



creating active communities

How can open and public spaces in urban and suburban environments support active living? A literature review

South Australian Active Living Coalition, Research Summary, March 2010

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introduction



*active living is defined
as a way of life
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The South Australian Active Living Coalition is hosted by the Heart Foundation and consists of key government departments and other agencies who share a strong interest in improving the health and well-being of South Australians through the provision of advice in relation to the built environment and active living.

Current members of the SA Active Living Coalition include:

- Department of Health
- Land Management Corporation
- Department for Transport Energy and Infrastructure
- Office of Recreation and Sport
- Heart Foundation
- Planning Institute of Australia (SA Division)
- Cancer Council of South Australia
- Local Government Recreation Forum
- Department for Planning and Local Government

In 2009 the Coalition, identified a need for more evidence/guidance about the role and importance of open and public space in supporting active living.

A literature review¹ was commissioned from the Institute for Sustainable Systems and Technologies, The University of South Australia.

The full report identifies the academic and policy evidence around: amount, types of public open space, uses of public open space, location of spaces and design of space.

The review also includes a specific focus on the policy perspective relating to open and public space in higher densities and transit-oriented developments.

The full report *Creating Active Communities: How Can Open and Public Spaces in Urban and Suburban Environments Support Active Living? A Literature Review* is available to download from:

<http://www.heartfoundation.org.au>.



definition of terms

The literature review defines public open space to mean *space within the urban environment which is readily available to the community regardless of its size, design or physical features and which is intended for, primarily, amenity or physical recreation, whether active or passive.*

This space is neither home nor workplace and includes green and hard surfaced areas, water spaces, nature trails and bike paths (that are separated from the road). It does not include footpaths, pavement, roads and car parking areas.

Active living is defined as a way of life that integrates physical activity into daily routines.

The literature review assigned the following values for density:

High density: greater than 65 dwellings per hectare (dph)

Medium density: 30–65 dph

Low density: 1–29 dph

The Active Living Coalition suggests that planners and developers take into account the following key considerations in the development of public open spaces:

1. View open space as a primary initial consideration in design. A network of open spaces is preferable to stand-alone open spaces. A linked series of spaces should be a basic aim of planning for open space provision, and a starting point for the structure of a new development.

2. Provide scope for multiple activities and uses. Spaces that provide for activity as well as relaxation could include:

– plaza/piazza/forecourt

areas for meeting and sitting;

- green areas for leisure, picnics and informal play;
- walking (including dog walking) and cycling paths;
- adventure playgrounds for young children;
- multi-use courts for children, teens, and young adults;
- safe pathways and corridors to connect pedestrians and cyclists to other destinations

3. Consider walkability and accessibility to public open spaces. Ensure that the distance from residences and workplaces is no more than 10min walk from public open space.

4. The connectivity of spaces is a crucial factor in fostering active living. Create 'conductive walkways' between other destinations and public open space to promote physical activity.

5. Incorporate high quality design and Crime Prevention Through Environmental Design (CPTED) principles to provide amenity and engender feelings of safety. Crime prevention is key to increasing the use and uptake of facilities.

6. The nature, extent and location of open space is best determined by taking into account the demographics of the local population and engaging communities in the planning and design of their local spaces.



“the connectivity of spaces is a crucial factor in fostering active living. Create conducive walkways between other destinations and public open space to promote physical activity”



findings and evidence

The following findings are summarised from the evidence presented in the literature review¹ that sought to identify the key features of public open space and their association with active living. The evidence covered a broad range of sizes and types of areas from small pocket parks, children's play areas and urban squares to sports fields and extensive green areas.

Public open space: users, proximity access, location and design:

users of public open space

Children's play spaces should be adventurous and reinforce learning, foster independence and offer children opportunities for testing boundaries and exploring positive risk-taking.² Design should balance concern over injury and safety with acceptable risk.

Children and dogs often increase socialisation opportunities and therefore are positive enablers for community development and social inclusion. Adults accompanying children to playgrounds may be encouraged into physical activity by adult-oriented exercise equipment.³ Dogs are also a stimulus for physical activity.⁴

For people over 50 years of age the location and design of public open space is important. Barriers to walking for this group were (in order of importance): distance, difficulty, poor footpaths, no place to rest, time it takes to walk, dangerous intersections and fear of crime.

