

# Open space as icon

## The making of local open space systems in Adelaide, 1950-2003

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Adelaide's planning history is replete with examples of the adoption and adaptation of iconic urban open space ideas. The making of urban open spaces, beginning with the Adelaide parklands, is a direct result of the diverse roles attributed to those spaces and the values placed on them by the public and by design professionals responsible for their provision. The emergence of the garden city idea and the concepts of the neighbourhood unit, pedestrian oriented design, the British New Towns and social and environmental planning in the twentieth century contributed to the reconceptualization of open space as a system that underpinned the structure of the urban environment. Contrary to nineteenth century practice, increasingly through the second half of the twentieth century, the social, environmental, aesthetic, health and marketing benefits of open spaces, combined with detailed site analysis, determined the development of local open space systems at the beginning of the planning process. Using an interpretive-historical methodology and combined methods that draw on interpretive-historical, qualitative and case study techniques the paper examines how the benefits attributed to open spaces resulted in the evolution of local open space systems in Adelaide in the second half of the twentieth century. The discussion focuses on three sites: Elizabeth (1954-1966), Noarlunga (1960-1985) and Golden Grove (1974-2003).

**Keywords** Open space system; Elizabeth; Noarlunga; Golden Grove, Open space benefits

### Introduction

Adelaide's planning history has many examples of the adoption and adaptation of iconic urban open space ideas. The making of open spaces in Adelaide is a direct result of the roles attributed to the open spaces and the values placed on them by the public and by the design professionals responsible for their provision. Broadly, those roles and values are categorised as social, health, amenity, marketing and environmental benefits. As a result, many open spaces were created in Adelaide during the nineteenth century. In particular, two sites - the Adelaide parklands (Jones 2006,

pp.128-140) and the Belair National Park (Cordes 1983, pp.21-40) - were icons of early open space ideas.

Open space systems were initially proposed by Frederick law Olmsted Sr. in the late nineteenth century and were formed in the urban environment retrospectively by linking existing and proposed parks. Olmsted's park systems were composed from a hierarchy of park types and sizes that were connected by parkways to form "a complete system of physically connected open spaces for a city" (Peterson 2003, p. 42). In North America the retrospective planning and application of city park systems was as Sonja Duempelmann (2009, p. 147) argued a "major preoccupation" in the first three decades of the twentieth century and influenced town plans internationally.

The emergence of town planning in the twentieth century led to the development of a number of influential planning concepts, presented in Table 1 that guided the ongoing development of metropolitan Adelaide (Hutchings 2007, pp. 61-83), (Forster and McCaskill 2007, pp. 85-107), Hamnett and Hutchings 2007, pp.117-120). Through those concepts model open space ideas were proposed and promoted for use in Adelaide including the greenbelt - an icon of twentieth century planning - as well as open space hierarchies, linear parks that facilitated non-vehicular movement and open space systems.

**Table 1. Selected town planning concepts that influenced the development of metropolitan Adelaide in the twentieth century.**

Planning Concept & Iconic Examples	Date	Originator/ Designer	Main Themes	Model/Iconic Open Space Ideas
Garden City & Garden Suburb (UK)	1890s	Ebenezer Howard	Devised as a means of ameliorating degraded urban conditions by combining the advantages of town and country living in size and population limited satellite cities.	Open space hierarchy Greenbelt
Letchworth Garden City (UK) Hampstead Garden Suburb (UK)	1903 1907	Raymond Unwin & Barry Parker	The open spaces were viewed as the 'lungs' of the site and were integral in creating a healthy, convenient and beautiful environment. In addition they were seen as sites where community interaction and cooperation could take place between the residents leading to community formation.	
Neighbourhood Unit (USA)	1920s	Clarence Perry	Influenced by garden city ideas the neighbourhood unit was devised as a "Family-Life Community". The main principles of the model include "size", "boundaries", "open space", "institution(al) sites", "local shops" and, an "internal street system". The open spaces were viewed as providing sites for both play and community interaction.	Hierarchy of local open spaces
Pedestrian Oriented Design Radburn New Jersey, (USA)	1928	Clarence Stein & Henry Wright	Described as the "garden city for the motor age" Radburn was an evolution of the neighbourhood unit. The Radburn plan aimed to establish a model to create 'better communities ... for the average family' and was based on five key elements "the superblock", "specialised roads", "complete separation of pedestrian and automobile", "houses turned around" to face the open spaces and, "park as backbone".	Linear open space network
British Mark 1 New Towns (UK) Stevenage (UK) Harlow (UK)	1946-1955 1946 1947	British Government Stevenage Development Corporation Harlow Development Corporation/ Frederick Gibberd	A response to war time bombing that aimed to decentralise the population. The New Towns are based on garden city, neighbourhood unit and Radburn ideas. In addition the Labour Government's social policy of class integration, specifically of the working and middle classes, is embedded into the new town policy.	Greenbelt Green wedges Open space networks
Social and Environmental Planning British Mark 3 New Town - Milton Keynes (UK)	1960s onwards 1967	Ian McHarg Christopher Alexander Constantinos Doxiadis Milton Keynes Development Corporation/ Lord Llewellyn-Davis	Viewed open spaces as a connected social and ecological system that structured the urban environment.  An evolution of the earlier New Towns that reflected the improved social and economic circumstances of the British people. Planning goals were "opportunity", "freedom of choice", "easy movement and access", "an attractive city", "public awareness and participation", and "efficient and imaginative use of resources".	Open space systems Green infrastructure

