



**LEGISLATIVE ASSEMBLY**  
FOR THE AUSTRALIAN CAPITAL TERRITORY

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STANDING COMMITTEE ON ENVIRONMENT AND TRANSPORT AND CITY SERVICES

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## Submission Cover Sheet

### Nature in Our City

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The Committee Secretary  
Standing Committee on Environment and Transport and City Services  
Legislative Assembly for the ACT  
GPO Box 1020  
CANBERRA ACT 2601

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**“Nature in our City”**

**Inquiry by the Standing Committee on Environment and Transport and City Services**

The Australian Institute of Landscape Architects ACT Chapter (AILA ACT) welcomes the opportunity to make a submission on this significant inquiry into “Nature in our City”.

Canberra is renowned as a planned city and more importantly, for the relationship between its spatial layout and the landscape. This relationship between the urban and natural environment has enormous symbolic, ecological and social value. In the context of the many pressing, interrelated issues, including climate change, social well being and increasing urban density, it is critical to immediately quantify and fully understand the role nature plays in Canberra. This inquiry provides the opportunity for just such an extensive and in-depth evaluation.

Landscape architects are involved in re-imagining and transforming all components of the urban, peri-urban, and suburban environment, from streetscapes to parks and playgrounds, transport solutions to tourism strategies, new suburbs and even cities. Landscape Architects can and do provide guidance and leadership in the successful development and management of green and blue infrastructure.

AILA ACT represents over 100 registered landscape architects who work in the Capital Territory and who are committed to the successful development and management of ‘nature in our city’. The following are AILA ACT’s initial comments based around the Committee’s Terms of Reference.

We look forward to an opportunity to expand and have an active involvement with the Committee as the Inquiry proceeds.

Gay Williamson  
AILA ACT President

## **Submission to Standing Committee on Environment and Transport and City Inquiry into ‘Nature in our City’**

### **The level of public support for and satisfaction with amount and quality nature and natural environment areas in Canberra, particularly in urban areas**

AILA ACT concurs with the ACT Government’s strategic intentions to make Canberra’s urban/built form more efficient. To achieve this, urban density is critical. However, it is also critical that in creating a more compact, dense city, the spatial relationship between the urban and natural environments, a relationship that characterises Canberra, is recognised.

To understand the role of the natural environment, the level of public support and satisfaction it delivers, requires dedicated scrutiny. AILA ACT therefore recommends:

***An extensive and detailed landscape strategy plan be prepared. This plan must:***

- ***Quantify and qualify the symbolic, ecological and community contribution of ‘nature’;***
- ***Identify the places and elements (parks, streets, nature reserves, buffers etc.) that are critical to the physical and visual connectivity of the landscape setting and nature;***
- ***Develop guidance on the distribution of ‘landscape spaces’ to ensure local, walkable access for people of all ages and abilities; and***
- ***Set out a hierarchy of landscape spaces and places (and corresponding maintenance/management regimes) according to its primary function, intended intensity of use.***

Canberra is a heavily treed city. A sight in Canberra is to look over the city in autumn and see the great fabric of colour that deciduous trees provide. This tree coverage in the older Canberra suburbs is enabled by large private blocks and space for large street trees. The recent “Making Space<sup>1</sup>” event hosted by Ms Suzanne Orr MLA, reinforced that leafy green suburbs were a greatly valued by the broader Canberra community.

It is important that the character created by well treed suburbs be retained. The improved amenity of well vegetated suburbs through parks and street trees is highly valued by people. This is reflected in property values. A recent study by AECOM<sup>2</sup> found that in Sydney, a 10% increase in tree canopy related to an average increase in property price of \$50,000. People want to live in leafy neighbourhoods. Given Canberra’s climate, it is usually deciduous trees that offer the most in terms of visual

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<sup>1</sup> Making Space, ACT Legislative Assembly, 18 April

<sup>2</sup> AECOM, “Green Infrastructure: A vital step to Brilliant Australian Cities”, 2017

amenity and solar benefits. Of course, vegetation also has climate benefits (discussed below), allows ecological function such as providing habitat, promoting biodiversity and creating habitat.<sup>3</sup> Space for large street trees should be a key priority for new and existing suburbs, including rationalising aspects of civil engineering and services, so that street trees can be incorporated.