Creating access for people with various forms of disabilities creates more inclusive spaces and promotes equity.⁵ Designers should consider such elements as signage, gutters and safe crossings, footpath provision, and alternatives to steps to encourage usage by people with disabilities.

To ensure spaces meet local needs and provide a sense of ownership the public should be involved early in the development or regeneration of public open spaces.⁶

Whilst development and maintenance costs are important considerations, reducing costs at the expense of the attractiveness, durability, quality of finish or suitability to use space is not advisable.^{7, 8}

proximity and access

Accessibility must be thought of in spatial terms (distance) and in terms of the factors that make a route truly accessible. Providing effective linkages between point of departure, home or work, and public open space destinations, is a critical aspect of physical activity inducement.¹

It has been well established that physical activity can be promoted by 'conductive walkways' to destinations such as open space, local shops and parks,^{9,10} as well as improvements to the streetscapes and built environment connecting those destinations. Conductive walkways include such features as; protection from main carriageways, views, lighting, sufficient width footpaths, continuity of route, safe crossings and streets designed for traffic calming.

To maximise public open space usage, the distance from place of residence or work should be walkable.^{3,12,13} A distance of a maximum 10 minutes walk for the majority of able-bodied people is recommended.^{13,14}

The planning of new neighbourhood developments must ensure that proximity is not reduced to linear distance (as the crow flies) but rather reflects the actual journey an individual would have to make.



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findings and evidence

location and design

Accessibility, aesthetics and size of public open spaces influence physical activity.¹¹ In an Australian study interview respondents with good access to parks that were large and attractive were found to be twice as likely to engage in physical activity in public open space.¹¹

There is a need to provide readily accessible public open space in areas of high-density development.

Public space should be linked to other destinations in the neighbourhood through green corridors, walking and cycling paths.¹⁵⁻¹⁷

Where possible, locate public open spaces close to compatible facilities such as schools, indoor sports venues and community buildings to maximise joint use opportunities.¹⁸ Visits to public open space and engagement in physical activity is enhanced by the provision of a cluster of activity facilities.¹²

Quasi-public spaces such as gyms and golf courses which may be monitored or need membership present complex issues with regard to the equitable provision of public open space.

In low socioeconomic areas maintenance of public open spaces is often poor, rendering them unattractive and undesirable places to use, further adding to the impoverishment of the community.¹⁹ The perceived safety of the public open space will influence usage and access particularly by women.

The CPTED design principles identified to enhance public safety are²⁰: natural surveillance, access control, territorial reinforcement, lighting and, management and maintenance. Adequate lighting creates the impression of good

surveillance and management and reduces concealment zones at night.

recommendations

- Ensure that public open space provides scope for a diverse range of activities and uses. Incorporate green space and natural vegetation.
- Use walkability thresholds of 10 minutes or less which are considered acceptable to the majority of people. During the planning of new neighbourhood developments, ensure that proximity to public open space is measured using actual distances (directness calculations) rather than linear calculations (as the crow-flies).
- Consider the functionality and attractiveness of the walk to public open space networks.
- Consider the needs of older adults and people with a disability and design for all needs in both getting to and within the public open space.
- Encourage access by incorporating safety and crime prevention through environmental design using natural surveillance, access control, territorial reinforcement, management and maintenance.
- Aim to produce high quality public open spaces that can be well maintained once established.



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how is public space used?

Public open spaces are not always used for physical activity. Passive open spaces constitute important meeting and gathering places and can be considered as a focal point for public interaction and enhancing the connections between people and ultimately enriching the social fabric.²¹

Accessible, attractive greener space may have a positive influence upon community attachment to public open space, and particularly a positive health benefit for older adults.²² These greener spaces appear to attract people outdoors and increase opportunities for public interaction. Greener spaces have a positive influence upon community attachment to public open spaces and attract people outdoors.²² This increases the opportunities for casual social encounters and fosters the development of neighbourhood social ties.²² Importantly green space promotes physical activity amongst older adults.²³

The evidence suggests that piazzas, squares and parks provide an important destination for sedentary, social activity.³ This type of use of public open spaces has potential positive physical and mental health benefits for individuals and communities overall. The review notes that parks can be seen as refuges away from the pressures of modern life, and that sedentary behaviour at a park does not indicate the failure of design intent.²⁰

While activity at the park may be sedentary, walking to get to the park or other designation features prominently within the literature.