Sources: Howard, E., 1965. *Garden Cities of To-Morrow*. London: Faber and Faber. Unwin, R., 1919. *Town Planning in Practice: An Introduction to the Art of Designing Cities and Suburbs*. London: T Fisher Unwin. Arno Press., 1974. *Metropolitan America*. New York: Arno Press. reprinted edition of Perry, C.A., 1929. *The Neighborhood Unit: A Scheme of Arrangement for the Family-Life Community*. *Neighborhood and Community Planning Regional Survey*, New York: Regional Plan of New York and its Environs, vol. 7. Stein, C., 1966. *Toward New Towns for America*. Cambridge: MIT Press. Gibberd, F., 1947. *Harlow New Town: A Plan Prepared for the Harlow Development Corporation*. London: His Majesty's Stationary Office. McHarg, I. and Steiner, F., eds., 1998. *To Heal the Earth*. Washington: Island Press. Alexander, C., Ishikawa, S. and Silverstein, M., 1977. *A Pattern Language*. New York: Oxford University Press. Doxiadis, C. 1968. *Ekistics An Introduction to the Science of Human Settlements*. London: Hutchinson. Milton Keynes Development Corporation (1970), *The Plan for Milton Keynes*, vol 1. (Wavendon: Milton Keynes Development Corporation).

As detailed by Alan Hutchings (2007, pp. 71-72) and Robert Freestone (2000, pp. 310-316) open space system ideas were explored in Australia in the first decades of the twentieth century in the metropolitan plans for Adelaide (1917), Melbourne (1929) and Perth (1931). In the second half of the twentieth century the social, environmental, amenity, health and marketing benefits of open spaces, combined with detailed site analysis, determined the development of local open space systems at the beginning of the planning process. Open space systems were used to structure the urban environment (Freestone 2010, pp. 145-159, 270-272) (Kambites and Owen 2006, pp. 483-484).

The paper examines how the set of open space benefits (roles and values) defined in Table 2 were attributed to open spaces resulting in the evolution of local open space systems in Adelaide in the second half of the twentieth century. The benefits relate specifically to metropolitan Adelaide during the nineteenth and twentieth centuries and illustrate an accumulative understanding, by selected design professionals, of the importance of open spaces. The discussion focuses on three sites. Elizabeth (1954-1966) was built by the South Australian Housing Trust (SAHT) in-line with British New Town ideas and contains a nascent local open space system. Noarlunga (1960-1985) was developed by two government agencies the South Australian Housing Trust (SAHT) and the South Australian Land Commission (SALC) and through private speculation. Both the SAHT and SALC created local open space systems at Noarlunga. Golden Grove's (1974-2003) local open space system, developed through a public-private joint venture partnership between the Government of South Australia and Delfin Pty Ltd, was the culmination of the ideas explored at Elizabeth and Noarlunga. The research follows an interpretive-historical methodology but combines interpretive-historical, qualitative (field work and interviews) and case study methods.

**Table 2. The nature, roles and values (benefits) of open space in South Australia in the nineteenth and twentieth centuries.**

Social	Health	Amenity	Marketing	Environment
Social reform through the controlled use of space.	Urban lungs.	Urban amelioration to create good living and working environments.	Has been consistently about selling allotments.	Protection of native plants and animals.
Rational recreation.	Contact with nature to improve mental, physical and spiritual wellbeing.	High quality design that considers aesthetics.	Over time the methods used have become increasingly sophisticated.	Revegetation with native plant species.
Community development.	Provision of sites for approved passive and active recreational activities.	Provision of services and facilities.		Revegetation with indigenous plant species.
Community identification.	Passive and active recreation sites.	Timely provision of services and facilities.		Protection of ecosystems.
Cultural concerns like the preservation of heritage sites.	Mental Health.	Sometimes aesthetic considerations only.		

