HIGH

DESIGNING THE HIGH LIFE:

THE IMPACT OF APARTMENT DESIGN POLICY ON RESIDENTS' EXPERIENCE OF APARTMENT LIVING AND WELLBEING



THE RISE OF APARTMENT LIVING

THE APARTMENT BOOM HAS GIVEN RISE TO CONCERNS ABOUT THE QUALITY AND AMENITY OF APARTMENTS AND WHETHER THESE FACTORS IMPACT THE HEALTH AND WELLBEING OF RESIDENTS.

In response, several Australian states have developed new apartment design guidelines, with minimum design standards. However, there is little policy-specific health evidence to help shape the content of apartment design guidelines.

THE HIGH LIFE STUDY WAS ESTABLISHED TO INVESTIGATE THE IMPACT OF APARTMENT DESIGN POLICIES ON DESIGN QUALITY AND, IN TURN, THE HEALTH AND WELLBEING OF APARTMENT RESIDENTS.

2.6 MILLON AUSTRALIANS (10.3%) LIVE IN APARTMENTS.

Between 2016 and 2021, the proportion of people living in apartments increased from:

5.7% TO 6.5% in WA (least developed apartment market)





THE VIEW FROM THE TOP

THE HIGH LIFE STUDY AIMED TO:

MEASURE IMPLEMENTATION OF POLICY-SPECIFIC DESIGN REQUIREMENTS

Are policy requirements being implemented on the ground?

COMPARE DESIGN OUALITY **BETWEEN CITIES**

Does a more comprehensive design policy improve design

COMPARE DESIGN **OUALITY & FEATURES BY AREA DISADVANTAGE**

Is healthy design a commodity that's available to everyone?

IDENTIFY ASSOCIATIONS WITH HEALTH & WELLBEING OUTCOMES

Does policy implementation impact residents' experience?

THE HIGH LIFE STUDY MEASURED: 172 BUILDINGS FROM 113 DEVELOPMENTS ACROSS 3 CITIES





PERTH



MELBOURNE

HOW WAS THE DATA COLLECTED?



SELECT BUILDINGS

We identified buildings built between 2006 and 2016 with 3+ storeys and 40+ apartments from areas of low, mid, and high area-level disadvantage.

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ACCESS PLANS

Building floor plates and elevations, submitted with the approved development applications, were used to create measures of the apartments and buildings.



SURVEY RESIDENTS

We invited building residents to complete a survey that included questions about their apartment design and their health and wellbeing.

HOW WERE THE BUILDINGS MEASURED?



WHO RESPONDED TO THE SURVEY?



RESIDENTS COMPLETED THE SURVEY (14% RESPONSE RATE)

12%

AT HOME

KIDS LIVING



DESIGN POLICIES: LAYING THE FOUNDATION

THE HIGH LIFE STUDY FOCUSED ON APARTMENT DESIGN POLICIES AND APARTMENT LIVING IN SYDNEY, PERTH AND MELBOURNE. In sydney, a comprehensive apartment design policy has been in place since 2002, while in Perth and Melbourne, There has been relatively little design guidance for apartments until recently.

Sydney: State Environmental Planning Policy 65 (SEPP65) was legislated 2002.
Perth: State Planning Policy 7.3, Volume 2 – Apartments (SPP7.3) was legislated 2019.
Melbourne: Better Apartments Design Standards (BADS) was legislated 2017 and updated 2021.





In Sydney, the buildings studied were developed under an operational planning policy, so we measured compliance with **SEPP65**.



In Perth and Melbourne, the buildings pre-date **SPP7.3** and **BADS**, so we assessed their adherence with the incoming policies (identifying how much of the new policy was already adhered to by current practice).