Canberra's character is also defined to a large extent by the existing open space in the hills and buffers provides vegetation that is relatively easy to maintain. The spatial qualities that these areas contribute to the city is very important in terms of providing a structure around which the city is built, visual amenity, places for the population to escape to and contributing to the character of the city. These need to be maintained and included in planning for future suburbs.

Parks in the city are vital for the health, recreation and play benefits that they offer the population. There is an increasing number of studies that show the valuable effect of green space on our physical and mental well-being. While there is an enormous body of anecdotal evidence for the healing powers of nature, research is putting evidentiary weight behind these contentions<sup>4</sup>. Humans are dependent on nature not only for material needs (food, water, shelter etc) but perhaps more importantly for psychological, emotional and spiritual needs.<sup>5</sup> Parks and other natural environments play a vital role in human health and wellbeing through providing access to nature,<sup>6</sup> and is associated with lower levels of perceived job stress and higher levels of job satisfaction.<sup>7</sup> Experiences of nature reduce psychophysiological stress,<sup>8</sup> and can build resilience to stress.<sup>9</sup> The growing body of research shows a connection between Australia's health and wellbeing and the design and structure of our built environment.<sup>10</sup> As Canberra grows, high quality green spaces need to be provided.

There has been some widespread criticism in the past for the standard of maintenance of the parks and open spaces in the city, and the reluctance to install and maintain irrigated grass. However, fewer, really well maintained, high quality parks would serve the community better in use and cost. Effective maintenance is an essential component of a successful parks system, including the willingness to adequately water these green spaces as the degree to which green spaces are accessible and aesthetically attractive, is positively correlated with degree of

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<sup>3</sup> Millennium Ecosystem Assessment (2005). *Ecosystems and Human Well-being*, Island Press Washington, DC.

<sup>4</sup> Frances E. (Ming) Kuo; *Parks and Other Green Environments: Essential Components of a Healthy Human Habitat* 2010

<sup>5</sup> Wilson, E. O. (1984). *Biophilia*. Cambridge, Mass, Harvard University Press. Katcher, A. and A. Beck (1987). "Health and Caring for Living Things." *Amnthrozoos* 1: 175-183.

<sup>6</sup> Maller, C., et al. (2008). *Healthy Parks Healthy People: The Health Benefits of Contact with Nature in a Park Context*, Deakin University and Parks Victoria.

<sup>7</sup> Kaplan, R. and S. Kaplan (1989). *The Experience of Nature: A Psychological Perspective*. New York, Cambridge University Press.

<sup>8</sup> Hartig, T., et al. (2011). *Health Benefits of Nature Experience: Psychological, Social and Cultural Processes*. Forest, Trees and Human Health. K. Nilsson, M. Sangster, C. Gallis et al. New York, Springer.

<sup>9</sup> Beute, F. and Y. A. W. de Kort (2014). "Natural Resistance: Exposure to Nature and Self-regulation, Mood, and Physiology After Ego-depletion." *Journal of Environmental Psychology* 40: 167-178.

<sup>10</sup> <http://www.healthyplaces.org.au/site/why.php> Accessed: 14 Dec 2014

engagement.<sup>11</sup> That is, people are more likely to use open spaces when they are well maintained.

Developing a hierarchy of parks and open space, with maintenance regimes and costs reflective of the intensity of use is critical. So too is a program to inform and encourage the community to understand and value the ecological and 'adventure' benefits of the more 'wild' spaces.

## **The types of nature and natural environmental areas within Canberra**

Canberra's natural environment is highly connected, visually and physically. It is an open space **system** that is comprised of a series of diverse natural environments, ranging from streets lined with deciduous trees, highly developed, articulated urban parks, rural landscapes and almost intact ecological communities.

To retain the integrity and significance of Canberra's unique open space system and advocates its value to the city, AILA ACT recommends:

***Making an inventory of and mapping the diversity in the natural environment and identifying the critical links to retain the physical and visual connectivity of the open space system.***

***Investment in a continuous community consultation and information program, similar to the 'citizen science' concept, to encourage community understanding and responsibility for the opportunities a diverse environment provides.***

The value of vegetation in the city is unquestioned but what does "nature" mean in the context of considering vegetation in the city?