Garnaut, C. and Round, K., eds. *The Adelaide Parklands Symposium*, 10 November 2006, University of South Australia. Daly, J., 1982. *Elysium Fields*. Adelaide: John A Daly. Johnson, D., 2013. *Anticipating Municipal Parks*, Adelaide: Wakefield Press. Smith, *Design for a City*. Smith, *The Planning and Development of Elizabeth*. Ramsay, 'Factors Effecting the Siting and Design of Elizabeth'. Knapman, C., 1973. *A Statement with Regard to the Sociological Implications of Planning New Developments 7 November 1973*. Adelaide. Tract (SA) Pty Ltd, 1975. *Comprehensive Development Plan Modbury-Golden Grove*. Adelaide. Hassell Planning Consultants, 1977. *Morphett Vale East Planning Proposals*. Adelaide. Golden Grove Community Planning Team, 1987. *The Golden Grove Community Plan*. Adelaide. Crafter, S. 1990. *Golden Grove Community Plan*. Adelaide. Wendy Sarkissian, W. Heine, W., 1976. *Social Goals for Modbury Golden Grove*. Adelaide. SAHT., 1973. *Noarlunga Regional Centre*. Adelaide. SAHT. And SALC., ND. *Combined Development SAHT & SALC*. Adelaide. Noarlunga Urban Area Planning Team., 1974. *First Report of the Noarlunga Urban Area Planning Team*. Adelaide.

### **Elizabeth (1954-1966)**

Elizabeth was a critical town planning model in South Australia (Forster and McCaskill 2007, p. 87). Its planning was based on the British Mark One New Towns, particularly Stevenage and Harlow, to suit local understanding of garden city and neighbourhood unit ideas. It is located 25km north of the Adelaide CBD and covers about 2070 hectares. Elizabeth was developed by the SAHT between 1954 and 1966 to support Premier Thomas Playford's industrialisation strategy for South Australia. It was designed by a small in-house team of architects led by Henry P Smith and was the SAHT's first large scale comprehensively planned development (Marsden 1986, pp. 275-282) (Peel 1995, p. 38). Elizabeth is an icon of 1950s and 1960s planning in South Australia (Foster and McCaskill 2007, pp. 86-87). It was at Elizabeth that the idea of local open space systems was introduced to the Adelaide landscape and would subsequently go on to inform local open space planning in metropolitan Adelaide.

The SAHT included an open space hierarchy, based on familiar spatial patterns, to structure the site and to achieve their social, health, amenity, environmental and marketing aims for Elizabeth as well as the political agenda that Elizabeth succeed (Smith 1965, pp. 5-9, 12-17). In the process they created a nascent local open space system. The components of the open space hierarchy included: a parkland greenbelt as opposed to an agricultural greenbelt, neighbourhood unit greenbelts, a town common sited adjacent to the town centre, village greens in selected neighbourhood centres, a number of pocket parks sited strategically throughout each neighbourhood unit, public gardens in the town and neighbourhood unit shopping centres, and road reserves (SAHT, GRS8094/2/22). Site revegetation was also a stated aim (Ramsay 1957, p. 10).

Community building and creating a sense of community identity were the SAHT's fundamental social objectives at Elizabeth (Peel 1995, pp. 15, 23-31, 39-56). The parkland greenbelt and particularly the neighbourhood unit greenbelts were the mainstay of its approach (Figure 1). The SAHT used the greenbelts unswervingly to separate and define the new town and each neighbourhood unit to create both new town and neighbourhood unit identities. The spaces were designed to include opportunities for a range of active and passive, formal and informal activities to support community building. In particular, the SAHT used organised sports as a means of bringing people together (Allery 1996, pp. 97-99, 101-104, 138-139) but also created landscaped spaces in the town and neighbourhood centres that offered settings for potential informal social activities (SAHT, GRS8094/2/22).

Elizabeth's pocket parks supported community building aims at the local level by providing sites within easy walking distances from homes where social interactions could take place. Each neighbourhood unit contained a number of pocket parks that were the focus of the smaller residential subsets that were clustered around them (SAHT, GRS8094/2/22). Frederic Gibberd (1947, pp. 12-13) had used a similar technique at Harlow and it anticipated emerging concerns that neighbourhood units of 5000-10000 people were too large for residents to identify as a community (Benko and Lloyd 1949, p. 8.), (Goss 1961, pp. 69-70). At some of the pocket parks local residents worked together to secure playground equipment and additional plantings (Galbreath and Pearson 1982, pp. 50, 52,-55, 74-75, 78-79).

