# MITCHAM'S FRONT GARDENS

## A STUDY OF CHANGING GARDEN STYLES AND PRACTICES IN POST WAR SUBURBAN ADELAIDE

by

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# ABSTRACT

From the 1960s fundamental changes in Australian society have taken place. It is hypothesised that the introduction of Australian indigenous plant material into suburban domestic gardens during that period might be viewed as a manifestation of cultural evolution within the vernacular landscape. This thesis consists of two parts.

Part I investigates ideas for garden studies through research into the history of modern gardens and a review of academic studies in related fields. Other published materials and popular influences, such as the media, are discussed for their contributions to suburban garden design, with particular reference to the recent cultivation of Australian native plants.

Part II presents two empirical studies undertaken in Mitcham, a local government area within the Adelaide metropolitan district. The study area contains residential dwellings spanning the period from 1840 to the present, set in a spatially diverse physical environment including portions of both the Adelaide Hills (Mount Lofty Ranges) and the adjoining plains. The first survey, which entailed observation and classification of over five thousand front gardens, led to the establishment of preliminary hypotheses which were investigated through a series of household interviews. Analysis and interpretation of data concluded that while some initial hypotheses were supported by the more detailed study, there was insufficient evidence to substantiate others.

Examination of the study area's physical and socio-economic characteristics revealed a distinct dichotomy between the Hills and Plains sectors. These differences were further reinforced by variations in garden styles commensurate with the dwelling construction period and the occupants' ages.

Data indicated that households established from the 1960s have incorporated an increasing proportion of Australian plant material into their gardens, paralleled with a trend towards a lower-maintenance, informal layout. Decreased areas of lawns are favoured, with some acceptance of these as seasonal features.

It was concluded that the domestic front garden remains a significant feature of the suburban landscape, generally given a high time and cost priority by owner-occupiers. It is believed that evolution of a unique Australian garden style will continue, to include a heterogeneous blend of native and exotic plant material within an informal setting.

# DECLARATION

I hereby declare that none of the material contained in this thesis has been accepted for the award of any other degree or diploma in any institution and that, to the best of my knowledge and belief, the thesis contains no material previously published or written by another person, except where due reference has been made in the text of the thesis. I consent to this thesis being made available for photocopying and loan if it is accepted for the award of the degree.

Elizabeth Margaret Caldicott

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# CHAPTER ONE

## INTRODUCTION

> *Australians are Home Lovers to an extent which surpasses that quality in any other land on earth ... His love of his home surpasses all, and is evidenced by the numerous 'garden suburbs' filled with individual and well-loved Homes that surround every township, town or city in our land ... Love of Home is evidenced again in every street of the above mentioned suburbs ... Evidence of the happy 'family circle' indoors may be seen in the bright floral and sculptural displays in gardens and affectionate touches such as wrought iron ornamentations to porches ...*
>
> (Robin Boyd [1972] p.49)

To own one's home, a house on a quarter acre block, is the 'Great Australian Dream', a goal towards which generations of Australians have striven. The family home is without doubt the single most important investment and asset most families will acquire in their lifetime. A large portion of household income is directed towards the purchase, adornment and maintenance of the home which provides security, becomes a source of pride and permits self expression in varying degrees.

Stretton (1989) describes Australia as a suburb and defends the majority who choose to live in these suburbs. He claims that:

> *... the allegedly monotonous and repetitive suburban quarter-acre can include an infinite variety of indoor and outdoor spaces ... the rooms in the house and the quarters of its garden can offer real variety of colour, use and mood ...*

The house-in-garden offers the owner:

> *... a whole field for self-expression, and many chances to adapt his environment to idiosyncratic needs ...*

It is an escape, quiet and private where one can:

> *... kick, dig up, replan, encourage to grow, or hang a wet shirt ... This freedom to alter his house without changing his address is an underrated one. Plenty of people like gardens, and the time they spend at gardening.*
>
> (Stretton, 1989 pp.14-16)

## 1.1 Background to and aims of the investigation.

### 1.1.1 Part I - Ideas for garden studies.

This study attempts to identify from temporal, social and spatial perspectives, those factors which have influenced management strategies and design principles in domestic gardens. Attention has been directed towards specific changes over the past three decades in Adelaide's suburban front gardens, particularly with regard to the increased cultivation of Australian native plants and the associated

less formal garden style.

The time frame within which this study is placed parallels significant social and economic changes, postmodernism and post-Fordism. The postmodern movement in architecture reflected changing lifestyles in western society while major new social and economic patterns have emerged with flexible employment opportunities and manufacturing processes.

Although to some extent architectural thought has touched design at an individual suburban level Robin Boyd (1987, p.125) suggests that, as a profession, architecture has not greatly influenced the Australian home life. Boyd adds that, far from influencing the course of popular fashion, architects have in essence been simply the instruments of it. Until recent years few qualified architects were trained in creative design, merely translating the client's ideas into a format which could be comprehended by the builder.

Adelaide, retaining a conservatism emanating from the first colonists, thrifty Scots and frugal Germans, largely escaped the excesses of post-war Functionalist structures. The endless monotony of towering skyscraping apartments and office blocks are singularly absent from the city's skyline. With its relatively small population and ample space to expand, there was no need for the urban concentration which demanded such high density housing. There was still room for a 'comfortable' urban sprawl.

This resistance to change, the tardiness in accepting new styles, has been fortunate for Adelaide in that much of the city's built heritage has survived. The inner suburbs have retained their colonial stone villas which have regained favour as the postmoderns looked back to traditional cultures for inspiration (Harvey, 1989). Restoration of existing structures in desirable inner suburbs became viable, justified by spiralling real estate values. Innovative architects were much sought after to both ensure authentic restoration and provide technological assistance for the structural problems associated with Adelaide's deep cracking clay soils and salt damp.

By the late 1980s the era of 'Reproduction-Colonial' and 'Federation' styles was well established, traditional designs with all the advantages of modern construction, engineering and plumbing. The reproduction styles have been particularly popular in the Plains sector of the Mitcham Council, consciously taking into account the *locale's* traditional structures (Jencks, 1973).

Additionally the eclecticism of the postmodern period has encouraged the blending of residential structures with the undulating, at times steep, topography in the Hills sector of Mitcham, inviting architectural ingenuity to design individual spaces within a natural setting. Thus, as suggested by Giddens (1984), human beings make their own geography.

By the 1970s, commercial structures began to incorporate landscaping in the initial design stages, the front setback space now being occupied by moss rocks,

wood chips, or scoria, together with evergreen plant material, predominantly hardy native species appropriate to the demanding outdoor urban climate. The role of landscape architecture was emerging as a discrete field.

Although the break from former cultural traditions during the 1960s may be seen as a reaction to modernism, with its efficient and rational functionalism (Harvey, 1989), it is difficult to translate broad social changes directly into the local context or try to relate it to suburban vernacular garden styles. However, the radical change in attitudes of contemporary young homemakers by the 1970s certainly echoed the same underlying philosophies.

The adoption of informal gardens which demanded less maintenance and incorporated indigenous species, suggests a general acceptance of more innovative design concepts and experimentation with new plant materials. This freedom from the constraints of the stereotyped conservative front garden externalises a wider, more flexible view of the world.

From the 1960s cultural geographers such as Meinig, Lowenthal, Riley, Lewis and Jackson, have directed attention to the study of *locales,* redefining landscape study at the ordinary level, the vernacular. In vernacular landscapes, Lewis (1979) considers that nearly all items are indicative of human presence, no matter how ordinary, and as such as equally important clues to the culture of any nature. With a dearth of academic literature on common landscapes, Lewis acknowledges the problems in studying them by conventional methods, recognising the

important role of popular literature, journals, advertisements and trade journals.

In his preface to *Vernacular Landscapes* Jackson (1984) comments that landscape history is largely confined to structures which have documentation (public spaces, parks) rather than the undocumented spaces, the more humble, less permanent and less conspicuous. Through the study of vernacular landscapes which identify with local custom, pragmatic adaptation to circumstances, and unpredictable mobility, we may eventually reach a comprehensive definition of landscape, and of landscape beauty which is derived from human presence, an image of our common humanity: hard work, stubborn hope and mutual forbearance.

If domestic housing styles and their surroundings are characteristic of the country where they have developed and reflect the cultural and economic history of that land, then the quarter-acre block, house-in-garden has become a unique statement of Australia's vernacular culture, a popular national art form common to the suburbs surrounding each Australian city. Treatment of the front garden in particular, has become the externalised expression of individual creativity, the image the occupants desire to project to the public.

A detailed review of literature, both academic and popular, has been included in the thesis to place in context the development of present day gardenscapes.

### 1.1.2 Part II - The detailed case study

An extensive initial observation survey was conducted within the Mitcham LGA to identify general patterns of front garden design. This was followed by householder interviews to elicit specific information pertinent to personal inputs into the planning and management of the domestic landscape.

Interviews of selected individuals involved in relevant organisations were recorded and transcribed, with their views used to support comments made by householders.

## 1.2 Issues to be investigated

Recognising that certain observable changes have occurred over space and time in suburban gardens, a series of questions emerged early in this study which formed a guide to consequent research.

(a) What historical events contributed to, and accompanied new approaches to suburban gardens?

(b) When did the concept of the 'Bush Garden' begin to manifest itself in Adelaide gardens?

(c) Which groups within society more readily accepted the informality associated with use of Australian plants?

(d) Which sectors of the community actively promoted the use of native flora?

(e) Which economic, social and political factors have exercised the greatest influence on the average domestic gardener?

## 1.3 Mitcham City Council - the fieldwork case study area

The choice of Mitcham LGA as a study area was based on the following criteria:

(a) The size of the area is large, 75 square kilometres with a population of almost 61,000 (1991 Census). Mitcham is the fourth largest city council outside of the City of Adelaide by area, and fifth by population.

(b) It houses a stable and ageing population, relatively limited in residential mobility with extended periods of continuous residency.

(c) There is a high proportion of:

i. home ownership
ii. nuclear families
iii. middle to high income earners with above average levels of education,

which suggests that the majority of occupants will be decision makers in garden design and maintenance, with the financial capacity to implement changing fashions in response to environmental awareness.

(d) The area lacks any significantly sized ethnic groups thus providing a predominantly homogeneous group with a white Anglo-Saxon middle class cultural background, the makers and keepers of 'mainstream' Australian gardenscapes.

(e) The area has a long and well documented history, being the oldest council in South Australia. It was proclaimed in May 1853 as the District Council of Mitcham, and was the first council to be formed under the District Councils Act 1852.

(f) The land subdivision and settlement pattern has been chronologically sequential.

(g) The majority of dwellings are low density detached homes on near quarter-acre blocks.

(h) The area provides a balanced distribution of dwellings from all construction periods, representative of most of the architectural styles produced in suburban Adelaide.

(i) The physical characteristics of the study area encompass all the main topographic features of metropolitan Adelaide, excluding coastal landscapes.

The area consists of plains, the Eden Fault escarpment, and hills produced by the Eden and Clarendon Fault blocks. Soils, rainfall, and natural vegetation (where still evident) vary considerably within the boundaries.

(j) The constraints of time and financial support available for the research limited the study area to one of a practical size, yet possessing sufficient characteristics common to the rest of the suburban area to be reasonably representative of metropolitan Adelaide.

A more detailed background discussion of this particular council is included in Chapter 5.

# PART ONE

## IDEAS FOR GARDEN STUDIES

# CHAPTER TWO

## IDEAS FOR GARDEN STUDIES - A REVIEW OF LITERATURE

This review includes academic papers dealing with the study of gardens and landscapes, and historical literature specific to gardening as a vernacular past-time.

To date there appears to have been limited academic research undertaken relating either generally to the nature of Australian suburban gardens or specifically to the cultivation of Australian native plants in domestic gardens.

### 2.1 Academic papers

Dr Ian Halkett (1975) presented his Doctoral thesis on the value of the private garden space associated with low density suburban housing, in the face of growing moves towards medium density housing on reduced allotment sizes. Halkett used Adelaide as his case study area, later publishing *'The Quarter Acre Block - the use of suburban gardens'* (1976). Halkett's important work centred on general garden design and changing spatial utilisation rather than referring to specific species under cultivation.

His research methods included an extensive aerial photographic survey of 1,058 gardens, supplemented by a householder survey sample of 430. This survey found that 95 per cent of all households surveyed had been involved in the design and maintenance of their gardens, with 90 per cent indicating some enjoyment derived from gardening activities.

In Chapter Five of his thesis Halkett emphasised the intensely personal aspect of residential gardens which defies and eludes empirical classification. His thesis identified design elements common to most suburban gardens, including front boundary demarcation, type of surface in the front garden and use of decorative vegetation. From these data Halkett developed a simple four category classification of gardens:

(a) plain throughout

(b) elaborate throughout

(c) plain front/elaborate back

(d) elaborate front/plain back

Elaborate gardens contained a variety of design elements, such as walls, shrubs and flower beds, several groups of trees, grassed areas and ornaments, while plain gardens contained simple elements, predominantly grass with perhaps one tree or shrub. Survey results indicated that 64 per cent of the gardens were classified as having plain front gardens, with 36 per cent elaborate. Gardens obscured by trees were excluded, as were terrace houses which lacked front gardens. This classification of suburban household gardens was considered but

found inappropriate for use in this study as it failed to differentiate on the basis of specific plants or plant types. Also, this current research has focussed on the front garden only.

In *Swan River Landscapes* Professor George Seddon (1970) observed that:

> *... It is surprising that gardening is never so much as mentioned by those who write of the arts in Australia: of the range of human activities whose function is primarily aesthetic, gardening is by far the most widely indulged in by Australians. It is perhaps the only genuinely popular art form of our culture and surely merits critical concern.*
>
> Seddon (1970), Introduction

Seddon has produced several books and articles addressing Australian landscape design which commend the use of suitable Australian plants to keep gardens in harmony with the spirit of the environment, the *genius loci.* His major works have been based in the Perth area where the climate and broad scale of the landscape make the use of native plants particularly appropriate. Climatically and topographically suburban Perth and Adelaide have more common characteristics than other Australian cities. A paper by Seddon published in the *Australian Garden History Society Journal* (1991), traces the evolution of present day Australian suburban gardens. Although only brief reference is made specifically to Adelaide's gardens his discussion of the use of outside space is applicable to most Australian cities.

Investigating factors affecting residential water consumption, Dr Graeme Dandy (1986, 1987) observed declining household use of water in Adelaide. Dandy has

suggested that this might be in response to recent urban water pricing policies, but also allied to changing garden practices with government promotion of the use of native plants in home gardens.

Dr Pauline Payne recently (1992) completed a thesis for her Doctorate in the History Department, University of Adelaide, based on the life of Dr Richard Schomburgk and his role in the early years of the Australian Botanic Garden. Payne's thesis addresses changes in garden philosophy over the history of South Australia, although more specifically directed towards formal public gardens rather than the smaller scale domestic garden.

Ms Roma Hodgkinson is currently engaged in research towards a Ph.D in History at Flinders University. Her study is centred on the roles of home gardens during last century and up to 1914, based on newspaper and journal records. Her work has been concerned with both the utilitarian backyard and the social significance of the ornamental front garden. She has investigated several relict gardens within the Mitcham LGA where remnants of former style have survived under the care of elderly owners.

Assorted unpublished Australian papers have been produced by undergraduate, graduate and postgraduate students on garden related subjects. Stephen Dangerfield (1989) presented an undergraduate paper in Environmental Perception and Behaviour at Flinders University. His study considered the psychological benefits of gardening, debating the relative role of private and communal open space, supported by information obtained from Lasscocks Retail

Garden Centre. Dangerfield deduced that privacy was a major concern of urban dwellers, borne out by the high proportion of screening plants and structures purchased from garden centres. Also noted was a decline in the purchase of fruit trees and vegetable seedlings, possibly related to reduced backyard space and the greater use of these areas for social and recreational activities.

Dangerfield reported a decline in the sale of native plants and pine bark in recent years, with the suggestion that widespread use of black plastic as a weed control method has resulted in disturbance of natural soil formation processes. Nursery staff had observed that native plants were being increasingly replaced by more colourful flowering annuals and perennial shrubs. Sales of advanced plants have generally superseded sales of small seedlings which require time to nurture to maturity rather than providing instant gardens.

Delwynn Poulton's unpublished thesis, *Brisbane's Front Gardens - Studies in domestic self expression and its relationship to Landscape Architectural Design,* (1982) was presented as part of the requirements for a Graduate Diploma in Landscape Architecture at Queensland Institute of Technology. For this paper, Poulton studied a sample of 19 suburban gardens in Brisbane, reducing front gardens to two categories, *Enclosure - the Play Place,* and *Exposure - the Show Place.* She concluded that 90 per cent of the respondents, selected from a range of socio-economic groups, saw their front garden as a show place.

Poulton noted that the *Exposure* group preferred well maintained lawns, trimmed shrubs, orderliness and weedlessness while the *Enclosure* group sought privacy,

shade, birds. The *Exposure* group disliked gardens that concealed the house and large trees while the *Enclosure* group disliked treeless gardens, excessive formality and space which could not be used for living. Further to the dual grouping Poulton found that the *Exposure* group had been strongly influenced by their background and upbringing, reflecting parental gardening styles, while the *Enclosure* group reacted strongly against the gardening philosophy of the family home seeking a freedom from the constraints of their childhood (pp.18-19).

Kate Low (1988) presented *The Gardens and Works of Betty Maloney and Jean Walker and Their Role in the Development of an Australian Garden Style* as part of the requirements for a Bachelor of Landscape Architecture at the University of New South Wales. Low traced the publications and practical contributions of these two sisters towards the establishment of native gardens, both private and public, and the promotion of cultivation of Australian native plant species in domestic gardens.

Maloney and Walker personally supervised and created numerous gardens, were active in the development of the Stony Range Flora Reserve (with Blombery) at Dee Why and were early members of the NSW branch of the Society for Growing Australian Plants (SGAP). Maloney and Walker's two small books *Designing Australian Bush Gardens* (1966) and *More About Bush Gardens* (1967) championed the cause of native plant gardens, offering advice on the design and construction of Bush gardens, based largely on their own experiences of gardening with native species in Melbourne and later Sydney. Maloney was also recognised for her skilled illustrations of Australian flora in numerous publications.

Two articles from US journals present evidence that a comparable change in attitude towards appropriate design for gardens in xeric climates has occurred in southern USA.

M.E. Hech (1975) discusses the revolution in urban landscaping, with the demise of grass lawns in Tucson, Arizona. Hech had observed grass being supplanted by bare earth, gravel and paving, with the use of native desert plant species. He viewed the front grass lawn as a relict symbol of the Anglo-American's conquest of the harsh environment and abandonment of the 'inferior' Spanish-Mexican culture. The grass lawn habit had then persisted as an outward sign of respectability throughout North America, sustained by vested business interests. Explanations for the present decline include time and cost of maintenance, allergic reactions to pollen production, the reduced need for the cooling effects of lawns with the widespread adoption of cooling and refrigeration, and simply fashion.

Christopher Grampp (1985) interviewed fifty San Francisco householders on attitudes to gardening, revealing similar responses to those made by householders in the Mitcham area. The front garden was seen essentially as a show place, neat attractive yards being considered valuable indicators of good citizenship and concern for neighbourhood appearance. The rear yard was predominantly used as a room outside, for private recreation and entertaining. Vegetable production was minimal with low maintenance gardens generally preferred.

Barter (1991) has observed the decline of the productive home garden in Malaysia, traditionally a source of fruit, vegetables, spices and medicinal plants, in

favour of the modern urban garden with lawn and ornamentals. This transition typically accompanies the social and economic changes wrought by urbanisation.

In a study of Puerto Rico dooryard gardens Kimber (1973) classified gardens into six design types, ranging from the *jibaro garden* (a small hut surrounded by open space containing edible plants, weeds and animals), to the *contemporary ideal garden*, a house set amid lawns, flower bed and ornamental trees. Like Barter's work in Malaysia, this reflects a transition of the function of gardens from economic to ornamental, and of occupants from subsistence to wage labour.

## 2.2 Urban and environmental commentaries

Robin Boyd, author of *Australia's Home* (1987, 1952), *The Australian Ugliness* (1960), *The Great Great Australian Dream* (1972), Hugh Stretton in *Ideas for Australian Cities* (1989, 1970), and John Fiske et al in *Myths of Oz* (1987), all pass social comment on Australian suburbia, the family home on a quarter acre block, or thereabouts, with evolving garden fashions an integral part of the changing scene.

More philosophical publications such as Ian McHarg's *'Design with Nature'* (1969), and Ian Laurie's *'Nature in Cities'* (1979), directed the attention of city planners towards a different approach to urban landscape design, the re-introduction of nature into the urban environment, as an element essential to balanced human existence.

By the 1970s global interest in the environment was developing into a major public issue influenced by books such as Rachel Carson's *Silent Spring* (1962)

which created widespread public awareness of the risk to the environment of pesticides and other chemical used widely in both agriculture and the home garden. The organic gardening movement and use native plants, more naturally adapted to the local pests, may be attributed to the discussions arising from this work.

It is unlikely that these publications directly influenced the average suburban home gardener but the philosophies they espoused became the essence of environmental movement of the 1960s and 1970s and have permeated all aspects of ordinary daily living.

## 2.3 Historians

In Australia, like other colonial settlements, the efforts of early European pioneers to establish gardens were struggles to acclimatise the European culinary and medicinal plants so necessary for survival. From the outset the colonies were essentially of an urban nature to which the English cottage garden tradition was readily adapted.

Beatrice Bligh (1973) traced the attempts of early settlers to create 'old' gardens in a 'new' land. *Cherish the Earth: the Story of Gardening in Australia,* published by the National Trust of Australia (NSW), draws much of the material from the eastern states and, as such, illustrates a period well prior to the establishment of the Colony of South Australia in 1836. By this time gardeners had accepted many of the adaptations in garden practices needed to accommodate the seasonal and

physical differences of the new land. Bligh stressed problems faced by early settlers in cultivating the hard, dry and seemingly infertile earth, managing with the scarce water supplies needed to sustain those plants which had originated from England's richer soils and more gentle climate.

Victor Crittenden's study of *The Front Garden* (1979), looks at the development of the cottage garden in Australia. His discussion deals with the small suburban front garden, typical of Australian cities. These front gardens developed very early after settlement at a time when European, British and American cities lacked any such innovation. The cottage garden in England was, at that time, confined to country villages, while the masses of urban dwellers were compelled to occupy squalid terrace houses. The rows of front doors opened directly to the street, devoid of any open space for gardens. Crittenden suggests that the suburban front garden was perhaps Australia's unique contribution to garden design.

Robert Swinbourne (1982) has provided a valuable historic record of the garden industry in South Australia in his *Years of Endeavour.* This book follows the development of commercial nurserymen, plantsmen and seedsmen in South Australia, based on existing catalogues which provide an important guide to the changing availability of, and demand for, both economic and ornamental species.

## 2.4 Historical popular gardening literature

Australian gardening books have been written from the earliest years of settlement, when colonists first established the need for guidance in such

matters. The range of material was relatively limited and, even by the early part of the twentieth century, was confined largely to cultivation of fruit, vegetables and ornamental exotic plants.

Two books published in England were probably the first to be written on the cultivation of Australian native plants. *The exotic gardener* John Cushing (1814) and *Flora Australasica* Robert Sweet (1828) were guides to the management of these exotic species in hothouses, greenhouses and conservatories.

The first significant Australian garden publications were the work of plant nurserymen. Thomas Shepherd's *Lectures on Horticulture of New South Wales*, was published in Sydney in 1835. Shepherd had trained as a landscape gardener in Scotland before migrating to Sydney where he established a market garden, fruit farm and nursery.

Daniel Bunce, also a nurseryman, began producing monthly issues of his *Manual of Practical Gardening* in July 1837, in Hobart Town. At the conclusion of the twelfth issue in June 1838 the articles were published as a book which serves as an excellent guide to plants available to Australian gardeners in the 1830s and set the pattern for later books which followed the monthly almanac format. Amongst general advice, notably in his *Australian Manual of Horticulture* (1850), Bunce gave instructions on the propagation and transplanting which followed the monthly almanac format. Amongst general advice, notably in his *Australian Manual of Horticulture* (1850), Bunce gave instructions on the propagation and transplanting of indigenous trees.

In 1858 William Adamson and John Smith, Melbourne nurserymen, first published the *Australian Gardener* in response to the demand for gardening information. Smith collected *Eucalyptus* and other native seeds for Ferdinand von Mueller who was claimed to be responsible for the establishment of *Eucalyptus* trees in Rome. In 1896 George Brunning took over the business and continued publication of the book, then in its 14th edition, until in time it became known as *Brunnings Australian Gardener. Brunning's Australian Gardener* (1983) is still in print and ranks as the longest surviving Australian garden book.