As stated above, all vegetation has a role in the city, including the open space network around which, our city is constructed, parks, private gardens and streetscapes. Because we are considering such a wide range of vegetation types, the use of the word "nature" in terms of reference is largely unhelpful. This term is too open to interpretation and also conjures concepts of "mother nature", suggesting that "natural" areas will take care of themselves and do not have to be managed. It also tends to infer that "native" plant material is preferable as it is perhaps more "natural".

It needs to be recognised that the full range of plant material can be used in our city. Native plants should also form the basis of green corridors and many open spaces, but Canberra's climate means that deciduous trees are a far better option for built up areas for the solar access that they provide – solar access that has a flow on benefit to heating and cooling costs, and greenhouse gas production.

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<sup>11</sup> Semenzato, P., et al. (2011). Natural Elements and Physical Activity in Urban Green Space Planning and Design. Forest, Trees and Human Health. K. Nilsson, M. Sangster, C. Gallis et al. New York, Springer.

The structure of the vegetation types in relationship to the built environment needs to be carefully planned and managed so that the full benefits that vegetation of all types provide can be realised.

The significance of urban parks and natural areas has also been canvassed. Access to areas such as Glebe Park, Canberra's horse paddocks and Mulligan's Flat Sanctuary support very different experiences of 'nature'. However, while the community readily understands the value of these as separate entities, their value to a system of spaces that provides vegetation corridors for wildlife and a continuous landscape setting to our urban lifestyle is perhaps less well understood by the community and indeed the managers of our natural environments.

To improve community understanding of the value of a diverse environment, programs that actively engage the community in documenting and monitoring the quality and biodiversity are influential. "Citizen Science" is useful to educate people on the environment and how they might take on some responsibility.

## **Opportunities for Blue (water) and or Green (natural) Infrastructure in Canberra.**

AILA ACT provided a fulsome submission on the ACT Government's Climate Strategy in which it advocated for the importance of good design and greater capital and management investment in blue and green infrastructure.<sup>12</sup>

In line with this submission AILA ACT:

***Reiterates the importance of mapping the blue and green infrastructure, ensuring there is connectivity in the system, to facilitate the, monitoring of its quality and the taking of restorative or remedial action.***

***Calls for strategies to deliver public spaces at the outset of any development or redevelopment must be identified along with performance targets for delivering shade, water detention and harvesting, waste and energy reduction measures.***

***Recommends the reinstatement of investment in the 'urban forest'.***

"Green infrastructure"<sup>13</sup> is a very important way to consider what value nature provides. It is an easier term to define than "nature". The term recognises that vegetation offer benefits, including financial benefits, but also require management, care and replacement. All vegetation from the garden, park, street trees, and open space network requires investment. From that investment, benefits that cannot be fully measured accrue to the city and its citizens. The fundamental issue that all

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<sup>12</sup> Refer to AILA ACT submission on ACT's Climate Change Strategy: To a Net Zero Emissions Territory Discussion Paper December 2017,

[http://www.aila.org.au/imis\\_prod/documents/AILA/QLD/Climate%20Change%20Policy%20Submission.pdf](http://www.aila.org.au/imis_prod/documents/AILA/QLD/Climate%20Change%20Policy%20Submission.pdf)

<sup>13</sup> "Living infrastructure" has been used by the ACT Public Service and is also an acceptable term.

governments face is that vegetation, green space and street scapes are vital to the city, and have to be invested in without fully realising their return on the balance sheet. As stated in the AECOM report on green infrastructure, “we need to treat trees, parks and other natural elements like any other vital infrastructure and comprehensively account for their costs and benefits”.<sup>14</sup>

One of the most pressing concerns is the moderation of temperature within the urban environment associated with climate change, and that “green” and “blue” infrastructure has a vital role to play on liveability and quality of life in Canberra.