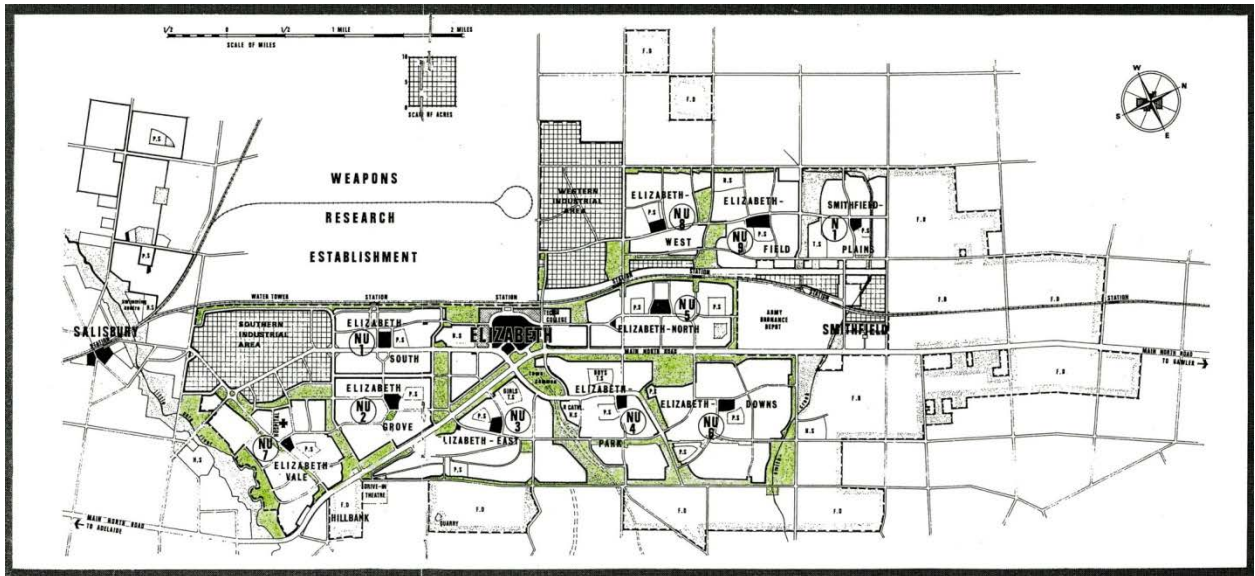


Figure 1. Site Plan of Elizabeth and surrounding area (1971) showing the 'green belts' that separate the neighbourhood units.

Source: SAHT, *Elizabeth South Australia*.

Contact with nature was an integral part of Howard's (1965, pp. 45-69) open space strategy for the garden city. Additionally, Unwin (1919, p. 278) recognised the value of landscaping not only for its amenity value but as a means to connect residents with the site and to identify specific locations within it. Smith's (1955, p. 6.) design strategy for Elizabeth relied on "backgrounds of trees and landscape features" to "create beauty and dignity" as the "imposing structures of the past [were] no longer practical". The revegetation of Elizabeth was led by horticulturist John Dwight who headed the SAHT's newly established Parks and Gardens Department. Dwight believed in using site appropriate plantings resulting in his extensive use of Australian native plants placing him at the forefront of a burgeoning national movement for the wider used of native plants (Jones 2003, pp. 39-43).

Site revegetation assisted the SAHT's creation of an attractive and liveable environment and supported community building agendas by framing spaces and suggesting potential uses. Native trees were also used to symbolise the bringing together of people of many nationalities as one community (Russell, GRS8094/2/14). Elizabeth was transformed from a farming landscape into a literal garden city by the scale of the replanting (Galbreath and Pearson 1982, pp. 7, 21). In turn the amenity and health values of the open spaces, specifically landscaped parks and the plethora of sporting opportunities were utilised by the SAHT to market Elizabeth to prospective immigrants (Peel 1995, p. 91).

### Noarlunga (1960-1985)

Noarlunga was developed extensively between 1960 and 1985 using an amalgam of ideas and by a number of developers, turning a small rural community into the major southern regional centre for metropolitan Adelaide. Noarlunga is located 28km south of the Adelaide CBD and encompasses

approximately 2950 hectares (Towler 1986). About half of Noarlunga was developed as a result of private speculation controlled by the weak provisions of the *Town Planning Act 1929*. The remaining area was developed as broad acres by two government agencies – initially by the SAHT and later the SALC, both solely and in collaboration (Watchman 1977, p. 10). As at Elizabeth garden city, neighbourhood unit and Mark One New Town ideas influenced the SAHT's early Noarlunga developments.