Fred Turner (1907) wrote for Anderson and Co, another seed firm established in 1863. *Anderson's manual of flower garden and shrubbery: a scientific and practical treatise on the cultivation of trees, shrubs, flowering and foliage plants* listed a number of Australian native plants suitable for home gardens.

Herbert Rumsey's *The Australian garden fair* (1923) included a chapter on native trees, shrubs and bush houses suited to the bungalow style home, and added notes on the selection of native plants and their culture. In 1927 Rumsey produced a second book, on the cultivation of nuts in Australia, including a description of the potential for the Australian nut *Macadamia ternifolia* (Crittenden, 1986).

### 2.4.1 Early South Australian gardening guides

In 1838, the same year that Bunce produced his book in Hobart Town, the first South Australian Gardening Guide appeared *Six months in South Australia with some account of Port Phillip and Portland Bay, in Australia Felix with advice to migrants: to*

*which is added a monthly calendar of gardening and agriculture,* written by T.H. James, and published in London.

Based on a series of lectures delivered in September 1839, George Stevenson (1840) wrote *Gardening in South Australia,* the advice predominantly directed at cultivation of fruit and vegetables, with an emphasis on grape vines, although some reference was made to the flower garden. When Stevenson died in 1865 he was described as the father of horticulture in South Australia (Crittenden, 1986 p.26).

A third South Australian garden book *The South Australian vigneron and gardener's manual* was published by George McEwin in 1843, seven years after the establishment of the colony. McEwin, initially employed as gardener to George Stevenson, had gained recognition for his botanical works in Scotland before migrating to South Australia. He acquired land in the Adelaide Hills, established an orchard and garden and became the founder of the Glen Ewin Jam Company. McEwin noted the similarity of Adelaide's climate with southern Spain, Italy and Greece and foretold a promising future for the production of wine, sultanas and currants in the new Colony. When McEwin revised his guide in 1871 he added a section on the flower garden and shrubbery and commented on the attractions of a variety of native genera such as *Hakea, Grevillea, Banksia* and *Epacris.*

The next South Australian gardening book appeared in 1857, *The South Australian Horticulturist and magazine of agricultural botany and natural history.* This compilation of four articles produced by J.F. Wood included, besides gardening hints, the Transactions of the Agricultural and Horticultural Society and a

discussion on the importance of the Horticultural Society's Garden.

A significant early South Australian publication was that of German migrant Ernst Bernhard Heyne, *The Amateur Gardener* (1877). Heyne, an academic graduate botanist from the University of Leipzig, differed from most of the earlier nurserymen who came with gardening backgrounds. Heyne promoted the use of leaf mould (compost) observing that the native plants were too rich in tannin to decompose rapidly and the presence of this substance in the soil was injurious to the growth of exotic garden plants (Crittenden 1986 p.64). Heyne favoured the gardenesque type of garden design practised by Loudon in England at that time, and his influence may well have led the way for the innovation of this style in Adelaide as a development of early cottage gardens surrounding the first settlers' homes.

These books indicate that early gardeners had recognised Australia's environment to be sufficiently different from England that new gardening books were necessary to suit the conditions (Crittenden, 1986 p.30).

### 2.4.2 Specialist writers

The first book on any single flower, the rose, *The Culture of the Rose* was written in 1866 by Thomas Johnson, a rose nurseryman from Melbourne. Although roses had been popular with the earliest settlers there was a resurgence of their popularity in Australia in the 1920s following the first World War. Crittenden (1986) suggests that the rose was the symbol of Britain, a part of the English revival and the admiration for the Mother country which followed the two

decades of Nationalism from Federation.

In the preface to *The Australian Rose Book: a complete guide to rose growers* R.G. Elliott (c1920) reiterated what other gardening writers were saying, that the Australian climatic conditions were so distinctly different from those in the northern hemisphere that the value of information from such countries was limited here. A separate chapter is devoted to each state, the South Australian chapter being written by Herbert Kemp, a prominent nurseryman in Adelaide since 1890.

> *It may be fairly claimed that the commercial centre for Rose growing in Australasia is Adelaide. In no city is the rose so popular or so plentiful. Almost every cottage with any space has a fairly representative collection, most of the larger gardens growing it by the hundred. This may be attributed mainly to the ease of propagation of the plants, comparatively low price, and suitability of the soil, good quality blooms being produced with scarcely any effort, and the hills near producing stocks naturally in abundance.*
>
> (Elliott, 1920, in Crittenden, 1986, p.129)

Roses remain perennial favourites to the present day, almost ubiquitous in Adelaide's suburban gardens, even those predominantly featuring Australian flora.

R.T. Wylde's book *On annuals, basket plants and climbers* published in Adelaide in 1876, reflects the growing interest in ornamentation of the structures such as verandahs and pergolas, which had become essential additions to the English style cottage offering some relief from the heat of Adelaide's summers. This also suggests that gardeners had found an alternative to flower beds which required constant watering in hot weather, developing an early interest in pot plants which could be moved into

the shade house or inside the house. Over one hundred years later Alec Blombery (1988) produced a book *Growing Australian natives in pots, indoors and outdoors,* introducing indigenous plants into a fashion which had been long established.

Samuel Hannaford (1866) was probably the first to publish a book on the use of indigenous ferns[1], although magazines and newspapers had published articles on local species. Many cultivated species of ferns, palms and other shade loving potplants are of Australian origin but, having been domesticated from early settlement days, these are often overlooked in discussions of the use of native plants in home gardens. It was not until 1920 that A.E. Cole produced *Half hours in the bush house,* one of the few books to deal with the *bush house,* sometimes called the *fernery* (in South Australia the *shadehouse*) which had become a unique Australian invention. Made of lattice work or covered with brush it was quite distinct from hothouses, greenhouses or summer houses.

### 2.4.3 Early works on Australian native flora

As one of the most significant developments in Australian garden design since the 1960s was the increasing acceptance of Australian native plant material it was considered relevant to investigate briefly literature dealing with the study and promotion of indigenous species per se. Much of the early literature prior to the 1930s was essentially the scientific works of botanists, couched in technical language beyond the scope of the amateur naturalist. An example of such works

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1 The wildflowers of Tasmania: or chatty rambles afloat and ashore. Amidst the seaweeds, ferns and flowering plants. (in Crittenden, 1986:193)

is *Flora Australiensis* in 7 vols. (1863-78) by George Bentham, assisted by Ferdinand von Mueller, a comprehensive survey synthesising the efforts of isolated explorers and botanists throughout the Australian colonies (Eaden (ed), 1987).

Later publications extended their content to encompass the needs of amateur botanists, conservationists and domestic gardeners. Significant in South Australia was J.M. Black's *Flora of South Australia* first published in 1922 by the South Australian Branch of the British Science Guild.[2] Similar publications were produced in other Australian States. In 1986 the Fourth Edition was published, edited by J.P. Jessop and H.R. Toelken of the State Herbarium.

In 1935 Western Australia Government botanist C.A. Gardener, first produced *Western Australian Wildflowers*, a landmark book printed by the West Australian Newspapers Ltd. This publication was largely an illustrated representation of the better known Western Australian wildflowers with plates of water colours and direct colour photographs. In the 1943 edition Gardner remarks that:

> *The brilliancy of hue and diversity of colour have made this flora world famous. ... This strange unique flora is something we should value and endeavour to understand ... It is something we hold in trust for future generations, and while a wise Government has provided laws and lands for its protection, it is the duty of all to appreciate and protect it from destruction and vandalism which unfortunately only too often accompany civilisation and progress.*
>
> (Introduction)

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[2] The Guild later became incorporated into the British Association for the Advancement of Science which provided inexpensive but accurate handbooks dealing with the plants and animals of Australia.

By the middle of this century a major change had appeared in gardening books, both in the amount of specifically Australian content written by local authorities, and in the sheer volume of publications. This may have been due to the increased purchasing power of the general public and the new printing processes which enabled cheaper publications with high quality reproduction of colour plates.

A comprehensive bibliography of Australian gardening books from 1806 to the 1950s, produced by Victor Crittenden (1986), provided much of the historical material from which this section has been drawn. Crittenden is currently working on a similar collection of books from the post 1950s period.

The task of producing an exhaustive contemporary bibliography is beyond the scope of this thesis. However some reference must be made to selected publications, in order to illustrate the variety of information available. A discussion of more significant recent publications is included in chapter 4.

## 2.5 Early Australian gardens

At the time of Australia's first settlements in the late eighteenth century British garden designers had turned from the formal architectural gardens to favour more natural landscapes, but still on a grand scale. It might have been expected that early Australian colonial gardens would follow the familiar British landscape garden designs, but Spooner (1976) suggests two reasons why English garden traditions did not become more significant in the colonies. Firstly, the broadacres necessary for the landscaped garden were too difficult for the settlers

to clear and maintain, and secondly, the colony's urgent need was for food - grain, fruit and vegetables. Early Australian gardening books reflect the primary concerns expressed by early colonists seeking specific guidance in basic horticulture for the new land.

Spooner also explains the influence of background. Many of the new settlers came from a social class which had little experience of gardening beyond the cultivation of small vegetable plots. The typical quarter acre allotment common to suburban areas surrounding the Australian cities early developed into self sufficient cottage type gardens.

In 1978 and 1979 the National Trust of South Australia received grants from the Australian Heritage Commission to identify specific gardens in South Australia worth surveying as culturally significant, acknowledging that garden design and gardening have formed an important part of our heritage (Beames and Whitehill, 1988). Of the twenty three gardens identified in the study nine were nominated for inclusion on the Register of the National Estate. A number of these gardens, designed to replicate the landscaped grounds of traditional English estates, survive in the Mt Lofty Ranges and foothills. In 1980 the Australian Garden History Society commenced publication of a journal which encourages historical research into the wider and more general field of Australian gardens. This has extended beyond the study of the grand and stately gardens to include ordinary suburban domestic gardens, now recognised as a valid field for research.

Australia had, from its earliest settlement, developed essentially as a suburban

society. Indeed Donald Horne (1964), in *The Lucky Country*, suggested that Australia may well have been the world's first modern suburban nation where the Great Australian Dream of home ownership, a detached bungalow on a quarter acre block, became a suburban reality. The Australian climate encouraged outdoor living and by the twentieth century the home garden had developed as a natural extension and accessory of the dwelling. It is this ordinary suburban domestic garden which has become the focus of a thriving industry and stimulated an abundance of popular literature filled with ideas and advice to the home gardener.

## 2.6 Towards an Australian garden ethos

Burnley Horticultural College, the first of its kind in Australia, was founded near Melbourne in 1897, with Carl Luffman appointed as principal. Luffman's *Principles of Gardening in Australia* (1903) discussed various styles but suggested that the natural style, a wild garden in the Robinson tradition, was most appropriate to Australia yet with characteristics of the *Paradise* garden such as shaded areas, a retreat from the heat. He was not, however, an enthusiast for native plants.

The tradition of modern Australian garden design probably began with W.R. Guilfoyle, who contributed much to the design of the Royal Melbourne Botanic Gardens. Although Guilfoyle's landscapes remained essentially English in design, he was aware of the value of using native plants, but as individual indigenous exotica. He produced a book *Australian Plants Suitable for the Garden* (1911) with extensive lists of Australian plants recommended for cultivation in domestic

gardens. Guilfoyle's tradition involving an appreciation of the interaction of people and nature, was to be developed later by Edna Walling into garden designs suited to the Australian environment (Crittenden, 1986).

English born Edna Walling trained as a horticulturalist in Melbourne at the Burnley College, worked as a landscape gardener and, from 1926 wrote prolifically for the magazine *Australian Home Beautiful.* By the 1950s she had been quite converted from English plants, using almost exclusively Australian species in the gardens she designed. She became an ardent conservationist, particularly in the field of roadside vegetation (Barrett, 1980). Crittenden (1986, p.150) suggests that Walling, not well known or honoured in her time, is now recognised as an outstanding gardener and writer who led the movement to natural gardens in Australia, and from there into the Australian native garden.

It is difficult to trace just how far Walling's work directly influenced garden design in Adelaide but it is known that she was commissioned to design and landscape at least one private garden in Medindie, which is still in existence, the original plans having been presented to the Adelaide Botanic Gardens (Beames and Whitehill, 1988). It is likely that Walling's designs were communicated to Adelaide's garden makers through her articles in the popular garden magazines of the time, and later by personal exchange of ideas as movement between Melbourne and Adelaide was facilitated by improved post-war transport.

Latreille's *The Natural Garden* (1990) reviews the life and works of Ellis Stones, one of Australia's best known and more innovative landscape gardeners. Stones worked

with Edna Walling in the 1930s in Melbourne and was strongly influenced by her philosophy of garden design. His landscaping style gained popularity at the time when Australians were turning to more naturalistic gardens. He particularly recommended the use of native plants which, with their informality, he felt to be in keeping with the changing Australian way of life. Practically, he maintained that with careful selection they would require little care, being adapted to local climates and soils. His choice of local materials and features attempted to replace some of the elements lost in town planning and subdivision which caused rapid destruction of the natural landscape. In the 1950s Stones worked with architect Alistair Knox and landscaper Gordon Ford, creating gardens along the Yarra Valley from Heidelberg to Eltham (Latreille, 1990). A growing confidence in Australian traditions contributed to the acceptance of Stones' designs, complementing new architectural styles attuned to the use of natural materials.

Stones was convinced that private gardens would come to play an even more important role for city dwellers as a place for quiet enjoyment within the ugly sprawl of urban areas. In the 1970s Stones was commissioned by Heidelberg City Council to landscape a new housing development at Rosanna, which was named Elliston as a tribute to his work. Further examples of his landscaping are to be found in the grounds of Como House and the Melbourne Botanical Gardens.

His contributions to the *Australian Home Beautiful*, the *Age* and the *Argus*, combined with regular appearances on a television programme 'Building Today' popularised his design philosophy in Melbourne. From here, by imitation at least, it dispersed through the wider field of Australian landscape designers

(Latreille, 1990). Certainly by the 1970s moss rocks, wood chips and railway sleepers were accepted as standard landscape materials in Adelaide, particularly in the newer suburbs. In the foreword to Stones' book (1976), Thistle Harris described him as the master of stone placement.

Stones' work introduced informality into garden design, and where possible he tried to create an atmosphere approaching that of the Californian Japanese style. He found that people oriented to European style gardening had difficulty in choosing native species appropriate to their particular garden setting, and failed to appreciate their subtle beauty of shape and texture rather than richness of colour (Stones, 1976)

In attempting to foster an individual tradition in Australian landscape design Seddon (1979) commended landscape architects to design in harmony with the natural environment. Seddon stressed the need to establish and maintain aesthetic and sympathetic relationships between the intrinsic natural elements of space, ecology, geology, landform, soil, vegetation and the cultural landscape.

Seddon describes early attempts to replace the native vegetation with foreign plants and formal garden styles as creation of *transference gardens* or *transferred landscapes.* He viewed gardens as part of the broader landscape, examples of the way in which humans change their environment, a philosophy shared by Meinig (1979), Jackson (1984) and Riley (1987). Any discussion of gardens must view landscapes less as natural phenomena and more as features resulting from human intervention. During the 1970s and 1980s a revival of interest in this aspect of cultural geography

recognised the need for research at the ordinary vernacular level.

Seddon's ideas have been developed by Bruce Mackenzie who had earlier worked with Ellis Stones. In creating designs appropriate to the environment Mackenzie (1986) was concerned that:

> *... our Australian landscape environment will be neither 'pro' nor 'post' anything ... it should represent an enduring and comprehensible ethos relevant to this land and this society ... it should stand proud, ignoring transient fashion.*
>
> (p.31)

Rodney Wulff (1987, *Landscape Australia No. 3)* refers to the design ethos of the 1970s, typified by the work of Ellis Stones, as the 'rocks and sleepers' (or 'dots and dashes') period. In a criticism of Stones' designs Wulff suggests that the widespread use of rocks, sleepers and native vegetation, not necessarily endemic to the site, represented a manifestation of nationalistic pride, emotionally derived yet largely lacking sensitivity in design.

In the following issue of *Landscape Australia* (No 4, 1987) Wulff examined landscape design styles, or directions, of the past decade through a contextually appropriate approach. Wulff's assessment includes both the broad scale landscape design of parks and the smaller scale of domestic gardens. While Wulff's discussion is Victorian based, his design typology is applicable in the wider Australian context. He proposed seven types of garden design likely to be found in Australian urban and suburban gardens:

(a) Sophisticated art expression - represented by extensive use of art forms/sculptures

(b) Nationalistic/Naturalistic - dominated by the use of rocks, sleepers and native plants

(c) International - featuring an abundance of mounding, formal geometric layouts, subservient to building forms and layouts

(d) Historic restorations/emulation - occurring when designs attempt to restore or duplicate past periods of design such as Edwardian or Victorian, often in public gardens

(e) Merge - where land use is placed in way that is virtually unseen, blending in with the landscape

(f) Australian eclectic - describes a mental approach to the use of traditional Australian material (corrugated iron, wire, old tyres and even beer bottles)

(g) Dreamtime/ethereal landscape - attempts to appreciate the vast, undefined and limitless Australian environment, evocative of the arid interior with sparse use of vegetation.

## 2.7 Summary

The limited extent of academic literature relating to garden studies suggests that this field has not yet been recognised as a significant aspect of cultural and landscape geography.

The literary interest in gardens thus far appears to have assumed a historical bias rather than an easily observable measure of cultural and economic changes in society.

The early Australian gardens were largely 'British nostalgia' in design and content, and as such have been influenced by all the past fashions which had contributed to the English garden tradition. In more recent years however, gardens have been better adapted to Australian climates, designed to meet the requirements of Australian lifestyles. Today modern suburban garden fashions in Australia are more closely identifiable with those of the West Coast of the USA.

The following chapter attempts to trace the origins of design features of present day Australian gardens, through a brief historical review of gardens from other countries.

# CHAPTER THREE

## A HISTORY OF GARDEN DESIGN TO THE PRESENT

The previous chapter attempted to establish the extent to which there is a literature concerned with 'the garden'. It ranged widely across time and space. Out of that review issues emerge which are important in trying to describe and explain the nature of garden design in Adelaide, and in the Mitcham area in particular. This chapter contains a collage of ideas from which present day garden fashions have evolved.

For the general purposes of this research a garden is identified as the area of open space surrounding a private domestic suburban dwelling, generally distinctly demarcated into front and back (or rear) yards, with specific activities allotted to each area.

### 3.1 Gardens in history

Throughout the history of gardens fashions have changed with the pendulum swinging from extreme formality to extreme naturalness. Garden historian Derek Clifford (1962) comments that no changes would occur if people did not become

bored, recognising that all gardens are a product of leisure. Only when a society has time to spare can energies be devoted to creative horticulture, to meet the recreational and spiritual needs of that society.

> *'A garden is man's idealised view of the world; and because most men* (sic) *are representative of the society of which they are a part, it follows that fashionable gardens of any community and any period betray the dream world which is the period's ideal. All history is one. Gardens cannot be considered in detachment from the people who made them.'*
>
> Clifford (1962 p.15)

Every civilisation has cultivated gardens, and for more than two thousand years these gardens have reflected the culture of the society which has created them. Changes within those societies and their culture have to some degree influenced, and been reflected in, contemporaneous horticultural practices.

Horticulture marks the first stage of sedentary occupation of the land and dates back to the earliest agrarian settlements. In these societies the primary function of gardens was to provide a more reliable food source, essentially grain, vegetables and fruit. Fences were built to protect the food supply from wild browsing animals, and to contain small domesticated animals and poultry, a practice still widespread in many countries today. Truly ornamental gardens generally developed only when societies moved towards a more highly urbanised situation, with survival needs satisfied and leisure time available for recreational activities.

The history of gardens through time makes absorbing reading and cannot be dismissed from any discussion on present day gardens, however it is not the

intention of this thesis to rewrite this history, rather to isolate those elements which have contributed to modern garden design.

Historians view the gardens of antiquity as reflections of those past cultures which created them, while the artist/designer can turn to them as a source of inspiration for new creations. Every past fashion in gardens has left fragments to endure, or to be absorbed and re-created in yet another form.

### 3.1.1 The ancient gardens

The gardens of antiquity developed in warm Mediterranean climates, thus it is reasonable to consider that the principles which underlie Australian garden design may have evolved from those early civilisations, or at least have been influenced by them.

The Egyptians, Assyrians, Babylonians and Persians created walled, shaded, watered gardens, which offered respite from the heat and aridity of the desert. These reached the height of their development in the *glorieta,* the private oasis or *'Paradise Garden'* (Brookes, 1969).

The first recorded gardens of the ancient Greeks were wild natural places, attributed to the presence of gods. Later both Greek and Roman homes were arranged around a formal courtyard garden, the *peristyle* or atrium, a design which survived the fall of Constantinople in the 15th century AD, retained as the cloistered gardens of monasteries and abbeys (Clifford, 1962).

During the 7th century AD, as Arab conquests spread Islamic traditions through northern Africa to Europe, the Moors introduced their eastern style gardens to Spain, examples of which exist today in Granada, the Alhambra and Generalife. From the 17th century Moorish gardens were introduced into Latin America by Spanish conquistidores and later to western North America by missionaries. The patio garden still features prominently in California and south western USA, well suited to the Mediterranean climate.

### 3.1.2 The Renaissance

Clifford (1962) suggests that the history of modern gardening, as an art, began with the Renaissance, as only references of a general nature survived in literature after the fall of Constantinople. Any consecutive documentation of earlier gardens has been lost. Gardening, unlike painting and literature, is an ephemeral art with few traces of original masterpieces remaining, except perhaps at sites such as Pompeii where a natural catastrophe has preserved the past for posterity.

Italian Renaissance gardens were designed by architects as extensions of buildings. Decorative plant material was used to provide an architectural link to emphasise unity with these structures. Gardens were valued as subordinate features rather than for plant specimens per se. Gardens as the domain of the plant lovers were yet to evolve.

### 3.1.3 The English garden tradition

Discussion of the English landscape tradition, epitomised by the 19th century works of Kent and Brown, has been omitted here as its scale limits its relevance to modern suburban design. English gardens traditionally developed as the setting for the home and the family's private life, yet that climate which makes English gardens so remarkable severely limits their use. The strong Anglo-Saxon heritage of the study area suggests that, initially at least, the English garden tradition was the primary source of early Australian garden design ideas.

The swing from formality to a more natural design became apparent in the 18th century in the emergence of the pastoral, *Back to Arcady,* school of landscape design. Jean-Jacques Rousseau observed in his letter to the Duchess of Portland, February 1767:

> *... The plants that grow in our woods and on our hills are still as they were when they left the Creator's hands, and it is there that I look to study nature - for I must admit to you that I no longer feel the same delight in botanizing in a garden. I find that nature, in a garden, is not the same: she has more brilliance, but she does not move me as much. Men say they make nature more beautiful - but I believe they disfigure her.*

Alexander Pope was probably the first poet to experiment with painting and then apply the techniques of art to both poetry and garden design. By 1731 Pope, in his *Epistle to Lord Burlington,* had transformed the rules of painting into a theory of landscape design which he reduced to three principles: contrasts, management of surprises, and concealment of bounds. He advised that those

who would create an acceptable garden should let Nature be their guide, and consider the *genius of the place.*

### 3.1.4 Victoriana - the Picturesque garden

The 19th century has been described as a period of eclectic gardens where no distinctive style dominated (Thacker, 1985). Enthusiastic collectors and amateur botanists had gradually built up a huge reservoir of new species of plants which would, in time, be introduced into private and public gardens. Ironically, while English gardeners depended on hothouses to raise exotic plants from the New World, colonial gardeners early devised the 'bush house' or 'shade house' to protect delicate cool temperate species from the excessive heat of Australian summers.

Budding's invention of the lawnmower in 1839 brought neat lawns within the domain of the small gardener, and added to the increasing diversity of mass produced garden tools along with a growing flood of cheap garden books, manuals and periodicals featuring garden advice which gradually found a market in the newly developing colonies.

The English cottage garden developed during the 19th century to reach its highest point by 1860, at which time the colony of South Australia was firmly established, and Adelaide's suburban gardeners were creating domestic gardens on their quarter acre allotments, generous by English town standards.

Gertrude Jekyll's *Wood and Garden,* published in 1899, contributed much to

cottage garden design, popularising the hardy herbaceous border. William Robinson, designing for the wild garden and woodland dell, placed plants to recreate the natural settings he had seen. His book *The Wild Garden* was published in 1870. While advocating a mixture of annual flowering plants and permanent perennial shrubs to maintain a balance in the garden, both Jekyll and Robinson saw that the spontaneity of nature could be cultivated into the domestic garden without complete loss of 'naturalness' (Thacker, 1985). Their design philosophies would be echoed in Australia in the 1970s through gardens created by Edna Walling and Ellis Stones.