DESIGN OBJECTIVES

NUMBER OF DESIGN REQUIREMENTS MEASURED IN EACH STATE POLICY BY DESIGN OBJECTIVE

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	SOLAR & DAYLIGHT	NATURAL	INDOOR Space	ACOUSTIC PRIVACY	VISUAL PRIVACY	PRIVATE OUTDOOR Space	COMMUNAL OPEN Space	CIRCULATION	PARKING	APARTMENT MIX	TOTAL
NSW	9	8	17	9	5	10	7	5	4	2	76
WA	10	6	17	10	6	7	8	5	6	4	79
VIC	5	5	10	3	1	6	4	1	0	0	35

DEVELOPING THE IMPLEMENTATION SCORES

The WA (SPP7.3) and NSW (SEPP65) policies included more design requirements than the VIC policy (BADS). For each policy, we created scores for each design objective and total policy scores.

We assigned apartments and buildings 1 point if the design requirement was met or exceeded and 0 points if they failed to meet the requirement. For example, significant trees on site = 1 point; no significant trees on site = 0 points; or >2 hrs direct sunlight = 1 point; <2 hrs direct sunlight = 0 points.

This approach weighted all requirements equally to provide a simple quantification of the 'amount' of policy implemented.

We also created a pooled implementation score, with apartments and buildings assessed for all the design requirements from all 3 policies, regardless of whether the requirements applied in the state.

THE DESIGN OF THE HIGH LIFE

SYDNEY



SEPP65 IMPLEMENTATION IN SYDNEY (NSW) BUILDINGS

We measured Sydney buildings' compliance with the SEPP65 operational planning policy. On average, buildings implemented 57% of the policy requirements (this ranged from 40% to 67%).

PERTH

SPP7.3 ADHERENCE IN PERTH (WA) BUILDINGS

To measure Perth buildings, we compared current practice against the aspirations of SPP7.3. On average, total SPP7.3 adherence was 55% (this ranged from 30% up to 71%). Perth buildings scored relatively well considering they were built before the introduction of SPP7.3.



MELBOURNE

BADS ADHERENCE IN MELBOURNE (VIC) BUILDINGS

We assessed Melbourne buildings against the intent of the BADS policy. On average, buildings adhered to 40% of the BADS requirements (this ranged from 17% up to 70%). Scores were based on fewer requirements, as BADS includes fewer quantifiable design requirements. There were no measured requirements for parking and apartment mix in BADS.

SYDNEY	PERTH	MELBOURNE
⊶⊸	⊳−−−0	▶0
A MIN	O MAX	□ AVERAGE



BEYOND COMPARE? HIGH LIFE CITY DIFFERENCES

TO COMPARE THE INCLUSION OF DESIGN POLICY REQUIREMENTS BETWEEN THE CITIES, WE ALSO SCORED BUILDINGS BY POOLING All measured requirements from the 3 policies.

The total implementation scores across the three cities were: **Sydney, 60%; Perth, 55%; and Melbourne, 43%**. There were notable differences between the building scores; Sydney buildings scored significantly higher than Perth and Melbourne buildings, while Perth buildings scored higher than Melbourne. Melbourne buildings scored lowest across all design objectives except parking. Notably, Melbourne had the weakest design guidance at the time the buildings were developed, and indeed since, as the new BADS policy remains less comprehensive than policies in other states.



DESIGN OBJECTIVES

SYDNEY PERTH MELBOURNE



RAISING THE BAR: IS HEALTHY DESIGN AVAILABLE TO EVERYONE?

THE POOLED IMPLEMENTATION SCORES FROM THE 3 POLICIES WERE THEN USED TO COMPARE DESIGN BY AREA-LEVEL DISADVANTAGE.

Buildings in relatively disadvantaged areas of Sydney had better implementation scores (60%) than those in the more disadvantaged areas of Perth (54%) and Melbourne (44%).

In Sydney, buildings in relatively disadvantaged neighbourhoods rated better on about half the design objective implementation scores. In Melbourne, there was greater range in the implementation scores across the design objectives, but the pattern was similar to Sydney, with buildings in relatively disadvantaged neighbourhoods often rating better. Results from Sydney and Melbourne suggest there is no systemic problem whereby those living in relatively disadvantaged neighbourhoods experience worse design.