Several studies noted the role of amenities and aesthetics in promoting walking and in providing 'conductive walkways'.¹ King et al⁹ found that high-walking rates in older women were primarily associated with the journeys to local shops and parks.

Vigorous activity, defined as engagement in organised group sports, accounts for approximately 11–16% activity of public space users in the literature.^{3,19,21} The majority of these activities occurred on multi-purpose sports fields or playground facilities. The research showed that the provision of open public space, with appropriate location and design may not be enough on its own to promote strenuous physical activity.

The evidence suggests that vigorous physical activity may be encouraged by:

- Increased public awareness of public open spaces through social marketing;
- The management of public open space facilities and the coordination/scheduling of activities.

recommendations

- Incorporate meeting and gathering spaces for all ages in public open spaces.
- If a space is designed for vigorous activities, increase awareness of public open spaces through social marketing and organised activities.



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policy perspective

amount

Public open space standards in Australia are mostly based on historical policies set in the UK and the USA.²⁴ The UK standard is derived from a 1920s National Playing Fields Association (NPFA) standard of 2.83ha of public open space per 1000 population and has been widely applied in Australia.

Although nowadays it is split for active and passive needs the original standards did not take into account indoor facilities and areas used for passive recreation, or modern considerations of green space needed for biodiversity protection, sustainable urban drainage or general amenity.²⁵⁻²⁷

The literature review suggested that there is potentially significant scope for an increase in the recommended standard of public open space provision.¹ The review found only one example of a standard that increased the NPFA standards – a recommendation of the National Capital Commission in Canberra (1981) where the standard is 4ha of public open space per 1000 population.²⁸

contribution calculations

NSW continues to apply the NPFA standards while other states base their public open space standards on percentages: Western Australia uses 10% of the gross subdivisible area free for open space and South Australia (SA) has a 12.5% open space contribution. The SA calculation assumes a development of 1000 people will have 385 dwellings at 2.6 persons per dwelling.

Dwellings developed at a net density of 20 dph require 19.2 ha of land (12%) represents 2.4ha similar to the UK standard.

hierarchies

Hierarchies are widely used both here and overseas to analyse and categorise public open spaces and guide future provision, based not only on standards but also the distribution and accessibility of such space. The literature review identifies a hierarchical approach in a fact sheet on healthy public open space design for multi-users and multi-uses by Sunjara et al.²⁹, based on the Western Australian Liveable Neighbourhoods Code.⁸ It provides graphical examples of good practice design components of different types of space and a matrix of standards in respect of a range of factors such as walking, cycling and active play.



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needs assessments



the move towards denser neighbourhoods, urban consolidation and a diverse mix of land uses, requires innovative solutions to public open space provision in urban Australian cities

The literature review identified alternative overseas approaches to public open space provision including 'needs based assessment' which takes into account local socio-demographics and culture as well as the number of visitors to the area. Function and value of public open spaces could be viewed from a number of perspectives rather than purely local recreational needs, in order to fulfil a more complex set of needs.

The literature review identified the most thorough analysis of public open space in the urban environment as the UK based Commission for Architecture and the Built Environment (CABE).⁶

The CABE analysis argues for high quality public space and the need to engage communities in the planning and design of their local spaces. In Australia the RESIDE (RESIDential Environments) project is looking at the relationship of public open space to the surrounding urban environment and physical activity levels.³⁰

Recent UK and US policy has focussed on the provision of green space networks—spaces interconnected by green corridors or walking and cycle routes.^{15–17}

Both Victoria and the Gold Coast³¹ are actively supporting these types of networks.

high density neighbourhoods

The move towards denser neighbourhoods, urban consolidation and a diverse mix of land uses, requires innovative solutions to public open space provision in urban Australian cities. Suburban consolidation has typically seen suburban allotments subdivided, increasing density and reducing private open space, without increasing land use mix. Conversion of existing buildings into multi-storey apartment blocks has increased the

population density in a number of urban areas, where the availability of open public space needs to be addressed.

In transit oriented developments (TODs) the review suggested that it may not be appropriate to solely use the approach of setting aside a proportion of the development for public open space. This approach does not take into account the density of the population and the design of TODs, which includes grid street patterns, well-designed streetscapes, and mixed use development, all factors that have a positive influence on active living.

Table 1. (refer to page 9) summarises the public open space provision per 1000 population for a high density versus low density development.