### 3.1.5 North American gardens

Early gardens on the east coast of North America retained a strongly northern European and British character, reflecting both the cultural background of migrants and familiar climatic conditions. However, as pioneers moved westward into the dry interior, the harsher land and constant struggle for survival left little time for ornamental gardens. Early writers describe the small farm cottages as bare and unadorned. Clifford (1962) adds that the lack of a wealthy gentleman class to set the example of well maintained gardens may well have contributed to the absence of gardens amongst the lower socio-economic groups of settlers.

The hot summers of south-west and southern parts of the United States, and the early Spanish influence, encouraged the development of Mediterranean-style gardens. Their high walled courtyards and patio gardens planted with hardy evergreen perennial shrubs provided contrast and shadow in the absence of colourful annual

flowering plants. Such gardens have developed naturally into extensions of the house, well suited to the modern outdoor lifestyles (Grampp, 1985).

Clifford (1962) suggests that the lack of development of a truly unique North American style is related to an absence of native garden traditions. Australian Aborigines were likewise limited in horticultural experience, their nomadic lifestyle restricting the cultivation of plants to a limited number of food species. Clifford (1962, p.204) suggests that new forms are most swiftly created when exotic influences combine with a native tradition, from their conflict and ultimate fusion arises an authentic hybrid.

Clifford attributes the characteristic open nature of American gardens to early settlers' attempts to protect their homes against Indian attacks. Later, as a strong community sense developed, the need for privacy by enclosure further diminished. A similar style of suburban landscape developed in Adelaide housing estates during the 1960s and 1970s, with front gardens devoid of front fences. In the Mitcham area the North American influence is reflected in the adoption of suburb and street names such as Pasadena, Sun Valley, California, Arizona, Colorado and Hollywood.

By the second half of the 20th century American gardens were designed to be the focal point of family activity with the swimming pool, the barbecue, and room to play. With increased leisure time and greater mobility, recreational activities moved away from the home, leaving garden maintenance a lower social priority (Clifford, 1962).

Much of the modern gardening technology has been developed in the USA. Time saving tools, chemical control of weeds and pests, instant gardens of flowering plants in full bloom, rolls of turf for ready made lawn, and fully automatic home irrigation systems which can also apply fertilisers, have further reduced garden maintenance.

More particularly since the 1950s, Australia has followed North American trends in social and economic patterns. Thus it might have been expected that home and garden styles have similarly shadowed American fashions, with exchange of ideas at professional levels, complemented by media exposure directed towards the ordinary domestic household through glossy home and garden magazines, television and cinema. Gardens suited to the American lifestyle and the climatic conditions of the south western United States offer appropriate styles for modern suburban garden designs in the Australian environment.

### 3.1.6 **Present day links with the past**

Thus certain elements from the past can be identified in modern Adelaide gardens: the 19th century English cottage garden tradition; the 'wild' natural garden of the ancient Greeks; and the Islamic 'Paradise garden' via Hispanic south western USA.

## 3.2 **The Botanic Gardens of Adelaide**

Each Australian colony early established botanical gardens, the Adelaide Botanic Gardens being founded in 1855 under the directorship of G.W. Francis. In the initial

years of the new colony the Botanic Gardens functioned primarily as a distribution point for economic plant material essential for the growing agricultural community. Mainly exotic species, both ornamental and economic, were available for domestic cultivation, but gradually indigenous Australian trees and shrubs were also propagated and released to the public. As well as a source of plants, displays at the Botanic Gardens introduced new ideas in garden fashions which were to be emulated, or modified in various degrees, by the home gardener.

Early Botanic Gardens catalogues suggest some interest in Australian species (13 per cent of species cultivated in 1859), however, as many plants were designated *of garden origin* rather than by country, it is probable that these were propagated from plant material donated to the Botanic Garden from private gardens. In the absence of a comprehensive Herbarium it was difficult to identify accurately plants by country of origin unless the donors had directly imported the original plant or were able to substantiate their source with legally acceptable documentation. Changes in botanical nomenclature over the years also create difficulties in comparison between catalogues of different periods. It is significant, however, that the percentage of Australian plants relative to the total collection, remained fairly constant from the establishment of the garden until the mid 1950s (Laurie Haegi, pers. comm.).

The 1954 catalogue listed only 14 per cent of the Garden species of Australian origin, by 1972 this had increased to 19 per cent and by 1988 to 21 per cent of all species cultivated. Figures for 1859-1954 taken from the Centenary Volume (Botanic Gardens, 1955), were derived from the catalogues for those years,

categorised into Australian and overseas species. These figures exclude cultivars and named varieties developed for the floral trade, and species which do not have country of origin stated.[1]

## 3.3 Modern Australian suburban gardens

From the 20th century lawns had become a standard feature of the Australian suburban front garden, encouraged by the availability of reticulated water supplies, the development of the rubber hose and the invention of the spiral blade lawnmower, patented in England in 1869 by the firm of Fellows and Bate. The model which was awarded a diploma in 1881 at the Melbourne Exhibition remained virtually unaltered until the middle of the 20th century, to be replaced by the power mower, at first electric then later petrol (Boyd, 1987). Further discussion of lawn is found in chapter 6.

Low shrubs and beds of flowering annuals attended the lawn but trees were rarely present. This absence was described by Robin Boyd (1963) as 'arboraphobia' (the fear of trees), a progression of the pioneer cult of clearfelling. In the 1950s, as the suburbs moved into adjacent rural areas only minority groups of tree lovers campaigned for the retention of native trees.

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[1] As the 1988 catalogue lists plant species by accession, which includes both multiple species from one source and single species from multiple sources, these figures can be used only as a guide to approximate proportions of Australian and exotic plants (pers. com. Laurie Haegi, Horticultural Botanist, ABG).

> *Modern Australians have no specially psychopathic fear of the gum or the wattle, but no two trees could have been designed to be less sympathetic to the qualities of tidiness ... The Australian bush was made in one of nature's more relaxed, even casual, moods. Measured against a fresh green European ideal, the Australian bush presents a slovenly scene ... Most eucalypts are undisciplined in the extreme, their branches straggling wildly with disconnected tufts of leaves. It is quite impossible to trim one into the shape of a rooster or a kangaroo. They do not drop their leaves suddenly and predicably, but all through the year in a slummocky way, and are likely at unexpected moments to add to the dry brown mess at their feet a dead branch or length of bark which one of them has discarded, having finished with it. It is all most unpleasant, measured against the European ideal.*
>
> Robin Boyd, *The Australian Ugliness* (pp.93-94)

The introduction of trees, particularly native species, into suburban gardens is very much a feature of the last three decades, 1960-1990. This may indicate growing environmental awareness and perhaps the emergence of an Australian national identity. Fiske et al (1987) also suggest that the gradual infiltration of native plants into Australian gardens reflects positive changes of attitude towards nature and the environment and human relationships with the landscape. Perhaps the introduction of native plants, in association with paving, shade trees and wood chips (weapons of low maintenance gardening) is part of a cultural phenomenon comparable with similar movements in western USA (Rogers, 1980) and the Netherlands (Bos and Mol, 1979).

The absence of front fences in the newer (post 1960s) developments may well have been derived from American influences, although Fiske et al (1987) suggest that this is the reflection of a new openness in Australian society, abolishing the boundaries between individuals. High fences for privacy and security are usually indicative of wealth and as such suggest elitism and exclusivity.

The reduction in area, and in many cases the complete removal, of lawns, accompanied by elimination of annual flower beds in favour of perennial shrubs has theoretical economic advantages (reduced water charges).

### 3.3.1 Adelaide's early colonial gardens

Few truly innovative garden fashions have been initiated since the establishment of the colony of South Australia in 1836. Colonel Light's original plan for the City of Adelaide with its five Squares and the encircling area of informal open space, the Parklands, set a precedent for orderly urban growth. The young colony's relative small population permitted generous allotments for even the working man's modest home, such that today Adelaide must be one of the best endowed cities in the world for open space per head of population.

Attempts to create truly English gardens in Australia have met with little success except in Victoria and Tasmania where the climate is milder and the soils more comparable. In South Australia such gardens are possible only with costly maintenance, the application of soil improvers and heavy summer irrigation. Some fine examples of traditional English gardens can be found near Adelaide in cooler, moister pockets of the Mt Lofty Ranges where the more affluent early settlers established gracious summer residences removed from the searing heat and aridity of the Adelaide Plains.

Adelaide's urban and suburban cottages developed in a similar vein to those in other capital cities at that time, with ornamental front gardens and economic rear gardens

(Crittenden, 1979), although Adelaide's climate probably dictated the use of a greater range of xerophytic plants and excluded many of the more hydrophytic species.

### 3.3.2 1900-1945 gardens in Adelaide

Until the 1940s the suburbs spread slowly but steadily over the Adelaide Plains, remaining close to public transport routes and confined to areas supplied with reticulated water. Land was still sufficiently plentiful for quarter acre housing allotments, with room in the back yard for a chicken run, a rainwater tank, a vegetable patch and several fruit trees. A grassed area below the clothes line doubled as a play area for children and the ubiquitous family pets (Fiske et al 1987).

The economic depression of the 1920s severely limited expenditure on luxuries. Backyards became important and even necessary for the production of food to supplement the family's needs (Seddon, 1991). Vegetable, stone fruit, citrus, almonds and walnuts grew well in Adelaide backyards, as did grapevines. The fruit could be preserved and stored, with jam making, bottling and drying of fruit regularly featuring as seasonal family activities in the summer and autumn months.

In this period front yards, traditionally the flower garden, depended largely on seeds, roots and cuttings gleaned from friends and exchanged with neighbours. Familiar daisies and geraniums, easy to propagate, spread freely through the suburbs. The extravagance of purchased plants rarely exceeded a packet of seeds from the local hardware store. The key function of the front garden was to provide a show of respectability for which neatness and order were the criteria.

During household interviews an elderly resident recalled a door-to-door vendor selling somewhat unusual Australian native shrubs during the 1940s. Attempts to verify this source have been unsuccessful as records of hawkers' licences are not available, the responsibility for issue of such having been transferred from the police to local government.

### 3.3.3 Post World War II gardens - 1945-1970

In the immediate post World War II period the front garden was still mainly a showplace, little used by the family. Trim lawns were groomed with the powered lawnmower as part of the weekend ritual, while the rose garden and annual flower beds were carefully tended to conform with the neighbours, or at least their expectations. A driveway, gravelled or cemented, was by now a standard feature as automobile ownership became more widespread.

The decade following the end of World War II was a precursor to the enormous social and technological changes about to take place throughout the world, including the urban and suburban developments of Australian cities.

The demographic structure of the cities was to assume a radical new form with a population explosion, the post war 'baby boom', consequent on the return of servicemen from the war zones. Additionally, large scale migration from Britain and other European countries swelled the industrial workforce, necessitating rapid expansion of residential construction into the hitherto rural fringes.

During the mid 1950s the new satellite city of Elizabeth was developed north of Adelaide, under the auspices of the South Australia Housing Trust. Innovative designs, based on Britain's New Towns concept, incorporated smaller house allotments while providing generous areas of public open space in neighbourhood units. Australian trees and shrubs were selected for amenity planting for their hardiness, rapid growth, limited maintenance and low water requirements (Galbreath & Pearson, 1982).

While public open space in the newer suburbs was being developed in a more informal style with the use of native trees and shrubs, the older more established councils retained lawns and formal flower beds. Within the study area, Mitcham City Council, the formal approach is still very much part of municipal gardens in the Plains wards although there is much wider acceptance of Australian species as street trees. By contrast, reserves in the Hills sector feature more informal layouts with a predominance of Australian trees and shrubs.

Early 1960s aerial photographs show a general paucity of trees in suburban gardens, compared with more recent photographs where dwelling outlines are largely obscured by numerous large trees. By the end of the decade many front gardens featured an occasional tree planted in the centre of the lawn, an exotic conifer or deciduous species, or a native *Pittosporum undulatum* (Sweet pittosporum), *Eucalyptus ficifolia* (Flowering gum), *E. citriodora* (Lemon-scented gum) or *Callistemon viminalis* (Gawler Hybrid bottlebrush).

### 3.3.4 1970s to the present

There appears to be a growing awareness of the use of trees as an energy efficient means of house temperature control. This feature, amongst others designed for climatic suitability of Adelaide's houses, was investigated by Dr Jill Kerby (1979), and has been promoted through the Energy Centre in Adelaide.

The increase in vegetative cover in the whole metropolitan area over the past 30 years is most noticeable in the southern suburbs of Adelaide, including the study area. Foothills residents have commented on the changed aspect of the Adelaide Plains. As neighbouring gardens have matured, trees have obscured their initial choice of home sites, twenty to thirty years ago.

By the 1970s, 'native' or 'bush' gardens had become fashionable, favoured for their low maintenance. Paved areas replaced the gravel drives and paths, while bark chips eliminated expanses of lawn which needed regular watering, weeding, fertilising and mowing. Carefully selected permanent shrubs and evergreen trees provided colour and shade without the seasonal chores of planting out annual flower beds. Commercial and amateur groups were beginning to supply and promote the use of Australian species for the home gardener.

In his investigation of the functions of the suburban garden in Adelaide, Ian Halkett (1978) indicated a number of changes in the way outside space is used compared with the pre-War period. The backyard has largely ceased to function on a productive space and solely children's play area. The garden is often landscaped to a

higher degree than the front garden, with a barbecue area, patio, pergola, and, if space and finance is available, a pool and/or spa and sauna. Where possible, direct access from the living areas of the house to the outside living space has been incorporated into the design of newer homes, or the remodelling of older dwellings. Outdoor living has evolved as a social institution with the garden becoming a natural extension of the house, the 'Room Outside' (Brookes, 1969, Grampp, 1985).

The essential front garden still demands some input to maintain an appearance of respectability. The effort needed to achieve this depends on whether the householder aspires to the creation of a botanical showpiece, or merely aims to conform amicably with the neighbours' expectation of orderliness.

### 3.4 The cultivation of Australian native plants

While botanists in England and Europe were fascinated with the strange new species dispatched from the Australian colonies only very limited initial attempts were made to cultivate local native plants in Australian domestic gardens.

A thriving trade in Australian seeds and other plant material grew up in England. London nurserymen, Grimwoods of Kensington, and Lee and Kennedy of Hammersmith, had successfully cultivated seeds from the *Endeavour* collection as early as 1789. Lee printed his own instructions for collectors of seeds in the new colonies. He was predominantly interested in trees or shrubs which could be cultivated as attractive herbaceous plants to meet the growing demand by landscape gardeners for useful species (Stevens, 1988). Before 1800 mimosa or

wattle *(Acacia* spp.) was being successfully grown in many of the private hothouses of England, while Kew gardens, one of the early Botanic Gardens in England, housed many unusual Australian plants (Carr & Carr, 1981, Stevens, 1988).

Some early awareness of the decorative potential of Australian flora is evidenced by Andrew Garran's 1880s description of wildflower display at Manly's spring show, a well known annual event.

> *Flowers fill all the bush about Manly in the spring ... The suggestion was to blend these beauties of the bush together. The idea was eagerly taken up, and was by tasteful hands made a reality. The old pavilion in the little park was transformed into a gay, green bower, in which flowers and ferns were artistically interwoven; palms took the place of ordinary pillars; the berries of the bush made harmonies with dark green leaves; fountains lashed and cascades danced over mini falls and grottos, which in the evening were illuminated by a well-directed play of the electric beam.*
>
> (Bligh, 1973, pp.93-94)

However, in spite of this interest in Australian native plants, the early colonial settlers still struggled to acclimatise the familiar English plants in their gardens. Indigenous plants were seen to have little economic value beyond providing a source of timber, fuel, oil *(Eucalyptus),* tannin *(Acacia)* and honey. The Macadamia nut *(Macadamia integrifolia, M. tetraphylla)* remains at present the only Australian food plant to have achieved significant commercial status, largely developed by overseas entrepreneurs in countries such as Hawaii and Kenya. The restaurant trade is, however, beginning to feature other 'wild foods' such as the Quondong *(Santalum acuminatum).* The floricultural potential of Australian wildflowers for both local and export markets has been recognised in recent years. Major

research projects are currently being undertaken by the Waite Institute (University of Adelaide), the Botanic Gardens of Adelaide, at Black Hill, and private growers, aimed at developing the commercial viability of local flora.

Records from the Archives of the Royal Agricultural and Horticultural Society of SA reveal that as early as 1843, regular flower shows were held in Adelaide, which included exhibits of native flowers. (The *South Australian,* 17th March 1843). A stipulation of exhibits was that they must be garden plants and not gathered from the wild which indicates that at least some early colonists had made efforts to cultivate the indigenous flora. What is not generally realised by home gardeners is that many of the ferns shade house and indoor plants long cultivated in Australia are species indigenous to Australia e.g. King fern *(Todea barbara),* Tree fern *(Dicksonia antarctica)* and Maiden Hair fern *(Adiantium aethiopicum).*

### 3.5 The rise and demise of the *'all-native'* garden

As many indigenous South Australian plant species, other than *Eucalyptus* spp., have proved relatively difficult to propagate commercially, even at the present time, some of the most popular native plants found in Adelaide gardens are exotic to the region, indigenous to Western Australia and the eastern states.

Much disillusionment about growing native plants stems from the widely held misconception that any plant native to Australia should survive just because it is Australian. Failure of the plants to survive has led to the belief that many Australian plants are difficult to cultivate, rather than accepting that the initial

choice of species may have been inappropriate for the site. Early disasters with unsuitable species have led to attempts to educate the public in careful selection, site preparation and methods of cultivation of Australian plant species. A plethora of literature, books and magazines, as well as newspapers, and staff at plant sales outlets, encourage buyers to select plants suited to the particular site, local soil, drainage, climate requirements.

Additionally, many native plants are highly susceptible to the pathogen *Phytophthora cinnamomii* which causes rapid deterioration and eventual death of plants. The sudden and inexplicable death of native plants in domestic gardens has frequently been cited as the reason why people have given up trying to cultivate them. It may well be that failure to nurture such plants successfully has been due not to poor garden management practices but to the fact that the plants were already infected with the fungus prior to leaving the nursery.

## 3.6 Conclusions and hypotheses 1 and 2

Current gardening trends suggest that a successful marriage of Australian native plants and exotic species is becoming the norm with native species more widely accepted for their intrinsic qualities rather than their indigenous origin. A wider choice of species and smaller shrubs, through hybridisation and selective propagation of cultivars, is today making Australian plants more attractive and of suitable compact size to fit comfortably into the average suburban home garden. When carefully selected to suit the environment, after the initial planting period, reduced water requirements make many native plants potentially more economic for Adelaide.

Identification of a characteristic Australian garden style has proved a complex exercise, as have attempts to trace the rudimentary influences on modern design principles. Notwithstanding these problems, however, it is accepted that suburban gardens are a most visible component of our cities, contributions of past traditions which have left their mark on the ordinary landscape.

Adelaide's suburban front gardens have evolved to display a collage of elements, eclectic in design yet unique in their own special styles, nurtured under the particular blend of natural environment and cultural heritage the city has to offer.

People and time are needed to make gardens, the results reflecting the taste and creativity of their owners and the fashions of the era. Gardenscapes are created, they mature and change, decay and regenerate in response to decisions of the makers, and have done so throughout time.

From the previous discussion of more general garden literature and history have emerged two hypotheses which provided the basis for further investigation in the following sections.

HYPOTHESIS 1

> Over time domestic garden styles are modified to reflect changing social and economic conditions.

HYPOTHESIS 2

> The use of native plant material has been a significant factor in the evolution of an informal Australian garden style since the 1960s.

# CHAPTER FOUR

## RECENT INFLUENCES ON GARDEN DESIGNS

In his discussion of vernacular landscapes Lewis (1979) observed a significant lack of academic theory in the study of this field. He emphasised therefore the need to assess the essential role of the media in influencing popular cultures. Certainly much of the literature pertaining to garden design in Australia has come from the popular media, newspapers, garden magazines, radio and, more recently, publications based on television programmes.

In addition to the media, other factors likely to influence domestic gardens fashions and the use of Australian native plants include various models, government policies and the availability of plant material. There has been increased public exposure to use of new materials both in home construction and garden plants since the 1950s, from which time confidence has grown in the acceptance of Australian native flora. In a discussion of attitudes to landscape and structures, Yencken and Gunn (1976:322) suggest that the strongest emotional reaction to innovation is to materials, rather than layout and design. The length of exposure to a new material conditions the public to accept it from the designer.

Economic constraints, the time available for leisure activities, external regulations, and practical limitations such as the size of garden and site factors are considered through the household survey, Chapter 8.

This chapter attempts to identify those influences which have contributed to change and innovation in Adelaide's suburban garden design over the past three decades.

## 4.1 The Media

Jon Lamb, regular garden journalist for *The Advertiser* since the 1950s, host to the ABC's radio garden talkback programme and former producer of the ABC television gardening programme in the 1960-1970s, reviewed changes he had noted in Adelaide gardens over past decades, presenting his view of the relative role of the media in influencing domestic gardeners. (Interview, December 1992).

Lamb dates the early 1980s as an end of the 'natives only' era, associating this with the rediscovery of the inner suburban villas and bungalows. Many of these older homes were, by this time, suffering from twenty years' growth of trees such as the Lemon-scented gum *(Eucalyptus citriodora)* and the Silky oak *(Grevillea robusta),* often planted too close to houses causing damage to the foundations and threatening roofs with falling limbs. Additionally he noted a resurgence of enthusiasm for cottage gardens in the mid 1980s, nostalgia for the colonial past revived with South Australia's Sesquicentary celebrations in 1986 and, in 1988 the Bicentennial anniversary of the arrival of the First Fleet in New South Wales. There has since been renewed interest in native plants, but not a return to the 'wild garden' of the 1970s.

In 1983, in conjunction with *The Advertiser* Newspapers Limited and based on *The Advertiser Weekend* section, Lamb published *The Weekend Gardener,* a small book, which sold 10,000 copies, dealing specifically with gardening advice appropriate to Adelaide's soil and climate, and invited the gardener to try growing natives.

Later, in 1991, Lamb addressed the problem of increased water costs[1] recommending the removal of lawns in favour of native trees and shrubs, well composted and mulched, to reduce water bills yet retain low maintenance, attractive gardens. For those who wished to retain their lawns he suggested newer grass species which are heat, drought and salt tolerant. His advice against fully automatic watering systems, as being water extravagant, was upheld in the householder survey.

Lamb also questioned the lack of garden education in schools, where programmes are designed to prepare students for life requirements, ignoring the one activity which will be common to most young adults, the home owners and domestic gardeners of tomorrow.

All major long running Australian garden mgazines have been published in Melbourne or Sydney, promoting garden designs and plant species disseminating information from these centres which are not necessarily appropriate for Adelaide gardens.

*Australian Home Beautiful* appears to have influenced home gardeners from the 1930s through to the present time, not only through the magazine itself but also

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[1] Giving Lawns the Chop *The Advertiser* Friday August 30th 1991, p.39.

with books compiled from journal articles.

Ten years ago *Your Garden* was the only widespread national garden magazine and, as one of Australia's longest continuing garden magazine publications, was cited most frequently by householders during the survey. First published in 1947, the editorial staff has estimated its current sales at approximately one million copies nationally per year. By the late 1950s *Your Garden* was regularly featuring articles on cultivation of Australian native plants by A.J. Swaby (founder of the SGAP), A.E. Brooks and Alec Blombery, while book reviews were beginning to include Australian authors and publications. The September 1970 issue featured 'The Shrub of the Year - *Callistemon viminalis* (Captain Cook Bottle Brush), a species which was to become synonymous with Adelaide's new suburban developments, widely used as a garden feature and street plant.

Another long running garden magazine *Australian Garden Lover* (first published as *Garden Lover* in 1925) ceased publication in 1980 but reflected changing modes of Australian garden design over an extended period.

A random survey of garden magazines and other occasional publications in 1992, identified over twenty different publications (See Appendix G). All magazines sampled had at least one article relating to the cultivation of Australian native plant species, with a market emphasis on environmental awareness in general gardening practices. Recently a new quarterly magazine *The South Australian Gardener*, has been produced locally, providing information designed specifically to suit Adelaide's climatic and soil conditions.

Lamb concluded that magazines offered 'potted advice' as stimuli for gardeners but did not constitute an important source of information. (Jon Lamb, pers. comm.).

## 4.2 Journals

Of a more limited circulation are specialised journals which would be known to the popular garden journalists, radio and television programmers, and through them translated into the vernacular media.