Conversely, in Perth, buildings in the most affluent and least disadvantaged areas consistently rated the best, whereas buildings in mid and higher disadvantage areas rated the worst. While not ideal, these buildings predated SPP7.3, so the policy intervention should improve this.



SYDNEY

BUILDINGS IN MORE DISADVANTAGED Neighbourhoods rated better on about half the scores

PERTH

BUILDINGS IN THE LEAST DISADVANTAGED NEIGHBOURHOODS RATED BEST ON MOST SCORES

MELBOURNE

BUILDINGS IN MORE DISADVANTAGED Neighbourhoods rated better on about half the scores





HIGH HOPES: 'THE APARTMENT I'D CHOOSE'

We asked residents in our buildings about their reasons for choosing their apartment.

PRIORITIES BY CITY

Apartment aesthetics were consistently rated highly across all cities. Affordability was also highly rated, though less so for Sydney, which is surprising given Sydney housing prices. No locational factors ranked in the top 5 for Sydney or Perth residents, but being close to shops and services (#3) and public transport (#4) were highly ranked in Melbourne.

	SYDNEY	PERTH	MELBOURNE
#1	AESTHETICS	AFFORDABILITY	AFFORDABILITY
#2	NATURAL LIGHT	AESTHETICS	AESTHETICS
- ‡3	APARTMENT Floorplan/layout	APARTMENT SIZE	CLOSE TO Shops/services
‡4 _	AFFORDABILITY	APARTMENT/ Building Security	CLOSE TO Public transport
#5	APARTMENT SIZE	CAR PARKING SPACE	NATURAL LIGHT

PRIORITIES BY AREA DISADVANTAGE

Affordability was rated highest overall, although those in the least disadvantaged areas rated it behind apartment aesthetics.

Residents in relatively affluent areas were more concerned with 'higher end' issues such as apartment aesthetics compared with residents in more disadvantaged areas, who focused on 'everyday living' issues like apartment size, building security, and proximity to services.

	HIGH Disadvantage	MID Disadvantage	LOW Disadvantage
1	AFFORDABILITY	AFFORDABILITY	AESTHETICS
2	APARTMENT SIZE	CLOSE TO Shops/services	AFFORDABILITY
3	APARTMENT/ Building Security	AESTHETICS	APARTMENT SIZE
4	AESTHETICS	CLOSE TO Public transport	NATURAL LIGHT
5	CLOSE TO Shops/services	NATURAL LIGHT	APARTMENT Floorplan/layout



DESIGNING THE HIGH LIFE

LIVING THE HIGH LIFE

We also asked residents about their perceptions of different design factors in their apartment and building, recording their level of agreement with a series of statements. For example, 'I can easily move furniture around or change how I use the rooms in my apartment,' and 'My apartment gets direct sunlight all year round'.

PERCEPTIONS BY CITY

Building safety and security was the most positively viewed design factor across all 3 cities.

Natural light and ventilation were also highly rated overall, though slightly less so by Perth residents.

	SYDNEY	PERTH	MELBOURNE
#1	BUILDING Safety/security	BUILDING Safety/security	BUILDING Safety/security
#2	NATURAL LIGHT	BALCONY/ Courtyard space	NATURAL LIGHT
#3	NATURAL Ventilation	NATURAL LIGHT	THERMAL Comfort Control
#4	BALCONY/ Courtyard space	STORAGE	NATURAL VENTILATION
#5	THERMAL Comfort Control	NATURAL VENTILATION	STORAGE

PERCEPTIONS BY AREA DISADVANTAGE

There were few differences in apartment perceptions between relatively advantaged and disadvantaged areas.

Building safety and security was again the most positively viewed design factor, regardless of area disadvantage, followed by natural light to the apartment. Natural ventilation, balcony or courtyard space, storage, and temperature control were all highly rated.