From the 1970s the SAHT's and SALC's developments were influenced by the British Mark Three New Town of Milton Keynes and the work of architect planners Constantinos Doxiadis and Christopher Alexander. The change in approach was a direct result of the re-emergence of social and environmental planning as state government priorities to mitigate the inherent inequality of urban fringe developments (Forster and McCaskill 2007, pp. 93-97). Local open space systems were created to address those priorities. Milton Keynes influence came directly via the Monarto Development Commission's (MDC) planning for Adelaide's unrealised second new town at Monarto located 80km southeast of Adelaide (Harwich 1984, p. 140). Doxiadis influenced local architect Newell Platten who worked for Doxiadis before being employed as a consultant for and then the SAHT's chief design architect and who was responsible for designing the Noarlunga Regional Centre (Platten 2012). The SAHT premised the design of its last three neighbourhood units at Noarlunga on Alexander's pattern language (Noarlunga Urban Area Planning Team 1974, p. 1). The planning of Milton Keynes and both Doxiadis' and Alexander's theories viewed open spaces as connected systems.

The SAHT viewed its Noarlunga development as a second new town and planned and built its first three neighbourhood units – Christies Beach, O'Sullivan Beach and Christie Downs – contemporarily with Elizabeth (SAHT 1958, p. 4). As at Elizabeth, the SAHT valued the open spaces it provided for their social, health, amenity, marketing and to a lesser extent environmental roles creating an open space hierarchy that illustrated its growing understanding of pedestrian oriented design. Unlike at Elizabeth the SAHT did not use the open spaces unswervingly to define and separate the neighbourhood units but arranged them in a manner that created three open space corridors albeit with two disjointed (SAHT, GRS8094/2/20).

The planning of the Noarlunga Regional Centre (NRC) was a critical step in the SAHT's change in direction and was guided by the vision of the Noarlunga Regional Advisory committee for a connected and pedestrian oriented Noarlunga. The committee proposed ternary level connections that linked residential streets to neighbourhood centres, neighbourhood unit to neighbourhood unit, and the neighbourhood units to the NRC and the proposed and existing open spaces along the Onkaparinga River and the coast (SAHT, GRS4714/1/15). An interdisciplinary planning team was assembled by the SAHT to develop a model for residential developments adjacent to the NRC at Morphett Vale, Hackham West and Noarlunga Downs and also ultimately in collaboration with the SALC for the land it owned at Huntfield Heights and Hackham (SAHT 1976, p. 3).

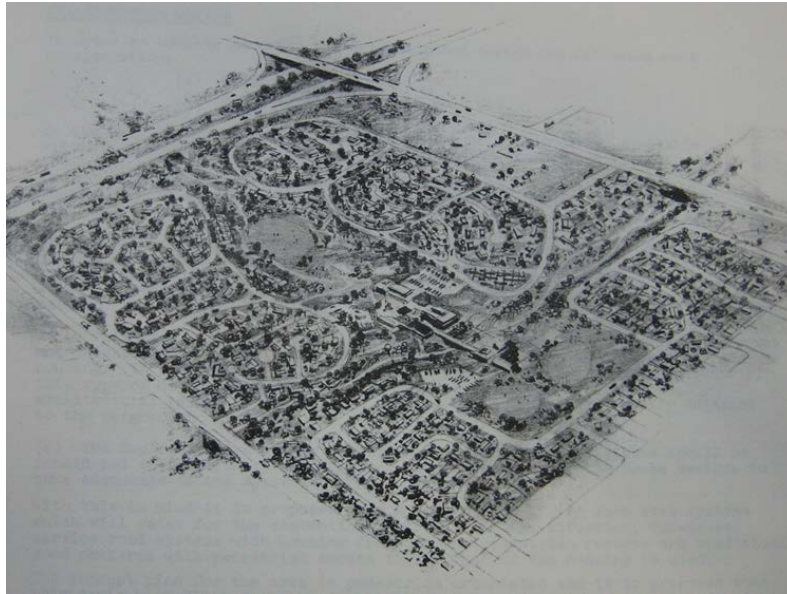


Figure 2. Noarlunga Urban Area Planning Team's Concept Plan for Hackham's West (1974).

Source: Noarlunga Urban Area Planning Team, *First Report of the Noarlunga Urban Area Planning Team*, p. 42.