*Landscape Australia,* the journal of the Australian Institute of Landscape Architects (AILA), was first published in 1978, in Melbourne. The new field of landscape architecture, which linked the built and natural landscapes, emerged at a time of growing environmental consciousness. The journal which began as a members' newsletter, developed into a commercial publication with a much wider circulation than AILA members, and has now become a forum for modern academic and philosophical discussion of the Australian garden design ethos.

*Australian Plants,* journal of the Australian Society for Growing Australian Plants (ASGAP), first published in 1959, has continued to provide advice on propagation and cultivation of Australian plants species to the present day. The Society early established seed banks in the different States to supply seeds for members and provides lists of nurseries supplying Australian plant material.

The South Australian *SGAP Journal,* (also first published in 1959, the inaugural

year of the SA branch) has continued to offer information specifically of a local nature, particularly promoting the propagation and cultivation of species indigenous to SA, including rare endemic species. Its editorials reflect changing public attitudes to the environment both in this State and elsewhere in Australia.

### 4.3 Garden guides

Although most current gardening manuals have been produced in the post 1950's period two earlier publication are mentioned here, as both guides are currently still in print and continue to be standard household garden guides.

*YATES' Gardening Guide for Australia and New Zealand* (1895), was produced by Arthur Yates and Co., Seed Merchants and Growers, Sydney, primarily to promote Yates seeds but providing general gardening advice on layout and design. Later editions included designs recommending a mixture of Australian and exotic shrub and tree species with the revised 1979 Guide, edited by Malcolm O'Reilly including a chapter on trees, shrubs and native plants.

The first edition of Leslie Brunning's *Australia Home Gardener* in the 1940s incorporated ethics of gardening, flower, fruit and vegetable cultivation, with notes of design and layout, and offered information on Australian plants viz. *Acacia* spp and *Eucalyptus* spp. His sections on soil management, watering and mulching were specifically adapted to the Australian environment.

## 4.4 Field guides

Field guides were not so much designed for cultivation of native species in domestic gardens but as simple field identification aids for bushwalkers and botanists, both amateur and professional. A love of the bush was often cited as the primary reason why householders had begun cultivating native plants in their home gardens, and these guides became their basis for plant selection. Selected field guides to native plants are a standard item in the library of every serious cultivator of Australian flora.

Thistle Harris' *Wildflowers of Australia*, (1973) first published in 1938 met a popular demand for a simple botanical key, based on Ferdinand von Mueller's *Systematic Census of Australia Plants* (1889). Revised and reprinted regularly, Harris' text became the standard library and classroom reference book for Nature Study in primary schools in South Australia in the 1960s.

In response to growing interest in native vegetation C.D. Boomsma published *Native Trees of South Australia* (1972). The first of its kind since E. Brown, Conservator of Forests, published *Forest Flora of South Australia* 1883-1890, Boomsma's book provides illustrated descriptions to aid identification, and includes a locality map for the area where each species is indigenous.

The first significant field guide specifically designed to meet the needs of the Adelaide local area was *Wildflowers of the Mount Lofty Ranges* by Leona Woolcock (1985), followed by a small volume *Wildflowers of the Adelaide Hills* by Ralph

Buckley (1988), and Ann Prescott's major work *It's Blue with Five Petals - Wildflowers of the Adelaide Region* (1988). In 1990 the Botanic Gardens of Adelaide published *Plants of the Adelaide Hills and Plains* (Dashorst and Jessop), an identification guide to plants of these areas. Many of the National Parks and Conservation Parks are now producing local handbooks and field guides of indigenous species as part of their ongoing public education programme.

## 4.5 Cultivation guides for native plants

An early book by Nerine Chisholm (1949) *Australian Gardens: their planning and making,* was the forerunner of a whole new series of publications encouraging informality in the domestic garden through naturalistic designs featuring Australian native plants.

Ernest Lord first published *Trees and Shrubs for Australian Gardens* in 1948 and became editor of *Brunnings Australian Gardener* in 1958. His descriptive lists of species suitable for cultivation which included large numbers of Australia species of trees, shrubs, ground covers and creepers, became a milestone in the development of Australian garden design. Advice was provided on species' suitability for different states, sites, soils and climates, as well as notes on successful propagation and cultivation of native plants.

In 1955 Alec Blombery produced *A Guide to Native Australian Plants. Their Propagation and Cultivation* revised as *A Guide to Australian Native Plants* (1967). This comprehensive book examined the botanical characteristics of common

genera and species, outlining various methods of propagation and providing detailed advice on cultivation. The advent of cheap, high quality colour printing made Blombery's *What Wildflower is that?* (1972), fully illustrated with coloured plates, a valuable and relatively inexpensive handbook for native plant lovers in their selection of plants. His later books included *Gardening with Wildflowers* (1975) and *Growing Australian Natives in Pots* (1988).

By the late 1950s, as demand was growing for advice and information on the successful management of native plant material in domestic gardens. Brooks, a member of the newly formed SGAP, published *Australian Native Plants for Home Gardeners* in 1959, with the foreword written by Swaby, founder of SGAP:

> ... *Hundreds of species* (of native plants) *are finding their way into our gardens. Many more would do so but for the lack of reliable information. They have been the victims of thoughtless misrepresentation by theorists who have failed to realise the very wide range of climatic conditions in our continent and the wealth of beauty and interest in each. Those who were prepared to persevere with them have been hampered by lack of contact with others. More recently, however, steps were taken* (viz. the formation of SGAP) *to bring these interested people, all over Australia, together for experiment and pooling of results* ... (Brooks) *provides a foundation upon which he and those associated with him may build a more extensive structure.*

In the introduction to his book Brooks states that it is written not only for the enthusiast who wishes to grow large numbers of Australian plants, but also for the average gardeners who prefer to grow native plants among others, or to limit themselves to a native section. Brooks discusses sufficient species, with almost all of them available from plant nurseries, to provide ample choice for the home gardener.

Dick Chadwick's (1985) *Australian Native gardening - Made easy* offers a comprehensive guide on planning gardens, including attributes of over four hundred native species, their floristic characteristics, attractiveness to birds, site specificity, growth habit and mature structure (height).

Over the past thirty years SGAP has produced a series of handbooks to encour/age the domestic cultivation of Australian flora. In South Australia several books have been designed specifically to meet the needs of Adelaide gardeners where the soils and climate are much different from those of the eastern states. The latest revised edition *Australian Plants for Adelaide Gardens* (Ivan Holliday (ed), 1990) includes a soils map of the Adelaide region and advice on selection of suitable plants for each soil type, subdividing the Adelaide region into coastal, plains and hills districts, with specific guidelines for successful native gardening in each district.

## 4.6 Models

The initial presentation of a product, in any field of marketing, is essential for the successful public acceptance of that product. Important as published materials are as a source of ideas, these may lead to disappointment when a reputedly attractive shrub or tree is selected from a photograph and planted in the garden but fails to perform as anticipated. The successful cultivation of plant species growing *in situ* provides the best model from which potential customers can make selections for their gardens.

In the post World War II period the general public has been increasingly exposed

to Australian flora through a number of models which, individually and collectively, may have impinged upon the general consciousness. People had to first recognise native flora, then develop sufficient familiarity to comfortably introduce them into their own gardens.

Whether the prospective gardener views a display specimen of the cut flower, the total plant in a nursery container, the mature plant growing *in situ* naturally or in a garden, each acts as a model to promote the cultivation of that plant.

### 4.6.1 The Botanic Gardens

During the 1960s an Australian Mallee section (dwarf *Eucalypt* spp and associated understorey shrubs) was established in the Adelaide Botanic Gardens featuring native plants in a bush landscape. It is difficult to gauge how far the display of a wider range of Australian species at the Botanic Gardens has actually influenced the public awareness of native flora, or stimulated the consequent interest in cultivation of such species in suburban home gardens, but as a model it merits recognition.

Wittunga[2] developed as an annexe of the Botanic Gardens and opened to the public in 1975, was a garden displaying predominantly Australian and South African (Gondwanaland) flora. The number of species present today has expanded considerably to include a high proportion of Australian plants.[3]

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2 'Wittunga' at Blackwood, a garden containing a magnificent collection of Australian and South African flora formerly owned and developed by the late Edwin Ashby, was given to the State in October 1965.

3 In 1988, of the 3237 accessions, 1781 species were native to Australia, comprising 55 per cent of the total.

Popular as a picnic area all year round, Wittunga's informal landscaping presents a major springtime attraction for Australian native plant lovers, both local residents and visitors to the area.

### 4.6.2 The Royal Show

The handwritten Show Book of 1867[4] listed four classes for indigenous Australian cut flowers. As the rules of the Society require that specimens be grown by the exhibitor, this precludes gathering flowers from the wild and indicates that species of Australian flora were being cultivated in Adelaide gardens at least from the 1860s.

In 1956 a section was offered for school children for a collection of wild or cultivated native flowers with native orchids specifically excluded, being protected by then by legislation. In 1963 SGAP donated the first trophy for cultivated Australian flora, both as individual cut flowers and in arrangements, recognising the potential commercial use of Australian flora. SGAP annually provides a non-competitive display of flowering native plants at the Royal Show. Growing interest in the cultivation of native orchids led to the inclusion of an exhibit class for these in 1969. Floor displays of growing flowering Australian plants were added as a competitive class in 1975.

The Royal Show attracts many thousands of people annually, the popular flower

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4 In the records of the Royal Agricultural and Horticultural Society, kept in the Archives of the Society at Wayville Showgrounds.

section offering an opportunity for ardent gardeners to exhibit home grown specimens, while commercial and special interest groups can promote new and interesting plants to a wide audience.

### 4.6.3. **Flower Shows**

#### 4.6.3.1 Field Naturalists Society

South Australia's first Wild Flower Show was held in the Banqueting Hall of the Adelaide Town Hall on October 25th 1888, under the auspices of the Field Naturalists Section of the Royal Society of South Australia. The Field Naturalists continued to hold flower shows for many years (Elise Wollaston, pers. comm.).

In 1941 at the request of H.M. Hale, Director of the SA Museum, Field Naturalist Edwin Ashby provided flowers for a display in the entrance to the Museum. These flowers, mainly collected from his own and other private gardens, became a weekly feature. After her father's death, Alison Ashby assumed the responsibility of continuing the displays (Enid Robertson, pers. comm.). Long term Adelaide residents and native plant enthusiasts recalled these Museum displays as their earliest exposure to Australian flora, beyond those growing wild in the bush, and motivated their desire to cultivate indigenous species in their home gardens.

#### 4.6.3.2. Society for the Growing of Australian Plants (SGAP)

When SGAP was founded in Melbourne in 1957 many SA Field Naturalists became

foundation members of the Victorian branch, then in the following year when the SA branch was formed, 43 of these became inaugural members of the SA branch.

In October 1958, the year of its inception, SGAP (SA) held a native flower show at Belair in the Adelaide Hills, with local exhibits and displays sent from both country and interstate enthusiasts. Both wildflowers and cultivated specimens were displayed. The following year a small selection of plants and seeds were offered for sale. The Flower Show has become a regular annual event attracting thousands of members of the public. Visitors are able to view displays of labelled flowering specimens before selecting young plants for purchase.[5]

Jon Lamb rates the work of SGAP as perhaps the single most influential body in both increasing public awareness of the possibilities that native plant material offers for cultivation in the South Australian home garden, and making more readily available species which could not be purchased from commercial outlets (Jon Lamb, pers. comm.).

4.6.3.3 Athelstone Wildflower Garden

F.C. Payne purchased land at Athelstone in the late 1940s and spent fifteen years developing a garden of Australian plants collected from all over Australia. During the 1950s the garden, which became known as 'The Sanctuary', was a popular springtime family venue, and the children of the 1950s were to become the home gardeners of the 1970s, willing to experiment with plant species unfamiliar to the

5 Records from early SGAP journals.

parents. The garden offered an opportunity to see plants growing away from their natural habitat, such as Kangaroo paw *(Anigosanthos* spp) and *Boronia megastigma* from Western Australia, and *Thryptomene saxicola* from Victoria.

In September 1963 when Payne planned to sell his land for subdivision, the Campbelltown Council purchased the property with a view to supplying native plants to the local community, and to preserve the garden. The garden and nursery were later purchased from the Campbelltown Council in 1974 by the State Government. The garden was incorporated into the Black Hill Conservation Park but the nursery was closed two years later when the presence of *Phytophthora cinnamomii*, a serious fungal root disease, was discovered (Owen Wills, 1981, pp.16-19). It is likely that, prior to its detection, the disease *P. cinnamomii* was inadvertently transmitted widely to suburban gardens through plant sales from this nursery, at that time one of the few outlets in Adelaide for indigenous species. The spread of *P. cinnamomii* from the point of sale may have contributed to the rapid demise of plants and actually acted as a negative factor in promoting the cultivation of native species.

## 4.7 Nursery Displays

The increasing sale of plants, in flower, from nurseries and garden suppliers indicates that home gardeners are attracted to plants they had not intended to buy. This 'spontaneous' plant selection accounts for a high percentage of total purchases, and reflects modern marketing techniques which use models to promote products.

The Woods and Forests Nursery at Belair has created an excellent display garden adjacent to the sales area in order to give customers a better impression of the mature habits of various species. Carefully prepared information displayed with individual species advises customers of the plant's suitability for different areas, a positive attempt to encourage successful management of Australian natives in Adelaide's suburban gardens. This outlet attracts customers from throughout metropolitan Adelaide and in particular the newer residential suburbs to the south, including parts of the study area.

Unfortunately the best time to transplant many native species is not always at the time of flowering but nurseries find it more profitable to promote sales when the plant is in bloom. Unless care is taken the chance of successful home cultivation of some native species is limited, with the less persistent gardener becoming disheartened, biased against a species particularly, and native plants generally.

## 4.8 Plant suppliers

### 4.8.1. Private nurseries

Catalogues from early South Australian plant nurseries indicate that most of the Australian species sold were confined to trees and large hardy shrubs, however from the 1930s a growing interest in the cultivation of native plants in home gardens became apparent. Catalogues from Wollaston's Ray Nursery (Raywood) included a good selection of native shrubs. Ashby's Wittunga nursery specialised in Australian native species. (Swinbourne, 1982). Ashby did much to encourage

the cultivation of native species which he believed could be grown on the Adelaide Plains with less cost of time and labour than exotic plants. His catalogues included advice on the care of native plants, particularly with reference to planting and watering. Appendix H includes a list of plant nurseries propagating native plants in SA from 1858-1920.

During two World Wars and the Great Depression, until the mid 1950s the role of the nurseryman/plantsman was dictated by public austerity As few households could afford expensive trees and shrubs, trade was limited to supplying vegetable seeds and later seedlings, fruit trees and a small range of easy to propagate (therefore inexpensive) exotic ornamentals. Price and availability determined the fashions of the day and it is doubtful whether any but the most discerning gardener differentiated between plants on grounds of their native origin.

It was not until the 1960s that smaller perennial ornamental and native shrubs were more readily available in Adelaide through major commercial outlets. Prior to the late 1950s Australian native plant enthusiasts depended upon mail order supplies of plant propagation materials, seeds and small plants, from small specialist nurseries in Victoria, New South Wales and Western Australia. These enthusiasts formed the original nucleus of groups such as SGAP which are currently involved with the cultivation of Australian plants in private gardens in Adelaide.

Olive Mellor wrote that:

> *... in our own natural flora, we have a wonderful field to draw from, limited at present far more than it should be; for businessmen cannot afford to produce goods that are not saleable, and though nurserymen are gradually educating the public by introducing a few more of our own trees and shrubs each year, we are still only beginning to appreciate the value of our native plants.*
>
> (in Shum (1939) p.37)

Apart from Payne (see section 4.6.3.3.) the only significant nurseryman to stock Australian native plants before the 1960s was Carl Engel of Kilkenny, an inaugural member of SGAP. During the 1960s and 170s numerous small private (often backyard) nurseries were established to meet the growing demand for native plants for domestic gardens but relatively few have remained economically viable. Allender, Gould, Gray and Lawry's nurseries now propagate predominantly as wholesale suppliers. When larger scale municipal areas, public parks and roadside plantings began to incorporate indigenous Australian plants into their landscape design several major private nurseries commenced bulk propagation of native trees and shrub species. Appendix I provides a list of plant nurseries established from 1960 to 1981 which specialised in propagation of Australian native species.

### 4.8.2. Non-commerical plant propagators

Members of SGAP annually grow thousands of plants, including many rare and endangered species which are difficult to propagate making them financially unattractive to commercial nurseries. Two plant sales, held in Spring and

Autumn by the Society, are a major source of Australian native plants. Recently efforts have been made to increase production of species indigenous to the Adelaide region.

## 4.9 Government departments

Over the past decades various government authorities have directly and indirectly attempted to influence public attitudes towards the Australian environment, through legislative controls and educative programmes. The degree of compliance with these guidelines may be measured in how far domestic garden designs have changed to reflect the adoption of such policies.

### 4.9.1. Woods and Forests Department (now State Flora)

The function of the Forest Board, established in South Australia in 1875 under the Forest Trees Act 1873, was to experiment with native and exotic tree species suitable for commercial timber production. Between 1875 and 1976 fourteen plant nurseries were established by the government.

Roy Gray, who had established the Flinders Nursery at Port Augusta in 1953 specialising in the propagation of native species, was appointed as manager of the Woods and Forests Nursery at Belair in 1957. An inaugural member SGAP (SA), Gray was largely instrumental in increasing the range of species and variety of plant types propagated by the government nursery from that time.

During the 1960s the Woods and Forests Department commenced sales to the general public at Belair Park nursery and, supplemented later by another outlet at Cavan in northern suburbs, serviced customers from all parts of the metropolitan area. An informal survey of customers at the Belair nursery display area[6] indicated they had come from suburbs widely dispersed throughout the Adelaide metropolitan area, commenting that this was the best source for Australian plants at very competitive prices.

The present Woods and Forests nursery was transferred from Belair to Murray Bridge in 1976, primarily established there to supply trees and shrubs for the new 'greenfields' development at Monarto. When that project was abandoned in the mid-1980s, the nursery became the Department's major plant propagation site. Sales figures for 1990 indicated that the nursery was supplying, by value, approximately one third of the plant sales in South Australia (John Scarvellis, pers. comm.).

### 4.9.2. Engineering and Water Supply (E & WS) Department

Until the 1950s state water catchments were planted out with fast growing *Pinus radiata* to reduce erosion and sedimentation, however by the 1960s, with the construction of the South Para Reservoir to the north of Adelaide, the environs incorporated Australian tree and shrub species. These large areas of native flora, in recreating habitats for indigenous fauna and avifauna, constitute a visual

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6 The Interview schedule is included in Appendix J. The Belair Nursery is within the Belair National Park. Receipts issued for Park entry fees can be credited at the nursery if plants are purchased. This has probably attracted many additional customers, contributing to increased sales of native plants.

manifestation of the changing environmental philosophies behind current public policies.

To some degree the E & W S Department has also negatively influenced the choice of plants in suburban household gardens by listing species, mainly native, which should not be planted within specified distances of water and sewerage pipes. Ironically, however, with each household water supply account promotional brochures are circulated encouraging people to grow native plants to conserve water. Recently a watering guide has been included positively favouring native species over exotic species which need more frequent irrigation.

The deliberate choice of native plants for landscaping around water storage tanks through the metropolitan area has further acted as a model for local residents. (See Plate 4.1)

An additional contribution to the popularisation of Australian native plants came through the E & W S Department's River Torrens Flood Mitigation Scheme in the 1980s, the recontouring and partial realignment of the River Torrens from Athelstone to the coast. A joint E & W S and State Transport Authority (STA) project along the River Torrens was affiliated with construction of the North East Busway (Obahn) Project, which commenced in 1981 with the planting of thousands of native trees and shrubs adjacent to the track.

Plate 4.1 E & WS revegetation programme, Blackwood tanks, 1990.


EWS
DEPARTMENT
BLACKWOOD TANKS
This site is programmed for revegetation-
the removal of lawn and the planting of
native shrubs, trees, and groundcovers.
This work is being undertaken to :
*** improve the visual impact of the site
*** enhance the environment
*** reduce the ongoing maintenance
*** reduce water useage
*** ***
TO PROTECT THE PLANTINGS ENTRY
IS RESTRICTED TO AUTHORISED
PERSONNEL ONLY.

Plate 4.1

### 4.9.3. The Highways Department

From the mid 1950s, with the development of the new town of Elizabeth to north of the City, areas adjacent to the new highways linking the satellite town with Adelaide were planted out with native species (predominantly hardy *Eucalyptus, Callistemon* and *Melaleuca* spp) a new concept in the amenity landscaping of the post World War II period (Galbreath & Pearson, 1982).

When the South Eastern Freeway was opened through the Adelaide Hills in the early 1960s, the engineering project was designed to blend sympathetically with the gentle topography but the initial scarring of the landscape attracted considerable environmental concern. With the support of *The Advertiser*, members of the newly formed SGAP undertook extensive roadside planting of native species along the freeway, then voluntarily provided initial maintenance until the plants were established (Ivan Holliday, pers comm).

From the 1970s, with growing public concern for the loss of native vegetation, the retention of remnant areas of roadside vegetation has been targeted and protected with declaration of roadside flora reserves. Again members of SGAP have worked in conjunction with the Highways Department to revegetate extended areas of rural roadsides. The Highways Department has developed regular roadside rest stop areas within these reserves, providing benches, tables and rubbish containers.

This positive move to incorporate native flora into the broad scale public landscape has provided an appropriate model for effective utilisation of local plant material.

### 4.9.4. Education Department

During the 1950s primary schools had areas set aside for students to cultivate small garden plots as an extension of Nature Study, Friday afternoon being the usual time for gardening lessons. Little instruction was given, most of the activity being based on planting seeds according to advice on the packet, and attending to those flowers and vegetables which managed to germinate and survive. Hand watering was a lunchtime occupation. With the rapid increase in school populations in the 1960s however, land was in too much demand for classroom construction and gardening passed out of the school curriculum.

Nature Study lessons on the other hand were an integral part of primary schools. Crosbie Morrison, a well-known naturalist, introduced primary school children to the flora and fauna of Australia through the ABC Schools Radio programmes, well ahead of the environmental movement.

Arbour Day was celebrated by tree planting in school grounds and local reserves, by the 1950 focussing on indigenous species.

During the 1970s the former Arbor Day was re-named Conservation Day and lessons assumed a broader conservation ethic, in keeping with the new environmental component of school syllabuses. By the 1980s many primary schools had set aside a plant propagation shed where students, under the guidance of key Environmental teachers, could be taught the rudiments of native plant propagation. Currently most schools feature a high proportion of native plants in the landscaping of their grounds.

### 4.9.5. National Parks and Wildlife Service (NPWS)

Operating as a section of the Department of Environment and Planning the NPWS[7] has played an important role in expansion of public environmental awareness. Through the 1970s and 1980s large areas of South Australia were set aside as national parks and conservation parks, in response to both the increased demand for outdoor recreational areas, and public concern for the diminishing areas of natural vegetation with associated loss of habitat for native fauna. In addition to management of conservation areas, the NPWS has assumed an important educative role with parks becoming important teacher resources for environmentally orientated school subjects.

### 4.9.6. The South Australian Housing Trust (SAHT)

The satellite city of Elizabeth was estblished by the SA Housing Trust in the 1950s. A remarkable feature at that time was the extensive use of Australian native trees and shrubs for amenity planting, in lateral and median plantations along highways, and as potential shade trees in the new public parks and reserves. Tenants and home owners were offered free native plants to encourage the development of attractive home gardens in harmony with the new, more natural landscape concept (Dwight, 1955, Galbreath & Pearson, 1982).

Acceptance of Adelaide's limited water resources and semi-arid climate made native flora appropriate landscape material in the face of a rapidly expanding

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[7] Now Resources, Conservation and Management, under the direction of the Department of Environment and Land Planning.

metropolitan population, and the large scale of postwar development projects (Gavin Walker, pers. comm.). The use of Australian trees and shrubs at Elizabeth, radically innovative at the time, is now commonplace. Mature stands along the highways today form an urban forest, aesthetically attractive while providing visual screening from the road for adjacent residential areas.

In new SAHT redevelopment areas such as Marion and Tonsley Park, where old 1950s family dwellings have been replaced with modern medium density housing, gardens have been re-designed to reduce maintenance and water requirements, landscaped prior to occupancy with predominantly native plants and permanent irrigation systems.

### 4.9.7 **Local government**

It was anticipated that some degree of conformity might be apparent between the local streetscape and adjacent gardens. From the 1960s use of Australian species as street trees has become widely accepted in many Adelaide suburbs. The 'Greening of Adelaide' policy has been promoted with tree giveaway schemes encouraging residents to cultivate indigenous species.