	HIGH	MID	LOW
	Disadvantage	Disadvantage	Disadvantage
#1	BUILDING	BUILDING	BUILDING
_	Safety/security	Safety/security	Safety/security
2	NATURAL LIGHT	NATURAL LIGHT	NATURAL LIGHT
3	BALCONY/ Courtyard space	STORAGE	NATURAL Ventilation
4	NATURAL	NATURAL	THERMAL
	Ventilation	Ventilation	Comfort control
# 5	STORAGE	THERMAL Comfort Control	BALCONY/ Courtyard space

Perceptions of thermal comfort in summer and the privacy of the balcony or courtyard rated lowest among residents, regardless of city or area-level disadvantage (results not shown).

REALITY CHECK: POLICY VS. PERCEPTIONS

WE EXAMINED WHETHER RESIDENTS LIVING IN APARTMENTS WITH GREATER IMPLEMENTATION OF THE DESIGN REQUIREMENTS Experienced better apartment design and amenity. Our (objective) pooled policy implementation scores were Assessed for their association with the (subjective) perceptions of design and amenity.



Associated with:

- Better percieved access to natural light and winter thermal comfort
- Poorer perceived summer thermal comfort¹



INDOOR SPACE REQUIREMENTS

Associated with:

 Perceptions of a more spacious and functional apartment indoor space



Associated with:

 Positive perceptions of having a useable balcony area



COMMUNAL OPEN SPACE REQUIREMENTS

Associated with:

· Better perceptions of communal area quality



CIRCULATION SPACE REQUIREMENTS

Associated with:

Better perceptions of communal area quality



PARKING Requirements

Associated with:

Perceptions of adequate parking

HEALTHY BY DESIGN: PERCEPTIONS AND WELLBEING

MENTAL HEALTH IS DEFINED AS 'A STATE OF MENTAL WELLBEING THAT ENABLES PEOPLE TO COPE WITH THE STRESSES OF LIFE, Realise Their Abilities, learn well and work well, and contribute to their community'². In recent years, there has been increased emphasis on the concept of positive mental health and its contribution to a satisfying, productive life.

We examined residents' perceptions of apartment design and amenity and their association with positive mental wellbeing. After controlling for socio-demographics, all apartment and building design perceptions were associated with greater mental wellbeing.

When all perceptions were analysed together, 4 perceptions remained independently and significantly associated with mental wellbeing:



1. Highlighting the importance of measures that mitigate the impact of direct sunlight in summer, for example shading, shutters, glazing and insulation. 2. World Health Organisation (2022), Mental Health Factsheets.

THE ARCHITECTURE OF MENTAL HEALTH: Policy requirements and wellbeing

WE INVESTIGATED THE PERFORMANCE OF THE BUILDINGS IN TERMS OF THE COMBINATION, OR MIX, OF THE POLICY DESIGN Requirements that had been implemented and how this impacted residents' mental wellbeing.

Focusing on 80 design requirements that were relevant to all apartments and buildings, we ran a cluster analysis, which grouped the buildings based on their combination of design requirements. 2 distinct groups or 'types' of buildings emerged:

HIGH POLICY PERFORMANCE BUILDINGS

✓ Have greater implementation of 51 design requirements

✔ % of buildings from each city in the high policy performance cluster:



LOW POLICY PERFORMANCE BUILDINGS

- X Have significantly poorer implementation of the apartment design policy requirements
- Perform worse across all design objectives compared with those in Cluster #1

WE THEN UNPACKED THE COMBINATION OF DESIGN Requirements from the high policy performance Buildings and levels of policy implementation.



Low policy performance buildings tended to be larger complexes containing multiple buildings and had the highest proportion of single-aspect apartments.