The State of Australian Cities 2013 reports that people living in cities, “particularly those in Australia’s inland cities, can be more susceptible than non-urban dwellers to the effects of heatwaves as a result of the urban heat island (UHI) effect. This is caused by the prevalence in cities of heat-absorbing materials such as dark coloured pavements and roofs, concrete, urban canyons trapping hot air, and a lack of shade and green space in dense urban environments.”<sup>15</sup>

In newer Canberra suburbs, this proportion of heat absorbing surfaces is much higher than in the older Canberra suburbs. The urban heat island effect occurs because of the capacity (thermal mass) of these darker surfaces to absorb the sun’s energy, converting up to 80 per cent of sunlight into heat that is stored and then released, raising local temperatures. As development occurs, these darker, absorbent surfaces and materials are increasing, while the overall extent of vegetation, shade and open spaces is decreasing. In Canberra’s old suburbs, the proportion of these surfaces is growing in older suburbs as larger houses are approved and less space is provided for irrigated landscaped surfaces and large trees. Increases in urban temperatures can increase air pollution, greenhouse gas emissions and reduce human comfort in cities, making it harder for people to cool down.

The benefits of cooling Canberra through the hot summer has many benefits:

- Every 1°C temperature reduction that can be achieved through the better design of cities can equate to five per cent energy saving through reduced cooling loads.<sup>16</sup> Reduced cooling loads will have significant social, economic and environmental impact on the long-term sustainability of Australian cities. Alternatively, without changing the way we manage the growth of our cities, a Flinders University-led study has found that a 1°C temperature increase boosts cooling loads by 1.5million kWh per year, generating 1000 tonnes in carbon dioxide emissions.<sup>17</sup> This also reduces peak energy demand and

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<sup>14</sup> AECOM, “Green Infrastructure: A vital step to Brilliant Australian Cities”, 2017; 26

<sup>15</sup> (REF: Infrastructure.gov.au, (2015) State of Australian Cities 2013 [online] Available from: [http://www.infrastructure.gov.au/infrastructure/pab/soac/files/2013\\_00\\_INFRA1782\\_MCU\\_SOAC\\_CHAPTER\\_4\\_WEB\\_FA.pdf](http://www.infrastructure.gov.au/infrastructure/pab/soac/files/2013_00_INFRA1782_MCU_SOAC_CHAPTER_4_WEB_FA.pdf) [Accessed 19 March 2015])

<sup>16</sup> Lehmann, S. (2014). Green Spaces Can Combat Urban Heat Stress - The Adelaide Review. [online] The Adelaide Review. Available at: <http://adelaiderreview.com.au/form/green-spaces-can-combat-urban-heat-stress/> [Accessed 9 Jul. 2015]

<sup>17</sup> Blogs.flinders.edu.au, (2015). Flinders News > Adelaide Urban Heat Island project. [online] Available at: <http://blogs.flinders.edu.au/flinders-news/tag/adelaide-urban-heat-island-project/> [Accessed 9 Jul. 2015]

CO<sub>2</sub> emissions (For every 0.6°C increase in temperature, peak utility loads in medium and large US cities increase by 1.5 – 2.0 per cent)<sup>18</sup>;

- Cooler summer temperatures improved amenity and more comfortable and enjoyable urban spaces;
- Better air quality – in the US, has been shown to deliver an annual economic benefit of nearly US\$1 billion<sup>19</sup>; and
- More moderate temperatures reduce heat and pollution-related illness and death.

The recent CSIRO report, “Mapping Surface Urban Heat in Canberra”<sup>20</sup> clearly demonstrates how mature vegetation and water bodies can moderate temperature in urban environments. By increasing the deciduous vegetation coverage across Canberra, the city can be cooled in summer, while allowing the city to be warmed through our cold winters. Again the AECOM research found that an increase in canopy from 20-28% results in a 4-degree lower air temperature and a 14-degree lower surface temperature<sup>21</sup>. Even irrigated grass surfaces that can reduce surface temperature by 24°C,<sup>22</sup> and planting vegetation for shade can reduce a building’s cooling energy consumption by up to 25 per cent annually.<sup>23</sup>

The benefits of increasing vegetation coverage have been recognised by the ACT Government.<sup>24</sup> We support the ACT’s efforts to reduce our carbon footprint as it sets a great example nationally, its overall impact on the release of carbon dioxide on an international scale is minor. We can, however, make a significant impact on the effects of climate change in our city with careful vegetation management moderate.