The Mitcham Council staff maintain street trees and the numerous reserves scattered throughout the Council area. Selection of species is partially in response to requests from residents, with a marked disparity between the Hills and Plains sectors (David Deare, Mitcham CC, pers. comm.). A higher proportion of exotic street tree species are found on the Plains, whereas native species

predominate in the Hills complementing remnant vegetation.

The Mitcham Open Space Action Committee, a voluntary Council sub-committee with a strong interest in the rehabilitation of native vegetation throughout the area, has directed particular concern towards roadside vegetation, including nature strips and pockets of land with floral significance which are facing development. Weed control of invasive exotic species and revegetation with indigenous species are current agenda items, the public being encouraged to participate in these programmes through the local community newspaper produced by the Council.

## 4.10 Conclusions

It is difficult to assess how far any of the above models has individually influenced the evolution of Australian domestic garden fashions and practices, but their cumulative effect within the broad environmental spectrum may have projected ideas and acted as stimuli for change.

The important role of newspapers in providing really useful garden advice has been disputed by Lamb, observing that the limited space devoted to garden information in current newspapers suggests more revenue is derived from other sections. Gardening is given a low priority by editorial staff, despite the fact that probably more people are involved with weekend gardening than any other single activity and, as such, support a wide range of income-generating retail services.

Talkback radio garden programmes however, now achieve the highest programme ratings in all states, suggesting that this format is probably a more influential force on domestic gardeners in dissemination of new ideas.

From the 1960s onwards the publication of a plethora of magazines, reference books and garden guides on growing Australian native plants has accompanied widespread interest in the cultivation and propagation of indigenous species. Such trends in suburban domestic gardens and public open space reflect increased environmental awareness.

The over-riding influence on precisely what people plant in their gardens is ultimately reduced to the promotion and availability of plant material from readily accessible suppliers. Models may provide the ideas but the economics of large scale commercial nursery production will limit the choice of plants to those which can be easily (hence viably) propagated. The traditional native plants suppliers will respond to market forces however cost factors are increasing concerns for even the amateur growers. Phytotechnology (tissue culture) has overcome some of the problems with species which are difficult to propagate and offers exciting potential developments for the future.

The following section includes a detailed discussion of the study area, as background for the field work undertaken. Two surveys were aimed at identifying spatial patterns in suburban garden designs, with an attempt to link features from the past with modern practices. Householder interviews were designed to establish factors influencing individual decision making in domestic garden fashion.

# PART TWO

## THE DETAILED CASE STUDY -

## GARDENS OF THE MITCHAM LGA

# CHAPTER FIVE

## THE STUDY AREA - MITCHAM CITY COUNCIL

This chapter provides background for the study area, including the physical characteristics and historical development of European settlement. Map 5.1 indicates the location of the study area relative to the City of Adelaide and Map 5.2 represents the postcode areas as derived from the 1986 Census. References will be made to specific suburbs in discussion of the householder survey in Chapter 6.[1].

### 5.1 Physical characteristics of the study area

An association exists between natural vegetation and other influencing components of the physical environment, namely soils and climate. Accordingly it is expected that these influences will affect the cultivation of plants in domestic gardens, particularly with respect to soils and climate. Soil modification (anthroposols) and introduction of irrigation to supplement natural rainfall have, with certain limitations, expanded the range of plants able to be cultivated.

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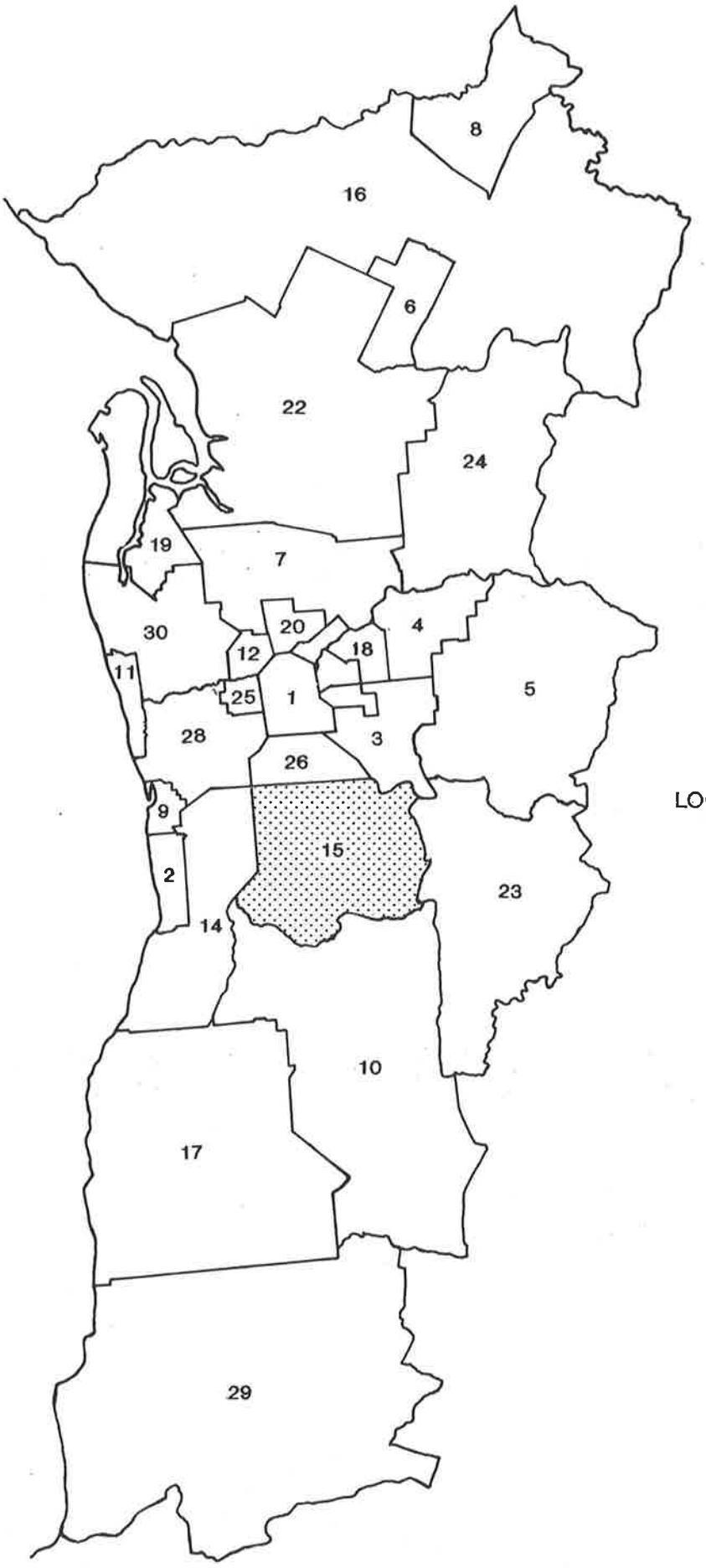
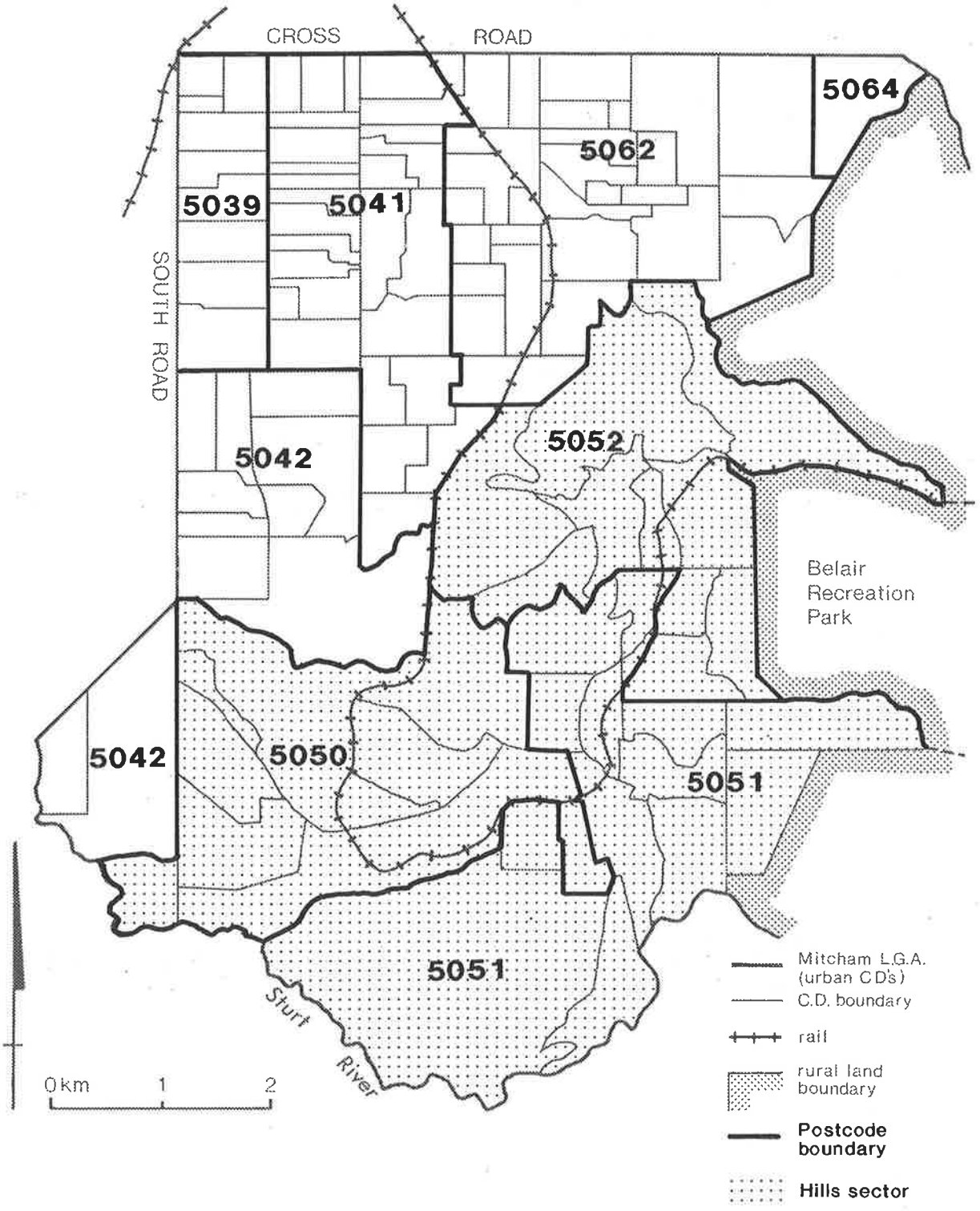
1 A map which shows suburb boundaries within the study area is included as Appendix A.




LOCAL GOVERNMENT AREAS

1. ADELAIDE
2. BRIGHTON
3. BURNSIDE
4. CAMPELLTOWN
5. EAST TORRENS
6. ELIZABETH
7. ENFIELD
8. GAWLER
9. GLENELG
10. HAPPY VALLEY
11. HENLEY & GRANGE
12. HINDMARSH
13. KENSINGTON & NORWOOD
14. MARION
15. MITCHAM
16. MUNNO PARA
17. NOARLUNGA
18. PAYNEHAM
19. PORT ADELAIDE
20. PROSPECT
21. ST. PETERS
22. SALISBURY
23. STIRLING
24. TEA TREE GULLY
25. THEBARTON
26. UNLEY
27. WALKERVILLE
28. WEST TORRENS
29. WILLUNGA
30. WOODVILLE

MAP 5.1: Location of study area (Mitcham LGA)




MAP 5.2: Postcodes within the Mitcham LGA (derived from ABS 1986 Census)

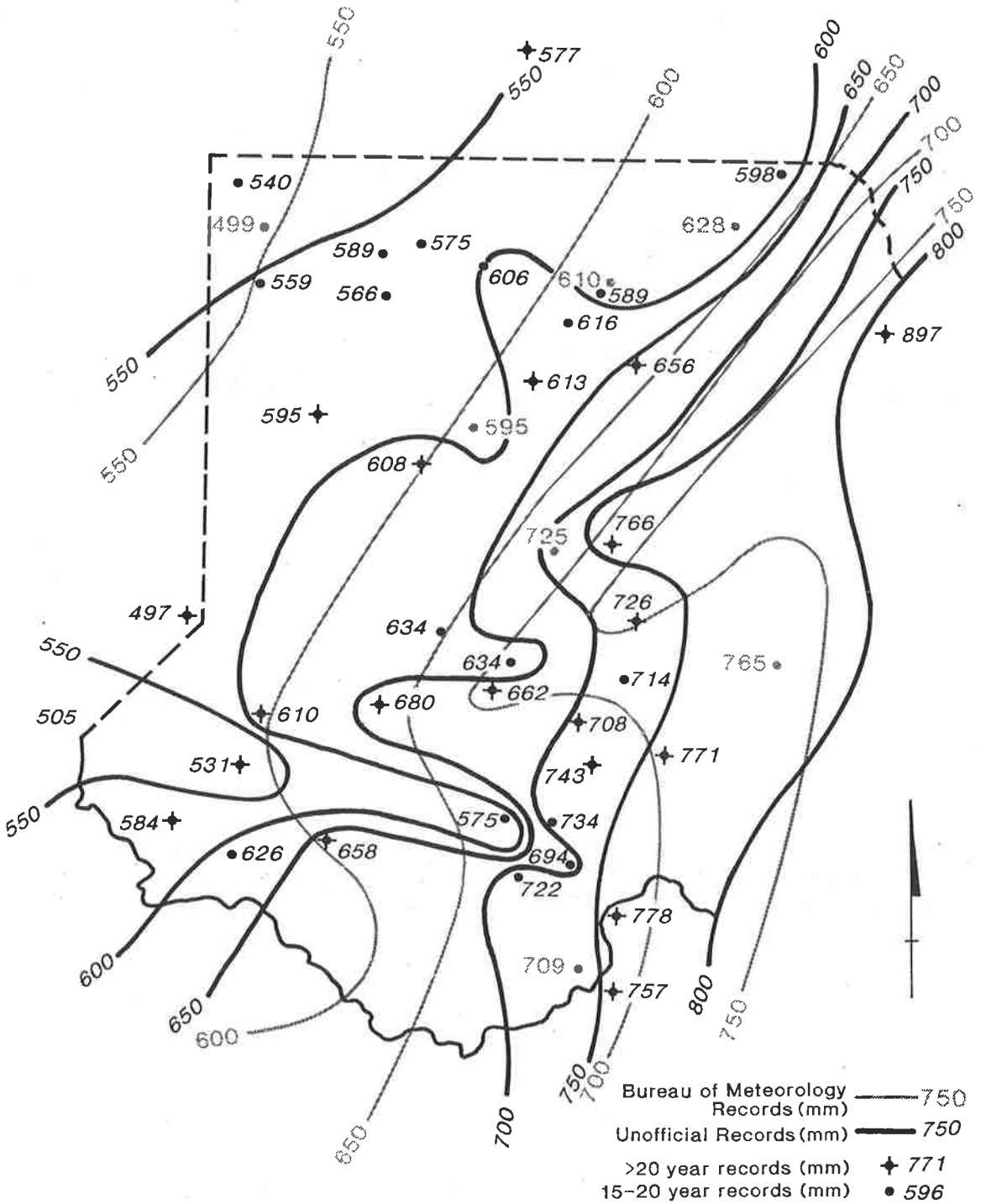
### 5.1.1 Rainfall distribution

It was expected that local variations in precipitation might exert influence on the plant genera and species being successfully cultivated in different localities within the study area.

An initial approach was made to the Australian Bureau of Meteorology (ABM) for records, but it was found that minimal data are available at the local level, the only current official recording stations operating in the study area are the Waite Institute (Glen Osmond), Clapham, Kalyra (Belair) and the Woods and Forests Nursery (Belair National Park). Microfiche records produced by the ABM (1989) were used to locate further stations. Where records had been kept from 1901-1950 data were then used to prepare Map 5.3, showing rainfall for the local area, based on an enlargement of the map published in *The Report on Metropolitan Adelaide* (1962 p.21). Official rainfall data were supplemented by unofficial rainfall records to interpolate data for as many stations as possible within the Mitcham Council area. Isohyets from non-official data sources were then superimposed on to the base map.

### 5.1.2 Non Official rainfall records

Various institutions likely to have maintained precipitation records were approached, namely Flinders University, Wittunga Botanic Gardens, the Department of Agriculture, the Country Fire Service, post offices and local schools. Then long term local residents were contacted, particularly those whose families had




MAP 5.3: Rainfall of the study area - official and unofficial data

past or current agricultural and horticultural associations with the district and were likely to have kept private records. Finally, the local newspaper (Messenger Press) was approached to print a request for help and notices were placed in central places such as local post offices, Council chambers and Libraries. As a result of this search a further 102 sets of privately recorded rainfall data were located.

Sufficient sets of data (40) had been maintained for over fifteen years to enable some correlation with official records. Twenty of these sets of records had been maintained continuously for 20 or more years. A further eighteen stations had records for 10-14 years. Although statistical tests have not been applied to locate variability or errors, the general pattern of isohyets produced from these private records approximates the official map.

The situations of backyard rain gauges, plotted on Map 5.3, are dispersed randomly over the entire area, with the only discontinuity apparent in Edwardstown, a suburb which contains predominantly industrial establishments and low cost rental residential accommodation. Most gauges were carefully sited to avoid undue influence of trees and buildings, or had been relocated as trees and shrubs had grown.

Problems identified which would have required consideration in testing for reliability and variability include:

(a) length of recording period

(b) establishment of a common period of 10 years or more

(c) use of different types of recording apparatus

(d) reliability of individual recorders

(e) time of day when recordings were read

(f) location of gauges to avoid 'rain shadow' effect of trees, buildings, fences etc

(g) missing data during householder absences

(h) changes of measurement from Imperial to Metric (generally the standard conversion used was a simplified formula of 1 point = 25mm, rather than 1 point = 25.4mm)

Average annual rainfall figures have been calculated and plotted on Map 5.3 for stations with:

(a) 20 years or more of continuous recording

(b) 15-19 years of continuous recording

For those stations where records have been kept for a shorter period (less than ten years) but overlap in time with the longer records there appears some positive association with official records. The period 1980-1989 included one of the wettest years (1986) and one of the driest years (1982) on record for Adelaide and the average for this period generally closely correlates with long term averages.[2] Records suggest that in the past decade rainfall has been above average in the hills area and below average along the foothills, while records kept

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2 Mitcham PO recorded rainfall for the period 1884-1969 with a mean annual rainfall of 610mm, while a local resident in nearby East Parade, Mitcham recorded rainfall for only the period 1981-1989 and averaged 614mm).

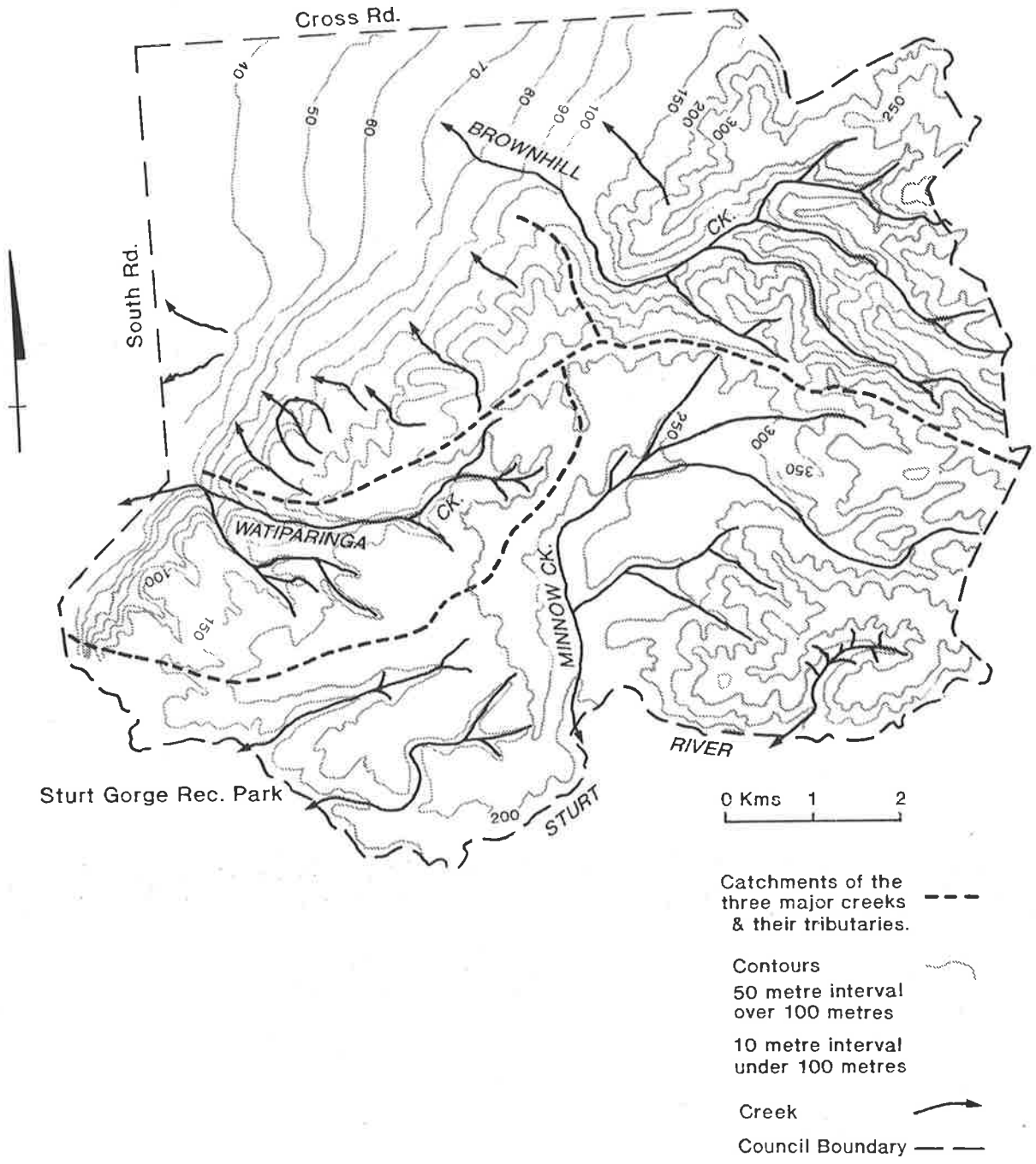
on the plains indicates little variation from the long term mean.

The presence of many rain gauges in the study area, if representative of the rest of the Metropolitan area, may suggest that gardeners are coming to accept the limitations and variability of Adelaide's climate, particularly with respect to rainfall. Several householders indicated that they used their records as a guide to irrigation requirements for their gardens, particularly for the lawns.

### 5.1.3 The influence of topography on rainfall

The isohyets generally follow the contour lines, shown on Map 5.4, indicating an association between topography and precipitation. Definite rainfall gradients are apparent from west to east, and north to south, as the topography rises from the relatively flat plains, up the steep escarpment to the first line of ridges, a marked increased in mean rainfall occurring along the escarpment. The lowest recording occurs in the north west corner (Clarence Gardens Bowling Club) 439mm, and the highest in the south east corner (Cherry Gardens PO) 933mm.

Isohyets drawn from the unofficial local records more closely follow topographic features associated with the drainage basins of the major creeks marked on Map 5.4. Deep erosional gullies account for the variation in rainfall recorded over a relatively small distance which is not recognised on the larger scale of the official source map. Inconsistencies in the distribution of rainfall recorded in the hills area occur where the topography varies considerably in altitude, aspect and degree of slope. These local anomalies were supported by observations of




MAP 5.4: Topography and drainage of the study area

(Mitcham Open Space Survey 1982)

residents who had noted marked differences in the occurrence of rainfall within even a street or two, when compared with recordings of nearby friends.

Although the Mount Lofty Ranges are low in elevation by world standards (highest point, Mt Lofty is 720mm), there is sufficient altitude to produce an observable orographic effect. Schwerdtfeger (1976, p.76) explains that orographic uplift results in the formation of an amplified wave in the passing airstream, possibly twice the height of the physical obstacle, producing rain to benefit the Adelaide Plains and the Ranges for about eight months of the year. This causes Adelaide to experience a climate which is anomalous when compared with other parts of the State at the same latitude and location, such as Yorke Peninsula.

Coote and Cornish (1958, p.5) believe that Adelaide receives negligible amounts of purely orographic rain, but concede that topography intensifies the precipitation derived from frontal uplift which occurs predominantly during the winter months. Their series of twelve maps shows the geographical distribution of monthly isohyets for the Adelaide Plains and Southern Mount Lofty Ranges. Sea level isohyets are superimposed to illustrate the influence of altitude against the normal decrease in rainfall as distance from the coast increases, their evidence reaffirming that isohyets closely follow the contours.