FEATURES OF HIGH PERFORMANCE BUILDINGS



HIGH POLICY PERFORMANCE BUILDINGS DEMONSTRATED A STRONG ASSOCIATION WITH RESIDENTS' MENTAL WELLBEING. Residents in these buildings had significantly better mental wellbeing (on average, by +1.96 points).

High performance apartments and buildings exhibited a greater implementation of:

SOLAR & DAYLIGHT & NATURAL VENTILATION

• High proportions of dual aspect apartments

• 10% window to floor ratio

ACOUSTIC & VISUAL PRIVACY



- Higher adherence to building separation standards
- Living spaces and bedrooms separated from common or external circulation spaces

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INDOOR & PRIVATE OUTDOOR SPACE

- Larger apartments meeting minimum size and dimension standards for apartment, bedroom and private outdoor space
- More external private storage areas



Larger and greener areas



CIRCULATION SPACE

- · Corridor width requirements met
- Limit of number of apartments per floor met





• Higher levels of resident and visitor car parking





• Significantly greater mix of apartment types within the building

THE ARCHITECTURE OF MENTAL HEALTH: POLICY REQUIREMENTS AND WELLBEING

LISTED BELOW ARE THE DESIGN REQUIREMENTS THAT, IN COMBINATION, Were found to be positively associated with good mental health.



SOLAR & DAYLIGHT & Natural Ventilation

- Higher % of apartments with all bedrooms + living area on an external wall of the building
- 2. Higher % of apartments with 2 aspects
- 3. Higher % of apartments where the first/main aspect is northerly
- Higher % of apartments with a ratio of openable living room window area to the open plan floor area ≥10%
- 5. Higher % of apartments with 3 aspects
- 6. Lower % of apartments with only one aspect

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ACOUSTIC & VISUAL PRIVACY

- Higher % of apartments where the main bedroom window does not open directly into external common circulation spaces
- 8. Higher % of apartments with the living area separated from external circulation spaces by service areas
- Higher % of apartments with a building street setback distance of ≥3m
- Higher % of apartments with balcony setbacks of ≥6m from the adjacent site boundary
- Higher % of apartments with ≤50% of all bedrooms accessible directly off the living area
- Higher % of apartments where the living room window #1 does not open directly into external common circulation
 spaces

2	
6	
50	

INDOOR SPACE

- Higher % of apartments meeting the SEPP65 minimum internal floor area size standard based on the number of bedrooms and bathrooms
- Higher % of apartments meeting the SPP7.3 minimum internal floor area size standard based on the number of bedrooms and bathrooms
- 15. Higher % of apartments with the area of the main/1st bedroom ≥10m²
 16. Uickar % of apartments with the area
- Higher % of apartments with the area of the 2nd, 3rd or 4th bedroom ≥9m²
- Higher % of apartments with the width/ depth dimensions of the main/1st bedroom ≥3m²
- Higher % of apartments with dedicated laundry rooms
- Higher % of apartments with the width/ depth dimensions of the 2nd, 3rd or 4th 27. bedroom ≥3m²
- 20. Higher % of apartments with private external storage



PRIVATE OUTDOOR SPACE

- 21. Higher % of apartments that meet the minimum SEPP65/SPP7.3 balcony size requirement
- 22. Higher % of apartments that meet the minimum BADS balcony size requirement
- 23. Higher % of apartments that meet the minimum SEPP65/SPP7.3 courtyard size requirement
- 24. Higher % of apartments that meet the minimum SEPP65/SPP7.3 balcony depth requirement
- 25. Higher % of apartments that meet the minimum BADS balcony depth requirement
- Higher % of apartments with a balcony depth less than the width i.e., long side faces outwards
- Higher % of apartments that meet the minimum SEPP65/SPP7.3 courtyard depth requirement



COMMUNAL OPEN SPACE

- 31. Larger area (m²) of communal open space per apartment as per SPP7.3
- 32. Larger area (m²) of total communal open space as per BADS
- Lower % of total communal open space that is hardscaped (concrete, paving, decking)
- 34. Longer length (m) of communal open space
- 35. Higher % area of the total communal open space that is grassed
- 36. Higher % of site area that is communal open space as per SEPP65
- 37. Longer width (m) of communal open space as per SEPP65/SPP7.3