It is important to note that providing large amounts of amenity green space does not guarantee that the space is usable, attractive and safe. It is possible to provide too much public open space as well as too little. Too much space may negatively impact on the amenity of an area. Small amounts of well designed green open space can significantly contribute to the urban environment.⁶

The literature review proposed that the open space needs of TODs may be assessed through audits to ensure they fit the demographic, cultural and behavioral characteristics of their population.⁶ The review noted that CABE provides a useful set of guidelines for making such open space audits, and provides advice on community involvement and design principles.³²

The literature review did not find any prescriptive standards for TODs. Currently there is a lack of evidence on public open space provision which is specific to TODs and higher density developments.



needs assessments

Table 1: Space provisions using standards for 6,600 persons at high and low densities.¹

Development	High Density	Low Density
Gross Site Area	30 ha	220 ha
Gross Density	110 dph	15 dph
12.5% space contribution	3.75 ha	27.5 ha
Space/1000 population	0.56 ha	4.1 ha
NPFA Standard (UK)	16 ha	16 ha

recommendations

- There is scope for dialogue around the recommended legislated standard of open space provision in South Australia (currently 12.5%).
- Alternative approaches to open space provision may be more appropriate in mixed land use, high density development and TODs.



“it is important to note that providing large amounts of amenity green space does not guarantee that the space is usable, attractive and safe”

conclusions

It is clear that open space covers a broad range of sizes and types of area from small pocket parks, children's play areas and urban squares to sports fields and extensive green areas. The evidence indicates that these fulfil a range of functions in respect of physical activity, from active sports to passive sitting, picnicking and as a venue for socialising for a range of age groups. These passive activities are shown to build social capital, enrich the social fabric and increase positive mental health benefits.

Open space also needs to be viewed as fulfilling multiple urban functions such as amenity, biodiversity enhancement, flood mitigation and carbon sequestration. Open space may be located in dense urban centres, suburbs and urban fringe locations and may serve diverse populations in terms of density, demographics and cultures in multi-ethnic cities. The evidence suggests that the full range of spaces is significant in promoting physical activity.

The evolution of open space policy and standards is charted and common aspects such as open space hierarchies and open space standards are identified. There is a lack of evidence in respect to appropriate provision of open space in higher density developments and TODs, although location and design guidelines are available.

The emphasis is on well-designed open space which is part of a linked network to promote pedestrian and bicycle trips between open space and other destinations.

Public consultation and input into design is needed. Effective contribution to urban active living can be gained from a range of sizes of open spaces if they are well designed, well maintained and managed, attractive and a focus for a diverse range of social activities suitable for the local community.

There is scope for further discussion about the recommended standard of open space provision in South Australia, to take into account the density of the development, local needs, and the range of functions it fulfils in a modern setting.