The issue for a city that is increasing its population density is how a high vegetation coverage is to be retained. Part of the answer to that conundrum is recognising vegetation and green space produces the greatest benefit. There is going to be a trade-off between space for vegetation and space for building, roads and other infrastructure. The benefits of the space that is allocated to vegetation has to be maximised. The ACT Government needs to be prepared to invest in this urban forest if the necessary gains in climate modification are to be achieved.

## **Managing the interface between the natural environment and urban areas particularly in regards to conserved environmental areas.**

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<sup>18</sup> *ibid*

<sup>19</sup> Globalcities.org ,(2015). A Practical Guide to Cool Roofs and Cool Pavements. [online] Available at: [http://www.coolrooftoolkit.org/wp-content/pdfs/CoolRoofToolkit\\_ExecSummary.pdf](http://www.coolrooftoolkit.org/wp-content/pdfs/CoolRoofToolkit_ExecSummary.pdf) [Accessed 19 March 2015]

<sup>20</sup> Meyers, J et al. “Mapping Surface Urban Heat in Canberra”, CSIRO, 2017

<sup>21</sup> AECOM, “Green Infrastructure: A vital step to Brilliant Australian Cities”, 2017

<sup>22</sup> Value-landscapes.eu, (2015). Study finds tree shade to be most effective at cooling our cities - VALUE - Valuing Attractive Landscapes in the Urban Economy. [online] Available at: <http://www.value-landscapes.eu/news/12/Study+finds+tree+shade+to+be+most+effective+at+cooling+our+cities.html> [Accessed 19 Mar. 2015]

<sup>23</sup> Epa.gov, (2003) Cooling Summertime Temperatures: Strategies to Reduce Urban Heat Islands. [online] Available at: <http://www.epa.gov/heatislands/resources/pdf/HIRIbrochure.pdf> [Accessed 19 Mar. 2015]

<sup>24</sup> ACT Government. “Canberra’s Living Infrastructure Information Paper”, 2018.

As has been previously emphasised, what makes Canberra unique is the relationship between its urban and natural environment. There is an imperative to understand fully the ecological, local community and national values of this relationship if the interface between these environments is to be managed successfully.

Again AILA ACT calls for:

***Mapping the diversity in the natural environment and identifying the critical links to retain the physical and visual connectivity of the open space system.***

***The preparation of an extensive and detailed landscape strategy plan be prepared.***

***A community consultation and information program to encourage community understanding and responsibility for the natural environment.***

Older studies and inquiries have addressed this issue. The work of George Seddon for then National Capital Development Commission, identified the value of the National Capital Open Space System, as well as a management hierarchy<sup>25</sup>. The Australian Government's inquiry into the "Bush Capital", expanded on this work and sought to identify what elements were integral to the system and setting of the National Capital<sup>26</sup>.

As Canberra has had self-government for 30 years, it would be timely to update this work and consider how to retain the open space system and manage the interface between the urban areas and particularly areas of environmental conservation in the context of more market driven development, the imperative to deliver greater fiscal value, climate change and increased urban density.

There are of course some precedents in Canberra, such as the suburbs of Forde and Throsby that adjoin the Mulligans Flat Sanctuary, and the planning for the development of Ginninderry. While the execution of the interface is by necessity very different, there is an imperative to keep out predators at Mulligan's Flat, both initiatives have sought to engage the community in the understanding the values of the conservation and indeed used this to promote the developments.

What has been more problematic is how to appropriately manage remnant vegetation, especially trees, in urban areas. These are often preserved in isolated 'pocket parks' that are costly to develop and maintain to facilitate intensive community use. Very often such treatment will compromise the longevity of the remnant vegetation. Having a better understanding of the relative value, rarity and significance of this remnant vegetation in the entire natural system may mean that other solutions can be considered, it may be that there is greater community value in removing the tree for development, promoting bio banking and the development of a more intensive urban park.