Stenhouse and Cornish (1958) describe Adelaide's climate as one marked by strong incidence of winter rainfall associated with cold fronts, oriented NW-SE, their activity being intensified by a similar alignment of the ranges. Summer surface heating of the plains and the 'heat island' effect of the urban area may

further contribute to convectional uplift.

There is also some evidence from records to suggest that the plains and foothills frequently record higher falls of rain in the summer months than occur further into the hills, probably due to thunderstorm activity and associated convectional uplift. However, once the more regular winter rainfall regime becomes established the pattern reverses, with the higher altitude stations consistently recording greater amounts of rainfall from June to September than the lower areas. This observation is supported by Schwerdtfeger (1976).

Incidence of rainfall is much more uniform in the winter months throughout the region, while conversely summer rainfall is much more variable within even a limited area. The distinct rainshadow effect on the hibernal lee of the Ranges is, to some extent, observable in local rainfall recordings, particularly in Belair, Glenalta and Coromandel Valley where a marked decrease has been noted north east of the ridges, i.e. properties which have a north-eastern aspect.

Absence of cloud cover in summer and high daytime temperatures have contributed to Adelaide having an approximate evaporation rate of 200mm in January, producing an extreme soil moisture deficiency for the summer period and into the autumn (ABM).[3] It can be assumed that the evaporation levels for the study area would not vary greatly from this amount.

The rainfall distribution pattern, its reliability and deficiencies constitutes one of

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[3] Bureau of Meteorology 1967, *Average evaporation maps for each month, Australia*, 3rd edition, Melbourne.

the most important natural influences on plant selection and garden practices in any given area.

### 5.1.4 The effect of vegetation on rainfall

Schwerdtfeger (1976, p.78) mentions a little known precipitation mechanism which involves the capture of cloud droplets by tall trees on occasions when normal thermodynamic processes are inadequate to cause precipitation. Short term augmentation of effective rainfall may give considerable benefit to vegetation, both indigenous and exotic, in the higher parts of the Ranges in summer. This would certainly contribute to the successful cultivation of exotic cool temperature plants such as *Azalea, Camellia* and *Hydrangea,* and deciduous trees in the Mount Lofty Ranges, while artificial environments are needed for such species to survive in the warmer, drier Plains suburbs. Adelaide's climate, although generally comparable with non-alpine central Europe, experiences a higher summer evaporation rate and strong seasonal polarisation of rainfall which makes it impossible to grow shallow rooted plants on the Plains without irrigation for at least four months of the year (Schwerdtfeger, 1976 p.78).

### 5.1.5 Hydrology

#### 5.1.5.1 Natural drainage

Map 5.4 shows that the natural drainage of the Mitcham LGA consists of three distinct but relatively small catchment basins, the Sturt River, Brownhill and

Watiparinga Creek. Sturt River has two main tributaries, Minnow Creek and Chambers Creek. There are, in addition, numerous small erosional gullies dissecting the western escarpment of the Mount Lofty Ranges and debouching along the piedmont. The gullies are generally steep-sided with rocky beds, although limited pockets of alluvium are found in the lower tracts of Brownhill Creek and in Hawthorndene and Coromandel Valley along Minnow and Chambers Creeks.

All streams of the area are intermittent, flowing during the winter season only, or briefly following occasional torrential summer thunderstorms. The catchment for these streams lies in the higher rainfall areas of the Mount Lofty Ranges to the east and south east of the study area. Having crossed the escarpment the streams then flow in a westerly to north westerly direction across the Adelaide Plains, today largely within the confines of underground stormwater drains or open cement-lined channels. The Sturt River eventually flows into the sea at Glenelg through the Patawolonga.

No consistent stream flow data are available for these creeks although figures were kept for several years in the mid 1960s at a gauging station on the Sturt River, in response to regular localised winter flooding of the south western suburbs. A flood control dam has since been constructed on the Sturt River several kilometres upstream from South Road as part of the South Western Suburbs Drainage Scheme (Hammerton, 1986).

The nature of the stream flow within the study area has probably had little impact on availability of water to home gardeners, but the associated alluvial

deposits have significantly contributed to the only identifiable occurrences of soils of above average fertility.

5.1.5.2 The impact of urban development on local hydrology

In an assessment of the historical hydrology of the Cowandilla Plains (Adelaide) before 1836, Holmes and Iversen (1976, p.92) comment that the hydrology of the plains has undergone a profound change, never likely to be returned to its natural state, due to drainage, reclamation and stream diversion.

They further suggest that modern urban hydrology, which has largely eliminated surface inundation and directed surface discharge by concrete drains directly to the sea, has significantly reduced the leaching effects of the natural water input. With the extension of residential development, particularly to the south of the study area from the 1960s onward (see chapter 5.3.3), small creeks and much of the low lying land were infilled, with former natural surface runoff being diverted through drains into St Vincent Gulf at various points along the coast. Sealing of the ground surface with cement and bitumen paving adjacent to areas of residential, industrial and commercial construction, has effectively removed major points of infiltration, reducing ground water recharge while accelerating surface runoff and causing localised flooding problems.

Consideration must also be given to the effects of changing land use on the hydrology of the area. Since the 1960s residential development has extended south of Daws Road on land which previously supported agricultural activities,

predominantly cereal production and stock grazing. Initially, as shown in 1948 aerial photographs, the urban growth was accompanied by a reduction of trees in the area, however current photographs reveal a proliferation of shrubs and trees both in residential gardens and as street trees. Section 5.1.8 includes a discussion of Greenness ratings for suburbs within the study area. It is difficult to assess how far the uptake of water by mature shrubs and deep rooted trees has compensated for the reduced leaching effect of lost infiltrating surface water, specifically in maintaining or altering groundwater salinity levels.

Garden watering has probably had relatively little influence on shallow groundwater salinity levels when compared with leaching from rainfall. However, the high salt content of much of Adelaide's reticulated water, supplemented from the River Murray, poses a potentially serious threat of increased soil salinity in the future, compounded by high evaporation during Adelaide's summer. During the householder survey gardeners commented on a saline crust which develops on the soil surface after extensive watering in summer, attributing loss of plants to increasing levels of salt in both the soil and water.

The process of salinisation may well have considerable influence on choice of plants and consequent garden style in future decades. Already evident is a move towards more salt tolerant species, particularly favouring certain Australian native plants and other exotic plants indigenous to arid and semi-arid environments. Alternative watering systems aimed at reduced application indicate some concern for soil salt accumulation. Local soil moisture budgets may be modestly affected by increased 'recycling' of moisture transpired from irrigated gardens in the drier months.

### 5.1.6 Soils

Modern soil science in Australia developed from work done by J.A. Prescott in the Adelaide area between 1926-27. Prescott's first soil map of Adelaide (1931), showed the region to be dominated by one soil group, red-brown earths, however his second map (1944) identified two distinct soil zones with podzolic soils dominating the hills and red-brown earths the plains.

Northcote's *Atlas of Australian Soils* (1960) showed the Adelaide Region to have 22 compound soil landscapes composed of more than 20 principal profile forms (PPF), or major soil groups. Some of these PPFs recurred in comparable landscape situations.[4] In 1960, concurrent with the publication of the *Atlas of Australian Soils* Northcote produced *A Factual Key for the Recognition of Australian Soils,* revised in 1979 to include over 500 principal profile forms.

Current soil landscape studies by David Maschmedt (1993) suggests a much greater diversity of soil type within the Adelaide region.

#### 5.1.6.1 Calcic and non-calcic soils

Academic debate accepts a clear relationship between soil type and rainfall but has failed to reach a consensus as to the specific limits which determine precise soil type demarcation. Ward (1966) considers that the division between calcareous and non-calcareous soils is determined by the 685mm isohyet, but

[4] See Appendix C for Soil Landscapes of the Adelaide Regions according to Northcote's Key.

Wright (1973) suggests that higher precipitation, in excess of 1000mm, may cause sufficient leaching to produce acidic soils. According to Taylor, Thompson and Shepherd (1974), acid podzolic soils developed on all kinds of parent material apart from calcareous rocks, tied approximately to the 675mm isohyet.

Within the study area the 675mm isohyet corresponds closely with the escarpment which creates the distinct boundary between the Hills and Plain sections of the Mitcham LGA. This escarpment marks the transition between the alkaline (calcic) soils of the Plains and the acidic (non-calcic) soils of the Hills, however Maschmedt (1993) has indicated that non-acidic soils occur well beyond the escarpment, further into the ranges than previously suggested.[5]

5.1.6.2 Classification of soils

The progression from a simple two dimensional profile descriptive classification came in the 1970s when Fitzpatrick (1971) defined a pedo-unit as a three dimensional soil unit, acknowledging the significant processes of soil development, transformations and translocations. The United States Department of Agriculture (USDA) adopted a soil entity type, the pedon, usually described in terms of the soil profile.

The USDA made a major breakthrough in soil classification in 1975 with the publication of the final draft of the *US Soil Taxonomy.* Keys to *Soil Taxonomy* are upgraded and published each two years, most recently in 1992. The *US Soil*

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5 See Maschmedt's soil acidity map, Appendix B.

*Taxonomy* is becoming more international in outlook and usage and may become the *de facto* international soil classification system. Its rigor and application to soils worldwide encouraged its spread, particularly through international aid programmes (Richard Merry pers. comm.).

5.1.6.3 A classification system for Australian soils

As numerous global soil types are absent from the USDA taxonomy any attempt to directly correlate systems has created major logistical problems on the international level. Consequently a number of countries, including Australia, have begun establishing yet further classification systems, based on the American theoretical model but modified to encompass local anomalies precluded from the USDA taxonomy. The new Australian taxonomic classification, introduced in 1988 and now in its third approximation, has been produced by the CSIRO in an unpublished Handbook format *A Classification System for Australian Soils* (Isbell, 1993).[6]

Soil mapping, using GIS, is being currently undertaken by the National Soil Conservation programme for agricultural areas. In South Australia David Maschmedt, Department of Primary Industry, has recently (1993) produced an unpublished set of maps with legend, *Soil Landscapes of the Mount Lofty Ranges,* which identifies each soil landscape according to broad geological or substrate groupings, defined associations of soils or geographic features, and use of a landscape descriptor for up to nine topographic situations. At this stage over twenty distinct soil landscapes have been identified within the Mount Lofty

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[6] See Appendix D. for Approximations of the different soil classification systems for the Mitcham LGA.

Ranges section of the Mitcham LGA.[7]

Because of the lack of practical application, little attention has been directed towards research and classification of urban soils except for studies of the deep cracking clays north of Adelaide where the nature of the soil has caused major problems in damage to the foundations of buildings (Adrian Beech, Richard Merry, CSIRO Div. Soils, pers. comm.).

5.1.6.4 Soils of the study area

The soil map of the Mitcham LGA (Map 5.5) has been adapted for this study from Taylor (1989).[8] The common usage names from the Great Soil Groups have been retained, although it is accepted that within the field of soil science these terms have largely been rejected in favour of the new taxonomic classification. Limited new information is available specifically for the Mitcham LGA, due to the complexity of soils over a relatively small area, and the lack of agricultural application of such information to a largely urban area.

During the Pleistocene and Tertiary periods the Adelaide region experienced tectonic activity resulting in uplift of the block faulted Mount Lofty Ranges. Gradual weathering of exposed land surfaces, and locally variable parent rock, has contributed to the formation of a wide range of soils. The elevated ranges have been heavily weathered to expose fresh basement rocks, while redeposition of

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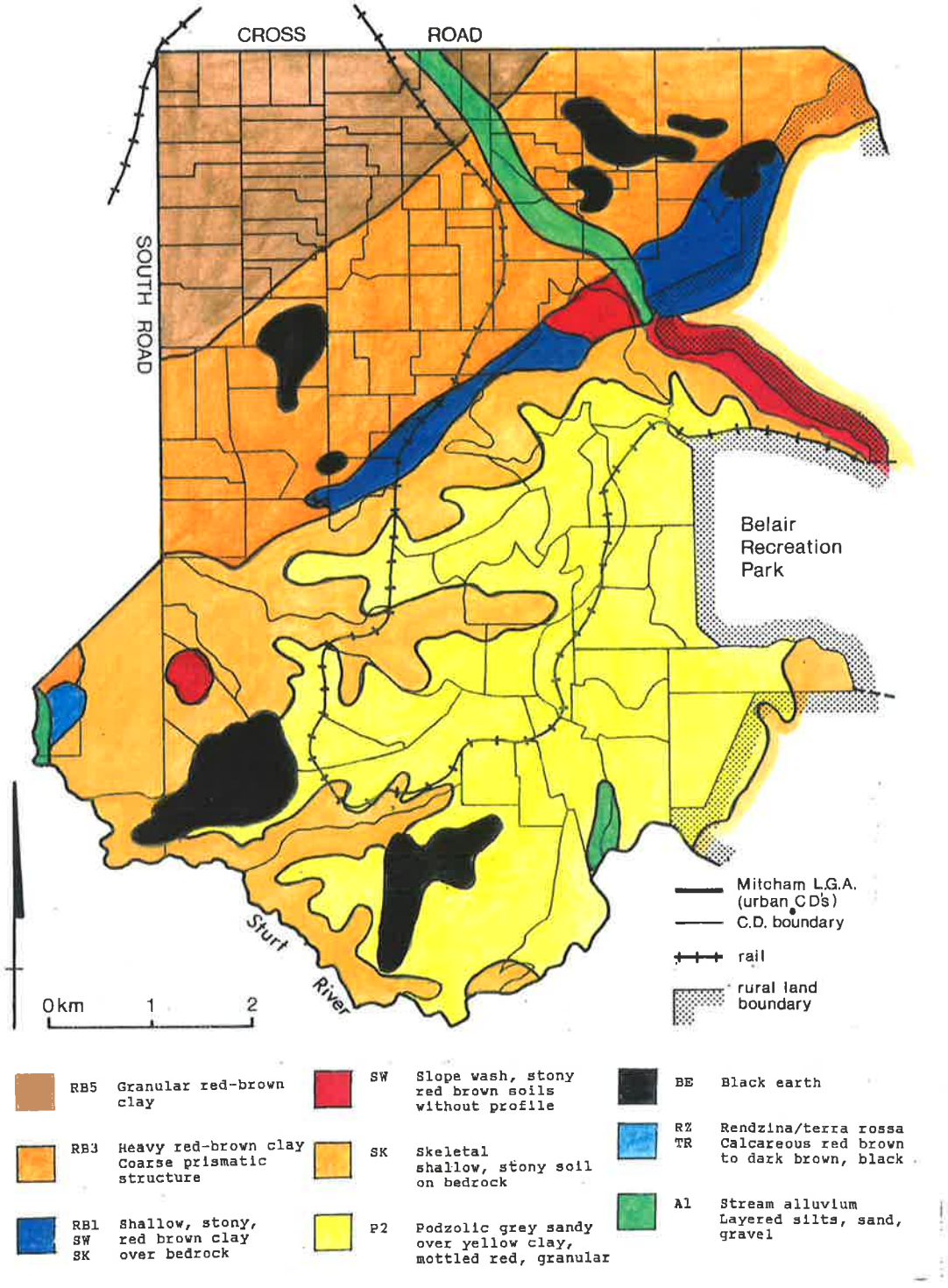
7 Maschmedt's soil landscapes map for Mitcham, and descriptors are included as Appendix E.

8 *Soil Association Map of the Adelaide Region*, second edition.




**MAP 5.5: Soils of the study area** (from Taylor 1989)

eroded material has occurred in the lower lying areas, accumulating as coarser sediments in the piedmont fans and finer alluvium on the gently sloping outwash plains. Mitcham LGA, the case study area, provides an excellent cross-section of the geology and soil formations of the Adelaide region.

Adelaide soils are predominantly *duplex,* i.e. the profile has a marked change in texture between the A and B horizons. The A horizons may vary from sand, through sandy loam to loam, over a B horizon of clay. The red-brown earths of the plains and the podzolics (grey-brown and yellow) of the hills fall within this morphological group.

Red-brown earths form a relatively uniform sequence overlying the Tertiary limestone of the Adelaide Basin to produce the clay soils of the gently sloping Adelaide Plains. They grade from heavy red brown clays with coarse prismatic structure along the lower foothills and upper plains, to granular red brown clays in the north west part of the study area. Many of these soils, naturally alkaline in the subsoil, are now acidified in the top 10-20 cms due to extended periods of cultivation practices and application of soil additives. Field trials at Waite Institute in 1992 showed good responses to the application of lime. The extended period of suburban settlement has contributed to significant changes in surface soil characteristics. (Merry, pers. comm.). Agriculturally red-brown earths have usually been considered good soils, prized for cereal growing in the early days. Similarly the foothills soils were valued for vegetable growing, horticulture, vines and almonds, especially the black earths and wiesenbodens. The red-brown earths, particularly those on transported materials, were recognised as being prone to zinc deficiency (Piper, 1938).

The Hills area supports naturally poor and acidic podsolic soils, grey sand over yellow clay with red mottles which have developed on fine grained felspar-rich slates and gneisses, or coarser grained quartz-rich sandstones and quartzites. With limited organic material, these soils often assume a water repellent characteristic, slow to absorb water in summer and producing a hard layer difficult to cultivate. In winter they are poorly drained, easily waterlogged, compounding the difficult conditions for plant, and hence supporting only hardy species with considerable tolerance for extremities of available soil moisture.

Limited examples of uniform soils occur scattered through the study area. Lateritic podzolic soils occur in isolated localities, exposed in railway and road cuttings along the ridge crests of the Ranges, between Belair and Eden Hills. Where the Tertiary limestone has been deeply weathered, a residual lateritic capping remains with outcrops of limestone and associated shallow calcareous soils. Pockets of black earths ('Bay of Biscay', vertisols or deep cracking clay soils) are relicts of former poorly drained swampy land. Lithosols, coarse skeletal soils, have developed on the steeper slopes and ridges, and minor occurrences of rendzina/terra rossa soils are found near Flinders University. Narrow beds of stream alluvium, consisting of layered silts, sands and gravels, have developed along the main streams. The escarpment and piedmont consist of a mixture of red-brown clays over bedrock, shallow stony slope wash and skeletal soils without significant profile development.

While soil development is influenced by local factors such as climate and biological activity, the basis of soil formation depends primarily on the mineralogical content of

the basement or parent matrials, together with superimposed geological and geomorphic events. The heavily fractured and deformed nature of the parent rocks, with varying levels of erosion and deposition, have resulted in a wide local variation in soil depth, texture, pH and fertility developing on surfaces of different aspect and angle of slope. Factors such as the type and amount of natural vegetation, both present and pre-existent, the land use prior to urban development (i.e. dairying, horticulture), and period of residential occupation, have all contributed to the existence of a highly complex pattern of specific *in situ* soil variants within the local area, which are not identified on generalised soil maps of the area.

Inclusion of this extended discussion on the soils of the study area was made on the basis that the soil substrate is a major factor in determining the nature of gardens developed in any given area. Soil characteristics influence the amount of time and expenditure assigned to garden management, in addition to the appropriate choice of plant materials. While it is possible to modify to some extent the top soil to accommodate different types of plants, there are finite limitations imposed by the nature of the subsoil, the parent material, the topography and the climate.

Further discussion of soils with specific reference to survey respondents is included in chapter 8.

### 5.1.7 **Natural vegetation**

#### 5.1.7.1 Land systems

From Specht's study (1972) it has been assumed that two major land systems and associated vegetation formations existed at the time of colonisation within the

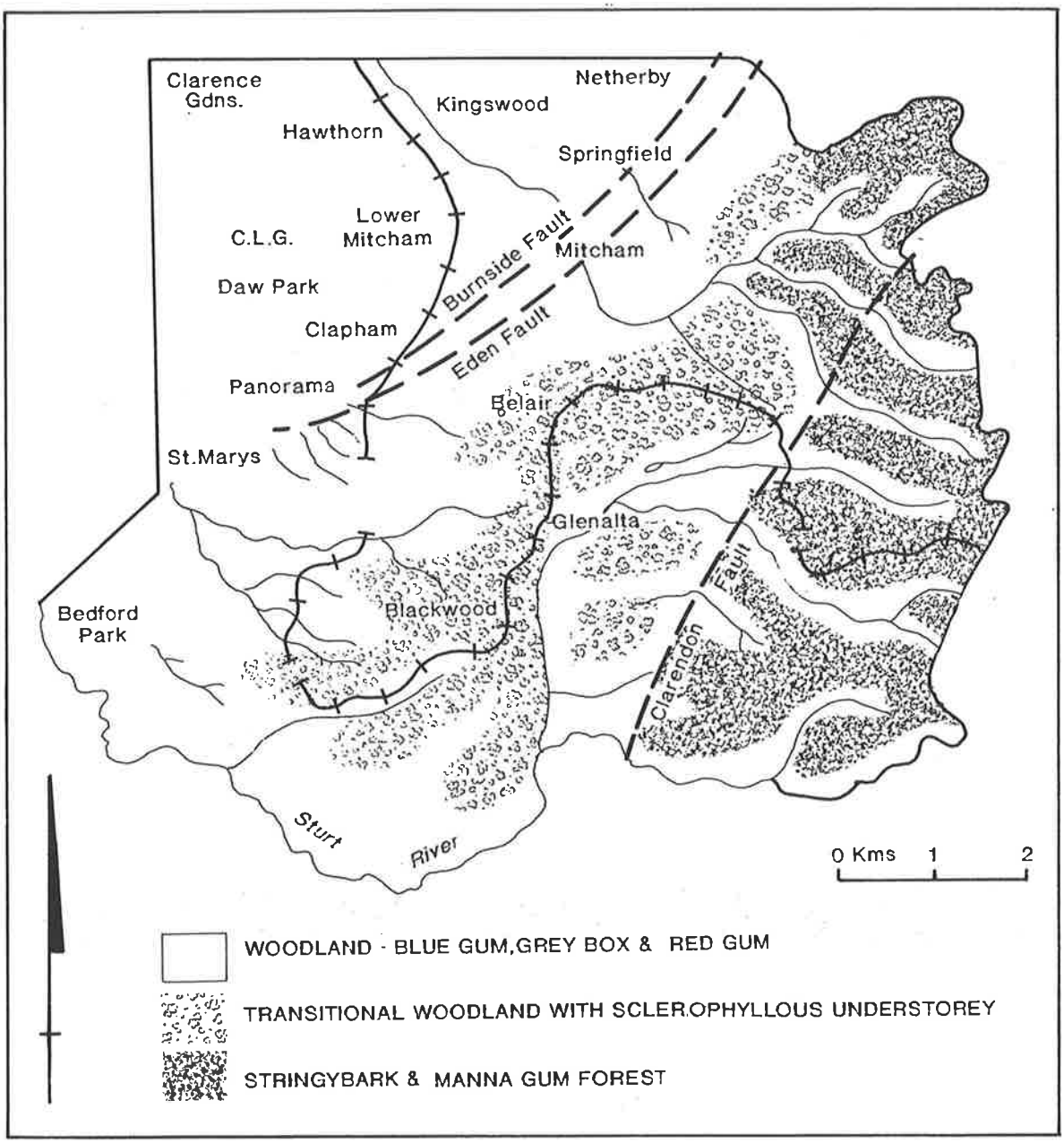
study areas: the Sclerophyll and the Savannah systems, as shown in Map 5.6.

The Hills districts of the study area still retain significant examples of the natural vegetation, although degraded to varying extents. The higher rainfall and low nutrient soils of the Ranges still support remnant open forest and woodland formations, dominated by various species of Eucalypt with low shrubby understoreys.

Gradually the Sclerophyll systems merge into the drier Savannah systems with slightly higher soil fertility. The Savannah systems are naturally dominated by tussock grasses with an occasional tree species. Evidence that this land system would have extended over most of the Adelaide Plains prior to settlement is provided from observation made by Morphett in 1837, Gouger in 1838 and Light in 1839 (in Lange, 1976).

Along the Hills Face the thin soils and harsh exposure of the western aspect probably supported low woodland formation e.g. *Casuarina stricta* association with understorey shrubs such as *Olearia ramulosa* (Specht, 1972, p.135).

Today, apart from a few small reserves, the Plains area is virtually devoid of its original flora. Early agriculturalists cleared any species not suitable for stock fodder, and any desirable species were heavily grazed or replaced by improved pasture species. Private domestic gardens consisted almost entirely of exotic species. Even early attempts at native gardens were largely dependent on availability of species not indigenous to the local area. Many exotic species, easily transported by wind and birds, have successfully acclimatised along roadsides and cuttings, posing an ongoing




SOURCE: Mitcham Open Space Survey 1982 (p.16)

MAP 5.6: Original vegetation of the Mitcham LGA from Specht

threat to any remnants of the original flora.