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references

1. Institute for Sustainable Systems and Technologies – University of South Australia: Creating active communities: How can open and public spaces in urban and suburban environments support active living? A literature review. Adelaide, South Australia, National Heart Foundation of Australia, 2009.
2. Staempfli MB: Reintroducing adventure into children's outdoor play environments. *Environment and Behavior*. 41, 2009.
3. Cohen D, McKenzie T, Sehgal A, Williamson S, Golinelli D and Lurie N: Contribution of public parks to physical activity. *American Journal of Public Health*. 97: 509-14, 2007.
4. Baum F and Palmer C: Opportunity structures: urban landscape, social capital and health promotion in Australia. *Health Promotion International*. 17: 351-61, 2002.
5. Ward Thompson C: Urban open space in the 21st century. *Landscape and Urban Planning*. 60: 59-72, 2002.
6. CABE SPACE: Start with the Park: Creating Sustainable Urban Green Spaces in Areas of Housing Growth and Renewal. UK, Commission for Architecture and the Built Environment, 2005.
7. Asakawa S, Yoshida K and Yabe K: Perceptions of urban stream corridors within the greenway system of Sapporo, Japan. *Landscape and Urban Planning*. 68: 167-82, 2004.
8. Western Australian Planning Commission: Liveable Neighborhoods Code. Perth, WA, Department for Planning and Infrastructure, 2009.
9. King WC, Brach JS, Belle S, Killingsworth R, Fenton M and Kriska A: The relationship between convenience of destinations and walking levels in older women. *American Journal of Health Promotion*. 18: 74-82, 2003.
10. Jackson L: The relationship of urban design to human health and condition. *Landscape and urban planning*. 64: 191-200, 2003.
11. Giles-Corti B, Broomhall M, Knuijan M, Collins C, Douglas K, Ng K, Lange A and Donovan R: Increasing walking how important is distance to, attractiveness, and size of public open space? *American Journal of Preventative Medicine*. 28: 169-176, 2005.
12. Diez Roux AV, Evenson K, McGinn AP, Brown DG, Moore L, Brines S and Jacobs DR: Availability of recreational resources and physical activity in adults. *American Journal of Public Health*. 97: 493-9, 2007.
13. Ker L and Ginn S: Myths and realities in walkable catchments: the case of walking and transit. *Road and Transport Research Journal*. 12: 69-80, 2003.
14. Cohen D, Ashwood JS, Scott MM, Overton A, Evenson KR, Staten LK, Porter D, McKenzie TL and Catellier D: Public parks and physical activity among adolescent girls. *Paediatrics*. 1: 1381-9, 2006.
15. Pollard T: Policy prescriptions for healthier communities. *American Journal of Health Promotion*. 18: 109-13, 2003.
16. Sallis J, Bauman A and Pratt M: Environmental and policy interventions to promote physical activity. *Am J Prev Med*. 15: 379-97, 1998.
17. Barton H and Tsourou C: Healthy urban planning: a WHO guide to planning for people London, World Health Organization Regional Office for Europe, 2000.
18. Land Com: Open Space Design Guidelines, LandCom, 2008.
19. Huston S, Evenson K, Bors P and Gizlice Z: Neighbourhood environment, access to places for activity, and leisure-time physical activity in a diverse North Carolina population. *American Journal of Health Promotion*. 18: 58-69, 2003.
20. Thompson S: Design for Open Space, Fact Sheet, Your Development, viewed 14 April 2009 <http://yourdevelopment.org/factsheet/view/id/72>, 2008.
21. Floyd M, Spengler J, Maddock J, Gobster P and Suau L: Park-based physical activity in diverse communities of two US cities. *Journal of Preventative Medicine*. 34: 299-305, 2008.
22. Kuo FE, Sullivan WC, Coley RL and Brunson L: Fertile ground for community: inner-city neighbourhood common spaces. *American Journal of Community Psychology*. 26: 823-851, 1998.
23. Takano T, Nakamura K and Wantabe M: Urban residential environments and senior citizens longevity in megacity areas: the importance of walkable green spaces. *Journal of Epidemiology and Community Health*. 56: 913-8, 2002.
24. Veal AJ: Open Space Planning Standards in Australia: in Search of Origins. School of Leisure, Sport and Tourism. Working Paper 5. http://www.business.uts.edu.au/ist/downloads/open_space_standards_2008.pdf. Lindfield NSW: University of Technology, Sydney, 2008.
25. Angold P, Sadler J, Hill M, Pulin A, Rushton S, Austin K, Small E, Wood B, Wadsworth R, Sanderson R et al.: Biodiversity in Urban Habitat Patches. *Science of the Total Environment*. 360: 196-204, 2006.
26. Girling C and Helphand K: Retrofitting Suburbia: Open Space in Bellevue Washington, USA. *Landscape and Urban Planning*. 36: 301-3, 1997.
27. Nowak D and Dwyer J: Understanding the Benefits and Costs of Urban Forest Ecosystems, in Kuser J: Urban and Community Forest in the North East. Netherlands, Springer, 2007.



references

28. National Capital Development Commission (NCDC): Urban Open Space, Guidelines. Technical Paper 21. Canberra, ACT, NCDC, 1981.
29. Sunarja A, Wood G and Giles-Corti B: A fact sheet on healthy public open space design for multi-users and multi-uses. http://www.sph.uwa.edu.au/go/c_beh/projects/post. The Centre for the Built Environment and Health, University of Western Australia, Perth, 2008.
30. Giles-Corti B, Knuiiman M, Pikora T, Van Neil K, Timperio A, Bull F, Shilton T and Bulsara M: Can the impact of health of a government policy designed to create more liveable neighborhoods be evaluated? An overview of the RESIDential environment project. 18: 238-42, 2007.
31. Gold Coast City Council: Active Parks, Viewed 4 June 2009, http://www.goldcoast.qld.gov.au/t_standard2.aspx?pid=4291, 2009.
32. CABE SPACE: Green Space Strategies: A Good Practice Guide. UK, Commission for Architecture and the Built Environment, 2004.

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