In-line with the planning for Milton Keynes and Monarto the concepts of diversity, flexibility of choice and equitable access to community facilities and services underpinned their planning decisions and the team devised their model based on Alexander's concept of "patterns" (Noarlunga Urban Area Planning Team 1974). In particular, they focused on the needs of those residents they had identified as being the least mobile - children, home makers and the elderly (Knapman 1973, p. 4). As at Radburn, the team proposed a system of internal linear open spaces as the main open space form (Figure 2).

Environmental concerns also informed the siting and form of the open spaces. The main north-south oriented linear open space that runs from Morphett Vale in the north through Hackham West and to Huntfield Heights in the south was created, in part, to protect the valley floor from a proposed sub-arterial road (Byrne and Hutchison, 1986, pp. 5-6). In addition, and for the first time, addressing environmental concerns was specified as a requirement of development resulting in the SAHT's preparation of an environmental impact statement (EIS) for Noarlunga Downs. The primary aim of the EIS was to protect the Onkaparinga River and its estuary from development and to keep them separate from the emerging urban environment. One strategy used to protect the adjacent cliff face from residential development was including it in the local open space system (Figure 3) (SAHT, GRS4714/1/20).

The concept of local open space systems was furthered by the SALC at their Morphett Vale East development. A private firm, Hassell Planning Consultants, was engaged in 1976 to plan the triangular site that forms the eastern boundary of urban development at Noarlunga. The neighbourhood unit remained the basis of residential planning. Open spaces were integral to the planning process and were identified through site mapping that considered environmental, social, heritage and aesthetic site features and constraints. The design brief also required Hassell to

specifically consider “informal and passive activities”, children’s needs and pedestrian movement (Hassell 1977, pp. 2-34, 50-52, 79, 120-121).

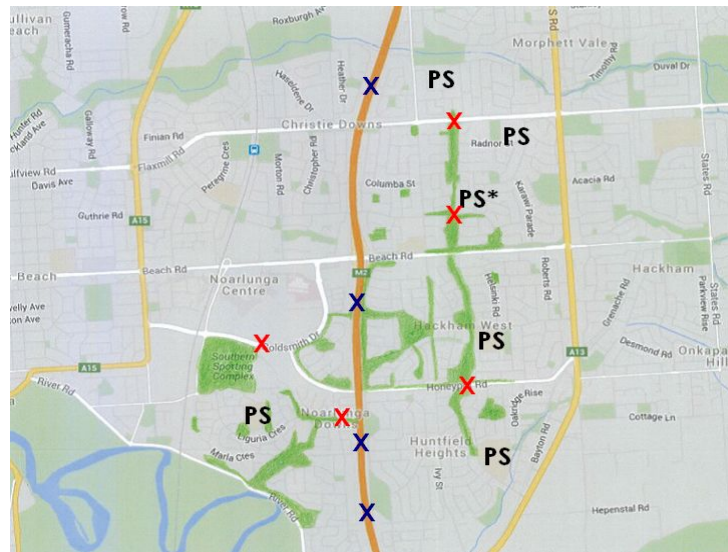


Figure 3. The local open space system as developed at Morphet Vale, Hackham West, Noarlunga Downs and Huntfield Heights. Key: X(blue) footbridge over the freeway, X (red) pedestrian underpass, PS government primary school, PS\* government primary school site subsequently redeveloped for housing.

Source: Google Maps.

Hassell (1977, pp. 2-34, 50-52, 79, 120-121) proposed a local open space system based on linear open spaces that incorporated existing open spaces, tracts of remnant vegetation, historic and heritage sites and the seasonal water courses that traversed the site. The linear reserves were oriented predominantly east-west and were used to divide the site into identifiable areas that could assist with community formation. They linked active recreation sites and community facilities and were also regarded as ideal sites for passive recreation.

The creeks were viewed as an economical means upon which to base the areas stormwater management and as a means to attract children away from the roads and to the reserves. The degraded riparian landscapes once improved would “enrich” the open spaces and the mature River Red gums created a sense of identity (Hassell 1977, pp. 2-34, 50-52, 79, 120-121). Improvement was the responsibility of the Noarlunga Council and took place when it had sufficient finances to do so. Delayed development undermined some aspects of the proposed system, notably the north-south oriented pedestrian corridor that did not eventuate.