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<sup>25</sup> For more detail on the work undertaken on this by George Seddon please refer to the National Capital Authority and their website <https://www.nca.gov.au/planning-and-heritage/policy-and-strategy/planning-policy-review/national-capital-open-space-system>

<sup>26</sup> Refer to the Australian Government's Joint Standing Committee on the National Capital (1992) report entitled "Our bush capital: Protecting and managing the National Capital's open spaces". Tabled 5/11/1992.

## **Current policy or regulatory settings that impede the integration of the natural environment within optimal urban development and design.**

If we are to get innovation and integration of outcomes in the management of our natural and urban environments then it is vital that the administrative processes that govern these outcomes also have these attributes. More importantly, it must be recognised that good outcomes require cooperation and commitment from all tiers of government, private sector developers, planning and design professionals and the community.

Administrative process must:

- support multiplicity in decision making
- be responsive and easily adapted
- make monitoring and feedback 'mainstream'.

More specifically AILA ACT recommends:

***A comprehensive review off current administrative planning, development and management regimes to identify the barriers to innovation***

***Trialling cooperative economic/contractual models to deliver precinct/ section wide redevelopment with associated community and public benefits.***

***Identifying performance targets and or ratings for the delivery of green infrastructure that provides shade, water harvesting, habitat etc.***

Any positive change to the way that the vegetation is manage in the ACT requires a clear administrative alignment within the public service. To the casual observer, the loss of vegetation across the city is apparent. Even on the large blocks of the inner south, enormous buildings, large paved surfaces, tennis courts with concrete bases, other hard surfaces are creating heat islands. Large trees are disappearing, but the space that these large trees used to inhabit, are being built over with paved surfaces. There doesn't seem to be a coordinated alignment of decision making that plans for the regeneration and rejuvenation of the urban forest. For example, TCCS has the power to retain trees that are considered significant, but an approach that tries to protect the object (the tree) rather than the space that a large tree can grow is only going to be partially effective. Once that tree dies, the space that large vegetation could inhabit also potentially goes. There is a case to legislate space for large trees on blocks, but this has to be supported by those who approve development proposals. One of the clear outcomes of the AECOM study was that cities need to adjust regulations and operating procedures to allow the development of the urban forest.<sup>27</sup> A coordinated approach to growing the urban forest is required.

Planning priorities and current land planning, management and budgetary practices need to support the maintenance of the urban forest. Currently ambiguous development codes and regulations as well as restrictive standards for infrastructure assets compromises good outcomes. For example, while estate development and

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<sup>27</sup> AECOM, "Green Infrastructure: A vital step to Brilliant Australian Cities", 2017; 26

multi residential codes have sections on the provision of open space and ‘deep root landscape zones’, a great deal is left to interpretation of what is a deep root zone, in some cases it is argued that is not natural ground. Similarly, the strict enforcement of engineering and landscape standards, especially in regard to the size and species of street trees, understorey planting in parks and verges has limited the opportunities to establish both meaningful public spaces and significant green infrastructure.

AILA believes that there is a lack of investment in the ‘urban forest’. Failure to commit appropriate funding to renew and enhance Canberra’s living infrastructure is perhaps the most serious threat. The difficulty in ascribing a monetary value to this ‘asset class’ cannot be used to put off the expenditure given the enormous opportunity costs to individuals and the community associated with its loss.

In terms of exemplars, Melbourne provides an excellent and relevant example of how, with a clear goal, a concerted effort over many years can bring about profound and positive change. Rob Adams notes that change “is incremental and does not come about during the short time frames of political cycles”.<sup>28</sup> Emphasising the importance of in-house expertise, he argues that change will only occur if is “able to operate horizontally across all the departments and not simply” and not buried in any of the traditional departments such as planning or engineering.<sup>29</sup> We believe that the issues raised by the Standing Committee can be addressed with a clear focus, strong leadership and good governance.

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<sup>28</sup> Dovey, K, R. Adams and R. Jones (eds), “Urban Choreography: Central Melbourne 1985 - ”.Melbourne University Press, 2018.

<sup>29</sup> Dovey, K, R. Adams and R. Jones (eds), “Urban Choreography: Central Melbourne 1985 - ”.Melbourne University Press, 2018.