A later period of development in the Hills area and the more rugged topography contributed to a better survival level there of native flora. By the time major subdivisions were undertaken a much greater awareness of the environment had evolved. The Blackwood Tree Preservation Society, formed in the 1950s, has been described by local residents as a vanguard of the environmental and conservation movement in South Australia, and claims to have been largely instrumental in ensuring the retention of many old and beautiful trees in the district (Don Burnard, pers. comm.).

5.1.7.2 Sclerophyll plant species

Common associations in the Sclerophyll system of the Hills which are easily identified in the Belair National Park include *E. obliqua* (Strinybark) in the higher wetter zones, graduating down through *E. leucoxylon* (Blue gum), *E. fasciculosa* (Pink Gum), *E. viminalis,* (Manna gum), *E. odorata* (Peppermint Box), *E. microcarpa* (Grey Box) to *E. camaldulensis* (River Red gum) along the water courses.

Typical understorey shrubs species include *Acacia pycnantha* (Golden Wattle), *M. myrtifolia* (Myrtle Wattle), *Banksia marginata* (Honeysuckle), *Exocarpus cupressiformis* (Native cherry), *Casuarina pusilla* (Sheoak), *Leptospermum myrsinoides* (Teatree) and *Xanthorrhoea australis* (Yacca).

A wide variety of wildflowers occur in these areas including a range of native

orchids, annuals and herbaceous perennials which are most colourful in the spring and early summer.

Common species include several *Hibbertia* spp (Guinea flowers), *Epacris impressa* (Heath), *Ixodia achillaeoides* (Hills daisy or fireweed), *Tetratheca pilosa* (Black eye Susan), *Wahlenbergia* spp (Australian Bluebells), *Bursaria spinosa* (Sweet bursaria or Christmas bush), *Calytrix tetragona* (Common Fringe Myrtle), *Brunonia australis* (Blue pincushion), *Pultenaea daphnoides* (Large leaf Bush Pea), *Platylobium obtusangularum* (Common flat-pea), *Wurmbia dioica* (Early Nancy), several species of *Drosera* (Flytraps) and *Kennedia prostrata* (Running Postman). Annual grasses include *Themeda australis* (Kangaroo grass), *Danthonia* spp (Wallaby grass), and *Stipa* spp. Many of these locally indigenous species are presently being propagated and promoted by both the Woods and Forests Nursery at Belair and the Society for Growing Australian Plants (SGAP) for successful cultivation in the local area.

5.1.7.3 Savannah plant species

Limited remnants of native vegetation exist in the Plains districts of the study area, predominantly *E. camaldulensis* (River Red Gum) of which some scattered mature individuals persist along stream courses. Inference from associations well south of Adelaide assume that former shrub species included *Acacia pycnantha, Banksia marginata, Callitris* spp (Native pine), *Exocarpus cupressiformis* (Native cherry), *Melaleuca* spp., *Leptospermum* spp., and *Casuarina cristata* (Sheoak).

Various tussocky grasses, the unifying feature of savannah systems, are now

found only in the understorey of the Sclerophyll open forest and woodlands of the Mt Lofty Ranges. These would almost certainly have comprised a major part of the Plains flora but were early grazed by introduced animals, and later replaced by improved pastures such as *Trifolium* spp. (clovers), *Medicago* spp. (medics) and *Lolium perenne* (perennial rye grass).

The original land system of the Plains has been radically altered during the 150 years since settlement by a combination of grazing, burning and the introduction of exotic pasture grasses and undesirable weeds. Common weed species include *Plantago varia* (plantain), *Echium lycopsis* (Salvation Jane, Patterson's Curse), *Homeria* spp., (Capetulip), *Oxalis pes-caprae* (Soursob), *Rubus* spp. (Blackberry), *Senecio pterophorus* (South African Daisy), *Olea europaea* (Olive), *Lycium ferocissimum* (South African Box thorn) and *Chrysanthemoides monolifera* (Bone-seed) (Specht, 1972).

### 5.1.8 Greenness Rating for Adelaide

The influence of human intervention on vegetation is apparent in early aerial photographs of the study area (1950s) which revealed vast expanses of treeless residential land over the plains area. However, householders interviewed remarked how they had noticed a great change in the appearance of the suburbs over the past thirty years as residents and councils had made a conscious effort to plant trees and shrubs.

This observation has been reinforced by a Geographic Information System (GIS) analysis of data utilising Landsat images of Adelaide, March 1990, undertaken by the

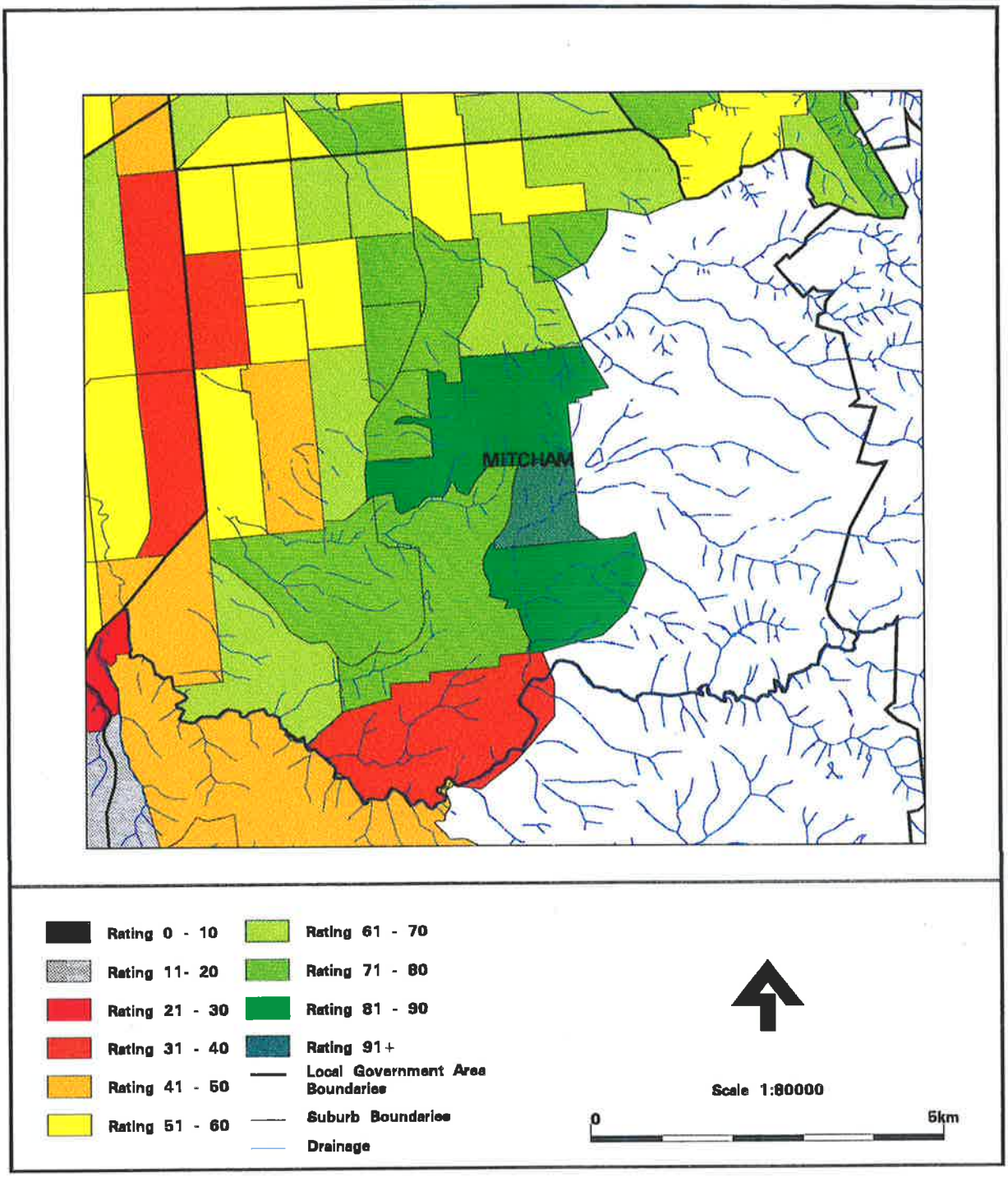
Office of Planning and Development. Data were used to produce a map for the metropolitan area of Adelaide rating varying levels of 'greenness' for the different suburbs (Goodwins and Noyce, 1993). Mitcham LGA with a greenness rating between 71-80, ranked equal first with Burnside and Walkerville of all local government areas.

Map 5.7, drawn from the same GIS source, reveals that all suburbs within the study area of Mitcham rank highly compared with the metropolitan area as a whole, the Hills and foothills suburbs falling well within the top three deciles. Glenalta, in the Mitcham LGA, scored the highest suburb rating for the entire Metropolitan area with 91+ of a maximum attainable sore of 111.

The rating system used has given higher weighting to native vegetation and urban tree plantings over lawns and park areas which require regular summer watering. March images were deliberately selected to exclude green winter grasses. Data were then adjusted to residential greenness to avoid discrimination of neighbourhoods with commercial, industrial and institutional zones.

In their report Goodwins and Noyce (1993) accept the importance of vegetation as a characteristic of the urban environment in terms of amenity, aesthetics, climate amelioration and improved land values, and recognise the effects of revegetation programmes such as the Greening of Adelaide and the MOSS (Metropolitan Open Space System) project. These findings support observations made during research for this thesis.

The south eastern suburbs generally rate more highly than the northern and




Map 5.7 Suburban Greenness for the City of Mitcham

western suburbs, suggesting links between the physical environment, historical and socio-economic factors. It is anticipated that this vegetation assessment programme will be ongoing with significant application to local government planning and wider environmental policy implementation.

## 5.2 Social characteristics of the population

As it was hypothesised that garden styles may be linked with the socio-economic characteristics of their owners the selection of criteria for investigation was based on this assumption.

Sources of data used from the 186 Census include:

(a) *SUPERMAP ABS Database*

(b) *ADELAIDE A Social Atlas* (1986 and 1991 Census)

(c) other ABS Statistical Tables

Data for Mitcham LGA and the Adelaide Statistical Division were compared to identify the differences and similarities between the study area and the wider suburban community. As 1991 Census data were not available at the commencement of this study 1986 Census data and Collector's District boundaries were used.

At the 1986 Census Mitcham LGA had a population of 61,213 persons, which represented 6.26 per cent of the total population of the Adelaide Statistical

Division (977,721 persons) and as such constitutes one of the largest local government districts in metropolitan Adelaide. (The total population figure for Mitcham at the 1991 Census was 60,914, showing relatively minimal net change in the population status of the area over the intercensal period.) The total number of occupied dwellings in Mitcham LGA was 22,066 in 1986 (which represents 6.3 per cent of the total dwellings in the Adelaide Statistical division. The 1991 Census data recorded 22,393 total dwellings.

Demographic characteristics identified as relevant to this study include age, ethnicity, dwelling occupancy, household income and occupation.

### 5.2.1 Age characteristics

Comparative age data given in Table 5.1 have been confined to age groups 20 years and over based on the premise that relatively few households are established by younger age groups, and are thus unlikely to have had significant influence on the type of house garden established in the previous five years.

The total number of persons over the age of 20 years, as a percentage of the total population, is 67.4 per cent for Adelaide Statistical Division and 70 per cent for Mitcham LGA.

| AGE IN YEARS | ADELAIDE SD (as percentage of total population) | MITCHAM LGA (as percentage of total population) |
|---|---|---|
| 20 - 24 | 5.7 | 5.6 |
| 25 - 29 | 8.4 | 6.3 |
| 30 - 39 | 15.7 | 14.8 |
| 40 - 49 | 11.3 | 12.9 |
| 50 - 54 | 4.6 | 4.8 |
| 55 - 59 | 4.9 | 5.2 |
| 60 - 64 | 4.9 | 5.4 |
| 65 - 69 | 3.9 | 4.6 |
| 70 - 74 | 3.4 | 4.0 |
| 75 - 59 | 2.3 | 2.9 |
| 80 - 85 | 1.3 | 1.9 |
| Over 85 | 1.0 | 1.6 |
| Total percentage of population | 67.4 | 70.0 |

**Table 5.1** **Age distribution of Study Area (Mitcham LGA) compared with Adelaide Statistical Division.** (ABS 1986 Census data)

The age distribution of the two areas indicates that in 25-29 and 30-39 year age groups the Mitcham LGA falls slightly below the level of the Adelaide Statistical Division, however from the 40 year age group onwards Mitcham has a higher level of representation in every category. This difference implies a high level of established owner-occupied homes with an ageing population and relatively low levels of mobility.

The higher representation in the upper age groups, 75 years and over, 16 per

cent compared with the ASD 13 per cent (Rudd, 1993, p.31) may be partially explained by the high incidence of aged and nursing homes in the district. Additionally many aged residents in this age group still occupy their own first home, or have more recently moved to medium density home units.

The 40-74 years age groups form 31.5 per cent of the total population in Mitcham, correlating with a high percentage of homes either owned or being purchased on relatively low monthly mortgage repayments (Tables 5.2, 5.3), which suggests a high proportion of households established for twenty or more years. The Social Atlas (1991 Census, p.26) indicates that only four suburbs in the Mitcham LGA (Coromandel Valley, Belair, Springfield and Hawthorn) had more than 53 per cent of households comprising family units, i.e. couples with dependent children. Of these four suburbs more than 15 per cent of households paid over $775 a month in mortgages (Social Atlas, 1991 Census, p.45), which indicates relatively recent purchase. All other suburbs have lower occupancy rates and reduced mortgage repayments supporting the premise that, with an ageing population full ownership of dwellings has increased in the study area.

| | ADELAIDE SD | MITCHAM LGA |
|---|---|---|
| OWNED | 36 | 45 |
| BEING PURCHASED | 34 | 37 |
| HOUSING AUTHORITY RENTAL | 11 | 1 |
| OTHER GOVT. RENTAL | 1 | <1 |
| PRIVATE RENTAL | 15 | 13 |
| OTHER/NOT STATED | 3 | 4 |

**Table 5.2** **Nature of occupancy of dwellings as a percentage of total dwellings. Mitcham LGA and Adelaide SD. (ABS 1986 Census data)**

| | ADELAIDE SD | MITCHAM LGA |
|---|---|---|
| UNDER $100 | 15 | 16 |
| $100 - $199 | 14 | 11 |
| $200 - $299 | 20 | 15 |
| $300 - $399 | 18 | 17 |
| $400 - $499 | 12 | 13 |
| $500 - $599 | 7 | 8 |
| OVER $600 | 11 | 16 |

**Table 5.3** **Monthly mortgage repayments as a percentage of total dwellings. Mitcham LGA and Adelaide SD. (ABS 1986 Census data)**

### 5.2.2 Ethnicity

Demographic characteristics such as place of birth were included to determine whether ethnicity is reflected in domestic garden style and the choice of plants cultivated. Questions were included in the later householder survey to identify those born in Australia, overseas born persons, persons with one or more parents not born in Australia, and period of residency in this country.

Census data presented in Table 5.4 indicate that over 80 per cent of the population in both the Mitcham LGA and the Adelaide metropolitan area was either Australian born or of English speaking cultural origin. The Social Atlas 1991 indicates for the Mitcham LGA that:

(a) a concentration of persons born in the UK or Ireland occurs in the Hills suburbs

(b) a low representation of persons were born in other European and Asian countries

(c) the suburbs of Eden Hills, Panorama and Coromandel Valley have up to 3.5 per cent of residents German born

(d) between three and six per cent of the population in western suburbs of the study area is of Greek birth

(e) isolated areas of five to eleven per cent SE Asian born persons exist in Pasadena (5-11 per cent) and Bedford Park (more than 11 per cent).

| | ADELAIDE SD (as percentage of total population) | MITCHAM LGA (as percentage of total population) |
|---|---|---|
| AUSTRALIA | 73 | 79 |
| UNITED KINGDOM | 10 | 7 |
| GERMANY | 1 | 1 |
| GREECE | 1 | 1 |
| ITALY | 3 | 1 |
| LEBANON | <1 | <1 |
| MALTA | <1 | <1 |
| NETHERLANDS | 1 | 1 |
| POLAND | 1 | <1 |
| VIETNAM | 1 | <1 |
| YUGOSLAVIA | 1 | <1 |
| Percentage of total population | 92 | 90 |

**Table 5.4 Country of birth, Mitcham LGA and Adelaide SD. (ABS 1986 Census data)**

These pockets of Asian born persons are located near South and Goodwood Roads, main transport routes to Flinders University. Here there is also a high incidence of rental accommodation and medium density dwellings, occupied by overseas tertiary students. Additionally, as Asian migrant families have become established financially, there appears to be formation of small ethnic enclaves in newer subdivisions along the foothills e.g. Pasadena and Bellevue Heights. It was anticipated that the gardenscapes in these areas would represent a different style from those designed by occupants with a European cultural ancestry.

### 5.2.3 Dwelling types and nature of occupancy

Assessment of dwelling ages was based on:

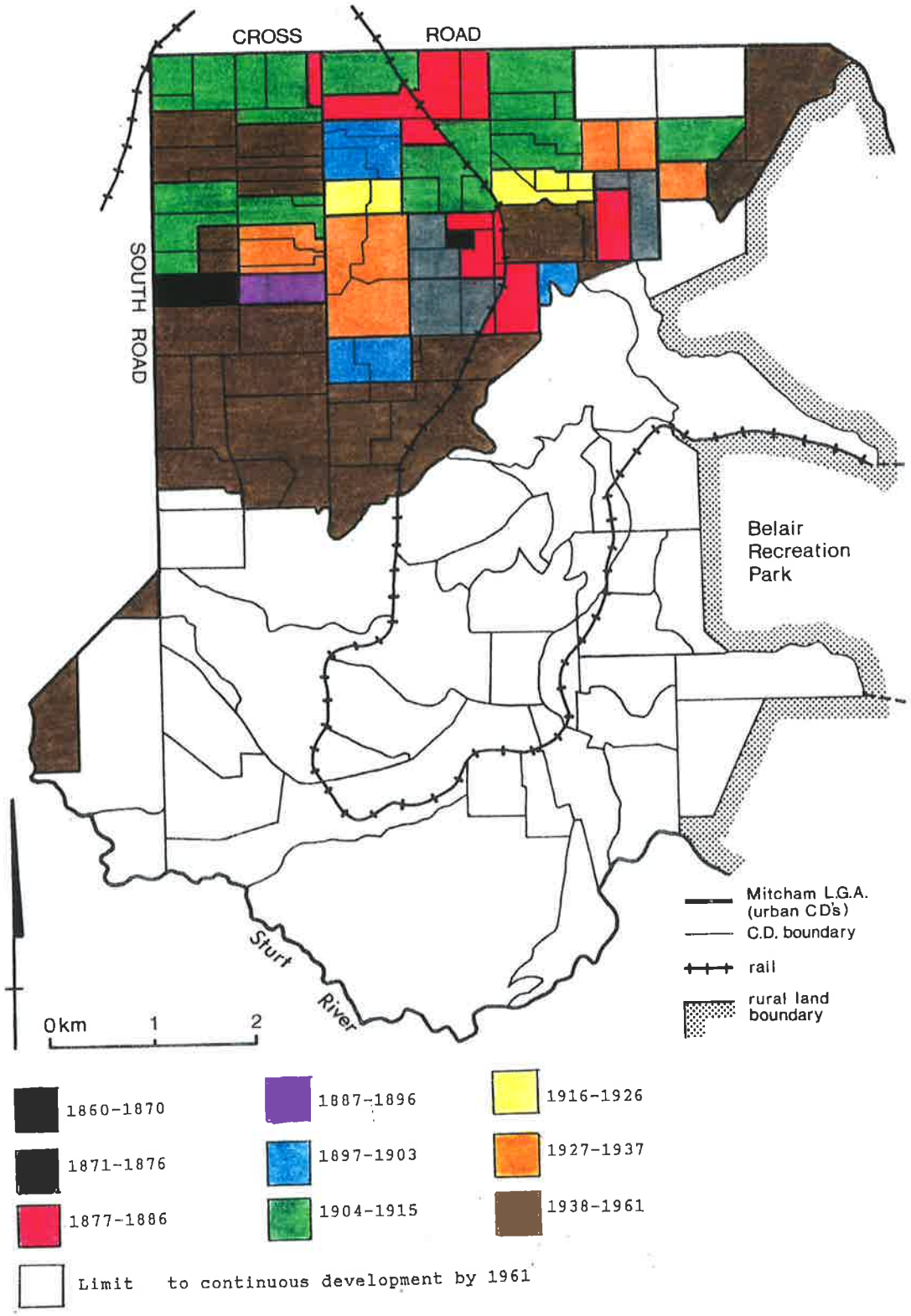
(a) Ann Marshall's map (1964) showing approximate periods of land subdivisions of the Adelaide Metropolitan Area from 1842-1961, from which Map 5.8 was produced for this study

(b) *House Styles in Adelaide - A Pictorial Record* (1981) Persse and Rose.

It was anticipated that owner-occupied dwellings, particularly separate houses, would have established gardens reflecting the occupants' level of interest in gardening and consequent style and choice of species to be cultivated.

Classification of the nature of occupancy and the age and type of dwelling were essential stages in this research. The higher incidence of certain categories of dwellings in the Mitcham LGA than in the Adelaide SD has been accepted as a desirable characteristic for the purpose of this research. Refer to Tables 5.2 and 5.5.

(a) Mitcham Council area has 83 per cent of its residential dwellings classified as detached or separate houses and only 1 per cent as semi-detached, compared with Adelaide SD's 75 per cent separate houses and 7 per cent semi-detached.




**MAP 5.8: Subdivision of land in Mitcham LGA**

**(from Marshall 1964)**

(b) Mitcham has 82 per cent owner occupied (owned and being purchased) dwellings compared with Adelaide's 70 per cent. There appears a strong relationship between the number of detached houses and owner occupied dwellings.

| | ADELAIDE SD | MITCHAM LGA |
|---|---|---|
| SEPARATE HOUSE | 75 | 83 |
| SEMI DETACHED | 7 | 1 |
| ROW/TERRACE | 1 | <1 |
| OTHER MEDIUM DENSITY | 15 | 14 |
| FLATS >3 STOREYS | 1 | <1 |
| OTHER NOT STATED | 1 | 1 |

**Table 5.5** **Dwelling type as a percentage of total dwellings - Mitcham LGA and Adelaide SD.**
**(ABS 1986 Census data)**

### 5.2.4 Levels of household income

The higher socio-economic status of the Mitcham Council area is further reflected by income levels and mortgage repayments (Table 5.3). Table 5.6 indicates that Mitcham had a lower proportion of households with stated incomes below $26,000 than the Adelaide SD and a higher proportion with stated incomes above $40,000 pa (1986 ABS Census data).

Monthly mortgage repayments were selected as a socio-economic indicator as it was expected that the amount repaid each month would highlight two characteristics:

(a) the household income level of the occupants, and

(b) the length of occupancy which in turn would have significant influence on the nature of the house garden.

| | ADELAIDE SD | MITCHAM LGA |
|---|---|---|
| UNDER $2,000 | 1 | 1 |
| $2,000 - $6,000 | 9 | 8 |
| $6,001 - $12,000 | 17 | 15 |
| $12,001 - $18,000 | 15 | 13 |
| $18,001 - $26,000 | 18 | 15 |
| $26,001 - $40,000 | 24 | 24 |
| OVER $40,001 | 17 | 25 |

**Table 5.6** **Annual Household Income as a percentage of total dwellings. Mitcham LGA and Adelaide SD.** (ABS 1986 Census data)

With over 80 per cent of dwellings in the Mitcham LGA being owner or purchaser occupied and a similar percentage of dwellings being separate houses, it may be assumed that a high proportion of the mortgaged dwellings are current or former

family homes. In Mitcham LGA 59 per cent of the total mortgaged dwellings had repayments of less than $400 per month which, combined with the 45 per cent of total dwellings without mortgages, suggests that many of the mortgages may have been taken out a considerable number of years ago when house prices were much lower than at present. It may also be assumed that a high proportion of the initial principal has been reduced over time, or that sale of a previous home has considerably reduced the need for large scale borrowing on the present home. The availability of long term low interest War Service loans is an additional factor for consideration in accounting for the numbers of low mortgage repayments. The distribution of Collectors Districts (CDs) with relatively low mortgage repayments is consistent with those suburbs established on the Plains prior to 1961, including War Service home loans for World War II veterans and defence personnel repatriated from the Korean and Vietnam Wars.