CIRCULATION SPACE

- Higher % of apartments located on a floor that meets the minimum corridor width (1.5m) requirement
- 39. Higher % of apartments located on a floor with ≤8 units
- 40. Higher % of apartments located on a floor with ≤12 units



PARKING

- 41. Higher % of apartments with an allocated car parking space
- 42. Higher number of visitor parking bays



APARTMENT MIX

- 43. Higher % of 3-bedroom apartments
- 44. Higher % of 4-bedroom apartments
- 45. Higher % of two-storey apartments
- 46. Higher % of mezzanine apartments
- 47. Higher % of courtyard or terrace apartments



BUILDING TYPE

- 48. Fewer residential buildings per complex
- 49. Fewer residential storeys
- 50. Smaller plot ratio
- 51. Fewer apartments

28. Higher % of apartments that meet

29. Higher % of apartments with any

30. Higher % of apartments with a

private outdoor space

requirement

courtyard

the minimum BADS courtyard depth

HIGHLIGHTS: THE BUILDING BLOCKS FOR RESIDENT WELLBEING

STATE-SPECIFIC DESIGN POLICY **COMPLIANCE AND ADHERENCE**



Sydney buildings, which were developed under SEPP65, complied with 57% of the SEPP65 requirements



Perth buildings, which predated SPP7.3, adhered to 55% of the SPP7.3 requirements



ADHERENCE

Melbourne buildings, which predated BADS. adhered to just 40% of the BADS requirements

IMPLEMENTATION OF POOLED DESIGN POLICY REQUIREMENTS



IMPLEMENTATION

Sydney buildings implemented 60% of the requirements



IMPLEMENTATION

Perth buildings implemented 55% of the requirements



IMPLEMENTATION

Melbourne buildings implemented 43% of the requirements

THE INTRODUCTION OF SPP7.3 AND BADS SHOULD IMPROVE DESIGN OUTCOMES FOR NEW BUILDINGS IN BOTH PERTH AND MELBOURNE.

There was little evidence that buildings in more disadvantaged areas in Sydney or Melbourne had poorer design outcomes, however buildings in comparatively disadvantaged areas in Perth need attention. The introduction of SPP7.3 should help address these inequities.

INCREASED POLICY IMPLEMENTATION WILL RESULT IN THE FOLLOWING OUTCOMES



HIGHER POSITIVE MENTAL WELLBEING:

51 policy-specific requirements were identified that, in combination, contributed to better resident mental wellbeing.

These design requirements should be prioritised in building design and approval processes to promote optimal resident mental health outcomes.



POLICY INCLUSIONS



PERTH SPP7.3

MELBOURNE BADS



In its current form, BADS may be unable to bring about positive mental wellbeing impacts and could benefit from adding additional design requirements that were found to be important for mental health.

POLICY INCLUSIONS

THE RESULTS OF THE HIGH LIFE STUDY CAN BE USED TO ADVOCATE FOR THE ADOPTION (WHERE CURRENTLY MISSING) OR RETENTION (WHERE PRESENTLY INCLUDED) OF THE SPECIFIC DESIGN FEATURES IDENTIFIED IN FUTURE DESIGN POLICIES.

ANY WEAKENING OF SEPP65 AND SPP7.3 THROUGH THE REMOVAL OF REQUIREMENTS **COULD BE DETRIMENTAL TO THE WELLBEING OF APARTMENT RESIDENTS.**





Foster S, Hooper P & Kleeman A. (2023) Designing the High Life: The impact of apartment design policy on residents' experience of apartment living and wellbeing. Melbourne: RMIT University, Centre for Urban Research & The University of Western Australia, Australian Urban Design Research Centre.