### Golden Grove (1985-2003)

Planning academics Stephen Hamnett and Alan Hutchings (2007, p.120) view Golden Grove as an example of “state of the art” or iconic suburban development that combined “mainstream environmental, social and design objectives” (Glesson in Freestone 2010, p. 203) to mitigate the failure of urban fringe developments to provide timely access to services and facilities. Golden Grove

is located 20km northeast of the Adelaide CBD and encompasses 1230 hectares. It was developed through a public-private joint venture partnership between the Delfin Property Group Pty Ltd (Delfin) and the South Australian Urban Land Trust (SAULT) between 1985 and 2003 (Bosman 2005, pp.6-7). The SAULT was previously known as the SALC. The creation of the local open space system at Golden Grove was the culmination of the experimentation with open space planning undertaken by the SAHT, MDC and SALC at Elizabeth, Monarto and Noarlunga. Key open space ideas were incorporated into the *Golden Grove (Indenture Ratification) Act 1984* and informed the joint venture's planning for the site.

Initial site analysis and planning was undertaken by private planning consultants, led by Adelaide planning firm Tract Pty Ltd and was directed by the SALC. The overarching objectives for the site were "efficiency, flexibility, freedom of choice, social equality and likely acceptability" (Tract 1975, p. 1). Site analysis was carried out in-line with that proposed by planner and planning academic Ian McHarg that conferred open spaces with multiple benefits including new ecological land use theories to "identify and evaluate (the) land most suitable for metropolitan open space" (1998, p. 108). As a result the open spaces were developed as an ecological and social system that structured the urban environment and is an early example of green infrastructure.

Site analysis, identified the Cobbler and Dry creek networks as undevelopable but recognised the value of their social, environmental, amenity and health benefits. The creek networks were also viewed as an ideal means to base the division of the site into three neighbourhood units and twenty eight villages and for stormwater management (Tract 1975, pp. 1-30, 40-43, 96, 101), (Hamnett and Hutchings 2007, p. 119). Site analysis also identified the creeks' limited ability to cater for all of Golden Grove's open space requirements resulting in the development of a better considered open space hierarchy and the creation of a more balanced local open space system than those created at Noarlunga by the SAHT and SALC. The open space hierarchy was composed of the linear open spaces based on the creek networks (Figure 4), the Salisbury East Reserve located outside of but on the western boundary of the site, district centre open spaces, neighbourhood centre open spaces, village and pocket parks, road reserves and entrance statements. A pedestrian and bicycle network known as the hike and bike trail was created to link residents with key services and facilities and was based on the linear open spaces of the creek networks and road reserves (Sabino 2012), (Trimper 2012).

The open spaces supported the key social objectives of community formation and the creation of community identity by providing opportunities for social interaction at village, neighbourhood and development levels. Specifically through the use of pocket or village parks, the sporting facilities and ovals located in the three neighbourhood centres and the network of linear open spaces. These open spaces provided opportunities for passive and active recreation and linked residents with key services and facilities (Sarkissian and Heine 1976), (Sabino 2012), (Trimper 2012). The timely improvement of the open spaces and joint venture sponsored community oriented activities enhanced the community building potential of the sites in the early years of the development (Golden Grove Community Planning Team 1987, pp. 4, 7, 28-30), (Crafter 1990, pp. 35-39, 55).

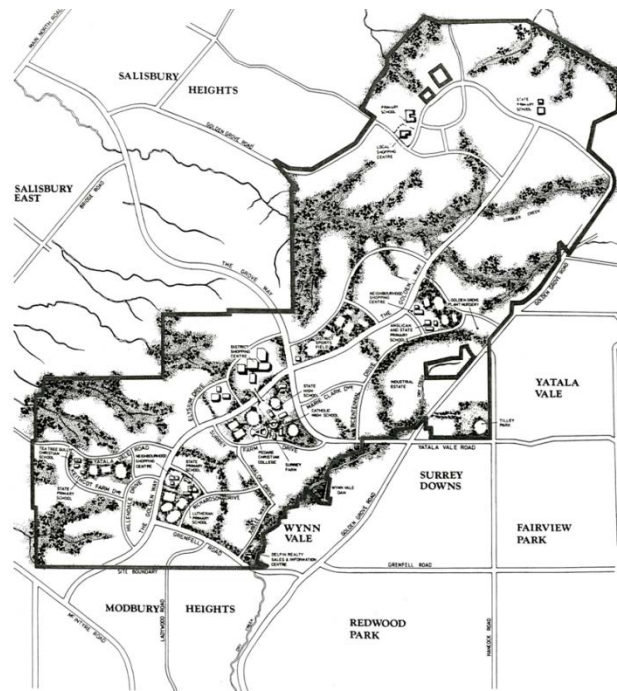


Figure 4. Golden Grove Concept Plan (1990) showing the linear, district and neighbourhood centre open spaces.

Source: Crafter, *Golden Grove Community Plan 1990*, p. 10.

The creation of community identity was facilitated at Golden Grove in two main ways. The first, like Elizabeth was through the physical division of the site into discrete areas with which residents could more readily identify. At Golden Grove that was the village containing approximately 1000 residents (LMC & Delfin 2003, p. 19). The open spaces were used to create the divisions where it was possible to do so without compromising its other roles. Each village was also provided with a village park or pocket park that acted as its heart (Sabino 2012). Site revegetation and theming strategies were also implemented to create a sense of identity. Native plants (Trimper 2012) and remnant farmscapes linked the new residents with the area's agricultural past and created a sense of country living in the city. The landscape theming of the Golden Way, the main arterial road through the site and the villages created associations at the general development and village levels (Bosman 2005, pp. 41, 117-118, 129-130), (Sabino 2012).

The environmental aims for the development were based primarily on the creek networks. Most of the existing remanent vegetation and habitat were associated with the creek networks and they were the natural drainage system for much of the site (Tract 1975, pp. 18-23). The creeks and the Para Scarp located on the western boundary of the site were revegetated with site indigenous plants (Trimper 2012). The joint venture based its stormwater management primarily on the approach outlined in the 1970s planning documentation. The impact of runoff on the creeks was minimised by the construction of swales and dams across the site where natural drainage had occurred prior to development (SALC 1979, pp. 193-212, 222-231). The improvement of these areas in a timely manner or their blending with the natural landscape combined environmental roles and values with other benefits (LMC & Delfin Lend Lease 2003, pp. 20, 26).

With financial success a stated aim for Golden Grove, the joint venture based its highly sophisticated marketing strategies around the benefits of the open spaces. In particular, the open spaces were used to market an image of Golden Grove that was based on the site's rural past as well as garden suburb and garden city ideas (Bosman 2005, pp.128-130). Site amenity was an integral role of the local open space system that also contributed to social, health, environment and marketing benefits. The timely provision of facilities and revegetation created attractive living environments and increased the useability of the open spaces (Sabino 2012). The degree of open space improvements created a level of resident expectation that led them to work together to protect the open spaces from perceived threats to it (Trimper 2012), (Murphy 1993, pp. 8-9, 24-26, 47).

## Conclusion

Local open space systems evolved in Adelaide in the second half of the twentieth century through the development of three sites - Elizabeth, Noarlunga and Golden Grove. Open space planning at each site was derived from the adoption and adaptation of model open space concepts, the planners understanding of the roles and values of the open spaces and increasingly in-depth site analysis that identified areas suitable for open spaces. The creation of a local open space system at each site was also a response to general criticism about piecemeal and speculative subdivision at the metropolitan fringe that created social and economic inequality.

Elizabeth was the SAHT's first attempt at a large scale comprehensively planned development. The political imperative for Elizabeth to succeed led the SAHT to focus on its social agenda of community building and creating community identity. The amenity, health, environmental and marketing benefits of the open spaces became secondary to those social aims resulting in the creation of a nascent local open space system. The nascent system at Elizabeth was based on familiar spatial forms and concentrated on dividing the site and providing opportunities for social interaction.

At Noarlunga, the SAHT's planners continued to expand their understanding of open space roles and values. In turn that understanding guided their decisions about open space planning leading to the creation of local open space systems as the primary open space type in its developments. Linked linear open spaces that drew on the Radburn model facilitated pedestrian communication, protected site features and the environment of the Onkaparinga River and estuary, provided access to a range of services and facilities and contributed to site amenity. Collaboration between the SAHT and the SALC and with the support of the MDC resulted in the SALC's adoption of local open space systems. While the SAHT and the SALC aimed to link their developments to the wider community the fragmented nature of their land holdings resulted in the creation of a number of separate local open space systems at Noarlunga. The provision of services and facilities in a timely manner and other open space improvements like revegetation were not considered by the SAHT and SALC to be entirely their responsibility and those aspects of their developments have occurred in a piecemeal manner over time.

Golden Grove's local open space system is the culmination of the open space ideas and experimentation that occurred at Elizabeth and Noarlunga. The local open space system at Golden Grove is an expression of its planners' understanding of the social, health, amenity, marketing and environmental roles and values (benefits) of open spaces. Detailed site analysis, at the beginning of the planning process, drew on that understanding and when combined with site constraints and

opportunities identified the areas within the development that were most suitable as open spaces. At Golden Grove, the five thematic open space benefits (roles and values) were considered equitably resulting in a more comprehensive system than at Elizabeth and Noarlunga. As a result Golden Grove's local open system is an icon of early green infrastructure planning, at the suburban level, in South Australia.

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