Higher mortgage repayments in the older suburbs such as Urrbrae, Hawthorn and Colonel Light Gardens occur where many of the older established homes have recently been acquired by younger households. Other areas with high monthly repayments (over $400 per month) occur in newer land developments of the foothills such as Pasadena and in the Hills at Blackwood, Belair, Glenalta, Eden Hills, Bellevue Heights, Hawthorndene and Coromandel Valley. This also exhibits a comparable pattern of distribution of:

(a) CDs with a high percentage of persons in the same dwelling in 1981

(b) CDs with a high proportion of the households comprised of two parents and one or more children

(c) CDs with a large percentage of persons over 15 years having annual incomes over $26,000, and

(d) CDs with more than 50 per cent of the females over 15 years in the labour force (which may account for the fact that 49 per cent of households in the Mitcham LGA have an annual income of in excess of $26,000, i.e. multiple incomes).

## 5.3 Historical development of Mitcham LGA

Prior to the 1960s most of the housing development was confined to the plains, north of Daws Road and Springbank Road. These areas were early serviced by trams and later buses, had gas mains, sewerage and reticulated water, none of which was extended into the foothills and hills area of the Council district until later.

A chronological sequence of land subdivision, within the limit of continuous development in 1961, was established by Ann Marshall (1964), based on searching of original land titles of Adelaide. Map 5.8 has been adapted from Marshall's map for this study to show the land subdivision from 1860 to 1961 within the Mitcham LGA. Although the Hills and foothills areas are shown to be beyond the limit of continuous development, isolated settlements were clearly defined at Blackwood, Belair and Eden Hills in the late 1800s. Chapter 7 includes a map (Map 7.1) compiled from survey data which correlates closely with Marshall's map.

This dating of dwellings revealed a pattern closely approximating the date of subdivision. Anomalies appear where the time lapse between date of subdivision

and commencement of dwelling construction varied by decades due to changing economic conditions, accounting for some suburbs displaying less homogeneity in age characteristics than others.

### 5.3.1 Pre 1945 housing development

Scattered relict 19th century dwellings are located in and around Mitcham Village (see Plate 5.1), and the former rural settlements of St Marys, Blackwood and Urrbrae. Homes of this period included large farm homesteads, former rural workers' cottages and groups of private dwellings adjacent to the railway line which passed through the area into the Hills.

The construction of tracks for trams, horse-drawn at first but electrified by the turn of the century, between Adelaide and Mitcham Village accounts for early houses in the suburbs of Hawthorn, (see Plate 5.2), Mitcham and Torrens Park. Gradual infill occurred adjacent to other tram routes to Malvern, Fullarton and Colonel Light Gardens which linked the Council district with the City of Adelaide (Steele, 1986).

In the early 1920s major subdivision of the Plains sector commenced, ushering in the new era of town planning. Ebenezer Howard's concept of 'The Garden Suburbs' is reflected in the names chosen for new housing developments, Colonel Light Gardens, Westbourne Park, Clarence Gardens and Daw Park (Hutchins and Bunker, 1986). Colonel Light Gardens, as a model, remains largely unchanged in character today, designated a heritage area in the Mitcham Council Development

Plate 5.1 Eynesbury House at Kingswood, built as a private residence in 1880, restored under a heritage grant in the 1980s.

Plate 5.2 Restored bluestone villa, Hawthorn, built circa 1900, present garden-style established in a later period.

Plate 5.1

Plate 5.2

Plan, and controlled as a special zone. The new concept in town planning provided for areas of public open space, wide tree-lined streets with generous nature strips allowing residents to extend their gardens beyond the property boundary. Part of this suburb was developed as a public housing programme, the 'Thousand Houses Scheme' financed by the State Bank. Housing styles included the Tudor style bungalow (Plate 5.3), Kentish Gable (Plate 5.4), Californian bungalow (Plates 5.5, 5.6) and Spanish Mission (Persse & Rose, 1981).

Also during the 1920s there were established groups of War Service homes west of Goodwood Road, minimal four main room brick dwellings, bungalow style, but set on large blocks (a quarter acre) allowing ample space for the economic vegetable and fruit garden in the rear and formal flower garden in front.

With the 1930s depression, followed by World War II, further home construction virtually ceased until 1945. Extensive land subdivision was halted, while temporary dwellings were erected on land purchased by owners unable to afford permanent structures (Auckens, 1989).

### 5.3.2 Post war housing development

From the late 1940s to mid 1950s Adelaide's rapidly increasing population and the formation of new households necessitated large scale provision of additional family homes. Initially construction of new dwellings continued on quarter acre allotments, vacant pre-war subdivisions, or replacement of the shacks constructed during the Depression.

Plate 5.3 Tudor bungalow, Hawthorn, built in the 1920-30 period. Present garden retains elements of original style.

Plate 5.4 Kentish Gable bungalow, Hawthorn, built circa 1920-30s. Present garden retains elements of original style.

Plate 5.3

Plate 5.4

Plate 5.5 Californian bungalow, Hawthorn, built circa 1920-30s, modest family home. Present garden retains elements of original style.

Plate 5.6 Californian bungalow, Hawthorn, built circa 1920-30s, as gentleman's residence. The present garden retains elements of original style.

Plate 5.5

Plate 5.6

In a period when the peace time construction industry was re-establishing, building materials were available in such limited quantities and types that stringent building restrictions were imposed on the size of dwellings permitted. This accounts for the large numbers of austerity houses still recognisable today typically featuring narrow eaved roofs, small two-roomed frontages, a limited area (110 sq.m.), minuscule front porches, often with a cantilever cement roof.

Within the study area Clarence Gardens, Edwardstown and Daw Park feature austerity houses, with street after street of almost identical two to three bedroom houses, offering little variation from a basic design beyond the narrow range of building materials or placement of the front porch to left, right or centre. Low front fences (brick or cyclone wire), a side driveway and garage were by now standard features. The back gardens remained strictly utilitarian while the front gardens contained large areas of lawn, some shrubs and the occasional shade tree, still predominantly exotic.

These suburbs are characteristically a mixture of both 1920s and 1950s style houses, indicative of the infilling of older subdivisions (Plate 5.7). In the Hills areas, less controlled by the more stringent building controls of the Plains, owner built timber framed asbestos cottages were common, many still in existence today.

### 5.3.3 1960-1970s

By the 1960s most available flat land on the plains had been resumed for private residential use and associated commercial activities supplying the new suburbs

Plate 5.7 American Colonial style bungalow, Hawthorn, built circa late 1950s to 1960s, as infill in an older established suburb. Conventional formal style garden.

Plate 5.8 Conventional 1960s brick bungalow with tiled roof, Torrens Park. Features wrought iron lacework, low brick fence.

Plate 5.7

Plate 5.8

with essential services and amenities. Further expansion into the outer suburbs followed, with the development of Torrens Park (Plate 5.8), Clapham, Panorama and Pasadena along the foothills, and Blackwood, Belair, Eden Hills and Bellevue Heights in the Hills.

In the same period the first major 'recycling' of old houses had commenced, as original occupants of the pre 1920s built houses reached and passed retirement age. Retirees now had greater influence and mobility than ever before, were able to travel and become more involved in local activities which reduced time available for the traditional retirement past-time of gardening. By now the trend towards retirement units had become both practical and acceptable. The smaller, usually strata-maintained grounds surrounding the units demand little, if any in put, by the occupants. The external appearances have become more uniform, lacking the individual touches observable in detached dwellings.

At this time residential areas within the city and inner suburbs (Unley and Hawthorn to the south, Norwood to the east) were undergoing gentrification. Low cost housing, largely occupied in the 1940-1950s by migrants arriving from Europe was now recognised as highly desirable residential real estate by the young upwardly mobile sector of the community. The restoration phase of many old houses commenced (Plate 5.9, 5.10), while others were demolished to be replaced by medium density modern townhouses and home unit developments.

A few far-sighted entrepreneurs anticipated the next stage of urban renewal and moved to acquire existing properties in the outer zone of pre-war suburbs within

Plate 5.9 Hawthorn villa, built circa 1910-20s. The present garden was redesigned to a formal style, after restoration of the house in the 1990s.

Plate 5.10 1970s restoration of circa 1910 villa, Hawthorn, featuring an Australian native plant garden.

Plate 5.9

Plate 5.10

the study area. This includes most of the area between Cross Road and Daws Road/Springbank Road.

Two developments followed. Firstly, where council building regulations permitted, old houses were demolished and replaced by blocks of medium density flats and home units, relatively *ad hoc.* These were middle income suburbs where, at that time, the residents took little interest in Council decisions. Secondly, a little later, as many of the older houses became available on the market they were strongly sought after by young families who wanted a convenient location within range of all services, on large blocks but within a relatively cheaper price range.

These middle suburbs were established to house workers on relatively low incomes, yet securely employed, able to purchase their own modest homes on low interest loans. These workers were employed in the expanding industrial zone along South Road or in clerical and sales fields in the city. These suburbs allowed easy access to Adelaide by public transport reducing the dependence on ownership of motor vehicles.

By the late 1960s and early 1970s higher income families had become part of the *rural retreat* to the hills. Improved roads to the eastern, north eastern and southern outer metropolitan area accelerated the use of private cars as commuter transport, encouraging daily travel to work in the city.

After the initial *laissez faire* development of the 1960s which permitted

construction of 2-3 storey apartment blocks, the Supplementary Development Plan for Mitcham formulated in the 1970s, now restricts multiple dwellings to a single level. The Mitcham Council area remains predominantly a low to medium density residential district, with commercial activity confined to major access roads and a small industrial zone restricted to land adjacent to South Road, at Melrose Park and St Marys.

### 5.3.4 1980 to present

The Kinhill Stearns Report (1985), evaluating proposed future directions for development of Metropolitan Adelaide, strongly advocated urban consolidation as the most economic option for the state to pursue. The middle suburbs were targeted for medium density housing as allotment sizes were generous, and services such as gas, water, sewerage and electricity existed. As the mains are generally of an age where major replacement is imminent, provision for increased capacity would be much less costly than to extend new systems into new outlying suburbs. Established amenities and community facilities such as schools, kindergartens, local shopping centres and recreation facilities are presently generally under-utilised by the ageing population.

Proximity to the city and existing public transport make the southern suburbs ideal for redevelopment, especially as some of the industrial and commercial development is locating south of the city, providing a potential source of employment.

Urban consolidation proposals cater for the changing demographic structure of

Adelaide's population, offering a variety of accommodation types. The new housing philosophy has been directed towards provision of homes for lower income aged citizens and single-parent families. These groups are being offered dwellings more appropriately sized with reduced areas of private outdoor space than are generally preferred by larger, nuclear families.

With the 1980 policy of urban consolidation being favoured by state and most local government authorities including Mitcham Council, the option of increasing medium-density housing is likely to be encouraged where development is proposed, particularly in the middle suburbs. A housing study was prepared for the Mitcham Council by Francis Mowling (1989) to identify the specific accommodation needs for the area to 2006.

According to a spokesperson from the Mitcham Council Planning section opposition to the provision of higher density development in the Mitcham area, in particular subdivision of large allotments and approval for the creation of 'hammerhead' blocks, has come from recently elected councillors supported by environmental lobbyist groups, creating conflict between planners and residents.

Research by Halkett (1975) suggested that there existed considerable householder resistance to the concept of reduced allotment size. The multiple uses of external space identified indicated greater utilisation of garden areas for informal social activities than had been anticipated by proponents of urban consolidation.

High interest rates during the late 1980s and up to 1991, have been followed by a major

decline in property market confidence causing considerable instability in the economy.

Private developers have been less than willing to outlay capital to purchase high priced low density dwellings requiring demolition before any medium density development can commence.

At present (1990s) the next 'recycling' phase is occurring with gentrification now apparent not only among the older (1920s homes and earlier) but also the 1940-1950s houses in the middle suburbs and the hills. The often poorer quality of the structures, including salt damp and poor foundations, is compensated for by the generous size of allotments and the higher value of the land, justifying considerable expenditure involved in renovations.

The former character of these suburbs is undergoing rapid change which suggests that the recommendations of planners are not necessarily the dictates of those families still able to invest in the luxury of the Great Australian Dream, the detached house on a quarter acre block.

## 5.4 Public housing

The Mitcham LGA as been relatively unaffected by government policy as far as future development proposals are concerned. Apart from small isolated pockets of South Australian Housing Trust (SAHT) and War Veteran homes in the Edwardstown and Daw Park suburbs there is relatively little public rental housing, 1.5 per cent of all dwellings compared with 11.1 per cent for the Adelaide

Statistical Division (1986 ABS Census).

Part of St Marys was initially developed by the SA Housing Trust in the 1950s as a government incentive for Chrysler (now Mitsubishi) to establish its plant at Tonsley Park. Ownership of much of this property has since passed into the private sector, currently being offered as cheap private rental accommodation to low income tenants, pensioners and single-parent families unable to be serviced by the relatively limited available government housing stock.

## 5.5 Reticulated water supply

Provision of reticulated water supplies was perceived to be a controlling influence on the nature of gardens which have developed. Adelaide as a city was early supplied with mains water, albeit in limited quantities due to restricted catchment areas and low annual rainfall. The summer drought period, coinciding with increased household demands for water has created ongoing problems for the Engineering and Water Supply Department to sustain acceptable standards of water quality and quantity.

### 5.5.1 Early works

Adelaide's first water storage area, the Torrens Weir, was destroyed by floods in 1858. In 1859 Thorndon Park Reservoir was constructed and supplied by a 21 inch main from the new Torrens Weir. In 1868 the Waterworks Bill was passed to construct the Hope Valley Reservoir to be supplied by an aqueduct from the Torrens Weir.

Probably the earliest reference to a reticulated water supply for the Mitcham area appears in the *Public Work Report 1879-80* (p.84):

> *A Bill has recently passed the Legislature to enable additional works to be constructed to supply this (the High levels Reservoirs) district, which comprises the Mitcham, Burnside, Magill and Glen Osmond water areas.*
>
> *The supply of water was first commenced at Mitcham on Christmas Day last (1879), and has been maintained continuously since that date. The works comprise a covered tank, to contain 275,000 (two hundred and seventy-five thousand) gallons, and five and a half miles of mains. The water is wholly derived from Ellison's Creek.*[9]
> *Fifty-five (55) services have been fixed.*

The *Public Works Report 1880-81* (p.112) mentioned further the High Level Reservoirs, the district supplied which includes:

> *... all those suburban places which are situated at too high a level to be supplied from the Thorndon Park and Hope Valley Reservoirs ... The levels of this district vary from 200 to 600 feet above the sea.*
> *The high level district is supplied from four service reservoirs, placed at convenient points, and which, for about eight months of the year, receive water from several of the creeks - viz., Horsnells' Creek. ... In summer time the water is furnished from the Hope Valley reservoir, and is raised to the above mentioned service reservoir by means of pumping engines situated at Marryatville.*
> *... the price of water has been purposely fixed at a high figure - 5d. per 1,000 gallons - in order to prevent the demand exceeding the capabilities of the works.*

To meet the growing water requirements of the city of Adelaide a Royal Commission was appointed in 1888 to examine alternatives for additional storage. In 1892 the Onkaparinga Waterworks Bill for the Happy Valley Scheme was passed and construction begun (Hammerton, 1986). Although the reservoir

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[9] Ellison's Creek, after Samuel Ellison, dairyman, was also known as Brownhill Creek which name has been retained to the present time.

was not completed until 1897 water was being supplied to Adelaide by 1895-6 *(Public Works Report, 1895-6).*

By 1898 a trunk main (eight inch diameter) had been constructed along the foothills from Darlington to Adelaide via Pasadena and Clapham. Water from the Happy Valley reservoir was then available for distribution to the Mitcham plains suburbs as demand justified the extension of mains. In 1940 this main was upgraded to a 12 inch diameter, and again in 1957 to a 48 inch diameter main.[10]

Millbrook Reservoir was commenced in 1913 and by 1923 was supplementing Adelaide's water supply. Water was fed through a tunnel one mile long from a weir on the Torrens River near Gumeracha. By 1928 Blackwood, Belair and Eden Hills were being supplied free from the Millbrook main by an eight inch main, pumped from Mitcham, until in the 1940s it was replaced by a twelve inch diameter pipe.

### 5.5.2 Post World War II demands

With rapid urban expansion in the 1950s to the south of the city the supply at Happy Valley was supplemented by a pipeline from the Murray River via the Onkaparinga River and Mt Bold reservoir in 1955. In 1962 construction of a reservoir on the Myponga River commenced. In 1955 Blackwood, Belair and Eden Hills were linked to the Happy Valley supply via an eight inch diameter pipe

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[10] E & W S Department, *Age of system - Water Mains Laid - Plan No. 1*, nd circa 1964.

from the pumping station at the Shepherds Hill Tank.

Although mains had supplied water to residents in the immediate township area of Blackwood and Belair since 1928, connections to more isolated homes on the outskirts of the townships came much later, only when sufficient demand could be demonstrated to justify the expenditure involved in extension of the mains. This meant many Hills residents were wholly dependent on private supplies, largely collected in individual rainwater tanks. Water became a precious commodity in the hot, dry summer months and choice of garden plants was of necessity limited to those which could survive the summer with negligible supplement to the natural rainfall.

Tracing the actual dates of water supply can be done only by referring to E & WS service maps, on a street by street basis. From the 1960s onwards connections were done in a somewhat piecemeal process, on demand, as each small subdivision was approved and E & W S resources were available. Particular in the Hills areas suburbs such as Glenalta and Hawthorndene were progressively connected to water supplies between 1948 and the late 1980s. By the mid 1950s private land developers, relatively unrestricted by legislation, continued to subdivide land on the outer edges of the city, while provision of such services as water, power, transport and education, remained the responsibility of the State government. From 1955 the Town Planning Act was amended to control development of urban land which could not be economically supplied with water and sewerage.

## 5.6 Planned development

In 1960 a precedent was set when developers Reid Murray Development (SA) agreed to finance provision of water, sewerage and roads for a new subdivision at Para Hills before housing construction could commence. Since the Planning and Development Act 1967 water has been progressively supplied to new subdivisions in the hills and foothills, but the responsibility and cost of service provision has moved to land developers rather than the Engineering and Water Supply Department (Hammerton, 1986).

When considering the influence of available water as a factor in determining garden design and plant selection it is important to note the early supplement of the natural rainfall by publicly reticulated supplies. Parts of Mitcham Council District have had supplementary reticulated water supplies available from the 1880s with varying levels of quantity, quality and cost. In addition to the natural rainfall, private tanks, bores and wells are still widely used at the present time.

Because of the nature of Adelaide's climate the greatest demand for water occurs at a time of peak temperature, low humidity, limited precipitation and high evaporation. The public provision of water must meet the essential needs of the consumers, safe for human consumption, and yet is predominantly used for washing, cleaning and gardening.

New water pricing policies and intensive public education programmes have been introduced to encourage reduced domestic consumption. The relationship

between residential water consumption and garden requirements has been addressed in two papers by Dandy (1986,1987), discussed in Chapter 2.1.

## 5.7 Summary

This detailed discussion has attempted to identify the varied physical and human characteristics of the study area as a background to the survey data presented in the following sections. The features of any human landscape are to some degree determined by the natural environment, modified by historical events and influenced by the cultural heritage of the community which occupies the land.

The case study area may be viewed as representative of much of the Adelaide metropolitan district, excluding very low socio-economic households, yet typifying the owner occupier of the house with a garden on a quarter acre block - the garden maker and exponent of the 'Great Australian Dream'.

This background research identified a number of differences in the physical nature of the study area, raising a third hypothesis to be investigated in the field work.

HYPOTHESIS 3

The nature of the physical environment will exert a strong influence on the type of domestic gardens likely to develop in a particular area.

# CHAPTER SIX

## METHODS USED FOR THE DETAILED CASE STUDY

Two field studies were undertaken as an empirical exercise to collect primary data which could be used to quantify the basic characteristics of front gardens in Mitcham. The first survey, a 'windshield' observation schedule gathered general data for approximately one quarter of the total dwellings in the Council area, establishing certain patterns which provided the basis for further investigation through a more specific householder interview programme.

### 6.1 Windshield survey

This initial phase of field research comprised a broad-scale subjective observation of dwellings within the study area. The survey was carried out at street level, the observer either walking or driving along selected streets. No direct contact was made with householders at this stage, although a number of individuals working in their gardens expressed some interest in the recording process.

The purpose was to identify design characteristics of gardens which might reflect

householders' style preferences and choice of plants. The survey was, therefore, confined to detached houses and semi-detached dwellings of no more than two per allotment, the occupants expected to be the decision-makers and/or gardeners. Any structures of higher density occupation, such as clusters of single-storey home units and blocks of flats, were disregarded since these grounds are generally maintained under strata management, with little input by occupants. As Mitcham LGA has a relatively small number of medium density dwellings it was generally possible to exclude these as encountered and still maintain a desirable sample size.

Unless landscaping had obviously been commenced around houses still under construction, these were omitted from the survey sample. Where former gardens had been retained on redeveloped sites, these were included.

The survey of 5573 private dwellings, detached or semi-detached, covered 109 of the 113 Collectors' Districts (CDs, 1986 Census) in the Mitcham LGA and constituted 24.7 per cent of all dwellings (n = 22,066), or 29.4 per cent of all detached and semi-detached dwellings (n = 18,575), (figures from the 1986 Census).[1] The size of the sample was considered to be sufficiently representative of the study area to enable valid conclusions to be inferred.

Discussion of data from the windshield survey is included in chapter 7.

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1 The 1991 Census data show an insignificant change in the total number of dwellings (n=22,049), but an increase of over 2000 detached and semi-detached dwellings (n=20,607).

### 6.1.1 Selection of sample dwellings

As the aim was to sample 15-20 per cent of the houses in the study area, one street was selected from each Collectors' District and twenty houses in that street were surveyed. However, where the CDs were very small in area, or composed of short streets, it was necessary to include additional streets to achieve the desired sample.

Some streets were excluded from the survey based on the following criteria:

(a) major traffic routes e.g. South Road, Goodwood Road, King William Road, Belair Road, Harrow Terrace and Fullarton Road, which make parking and driving slowly with frequent stops hazardous.

(b) roads which are largely zoned for commercial use, with retail and other business development.

(c) residential development is limited on the above routes, and what remains is rapidly being replaced by business premises.

### 6.1.2 Observation schedule for the windshield survey

The following data were recorded for each dwelling:

(a) the approximate construction period of original dwelling.

(b) the percentage of Australian native plants (trees and shrubs) present in the front garden.

(c) the percentage of front garden, excluding driveway, occupied by lawn.

(d) the ratio of native trees to exotic trees, over two metres tall, present in the front garden.

(e) the height of the front fence, if present.

(f) treatment of the native strip (Council land between the property front boundary and the road).

### 6.1.3 Dwelling classification

Categories used for assessing the approximate ages of dwellings were formulated on the basis of the existence of unique architectural styles representative of distinct historical periods of housing construction in Adelaide. Dating of construction was

based on the detailed descriptions and photographs of Adelaide houses in *House Styles in Adelaide - A Pictorial History* (J.N. Persse and D.M. Rose, 1981).

Each house was classified subjectively and placed into one of the following age periods:

(a) pre 1940 - any dwelling constructed prior to World War II (in unrestored condition)

(b) 1940-1959 - wartime and post World War II (austerity)

(c) 1960s - houses built shortly after lifting of austerity building restrictions

(d) 1970s - newer subdivisions

(e) 1980s - most recent subdivisions, redeveloped allotments

(f) pre 1940 restorations - restored or currently undergoing renovation

Classification of pre 1940s houses as *restorations* or *renovations* was based on the subjective observation that a house had undergone obvious recent redevelopment dating from the 1960s, leading in many cases to a complete change of character from the initial style. Redevelopment included some or all of the following:

(a) re-roofing with modern materials, new style gutters (Colorbond, aluminium tiles, asbestos shingles)

(b) changed window frames, size, shape, materials

(c) horizontal or vertical extensions to the original structure

(d) modern colour schemes - grey roof, white woodwork (1960s), olive green and dark brown (1970s), red roof, bottle green, cream and antique gold woodwork (1980s)

(e) new high front fences in modern materials or brush, or complete removal of front fence

(f) brick paved driveways

(g) restored or replica lacework, iron or wood

(h) professionally landscaped gardens, native or cottage with plant species anachronistic to the period of establishment of the original building

As certain building styles persisted over an extended period it was necessary to consider elements such as roofing materials, window frames, width of eaves and the size of mature trees, in order to place houses in approximate age groups.

The preliminary survey suggested that the appearance of a house and its front garden, as viewed by the casual observer, provides not only a strong statement of the socio-economic status of the occupants, but also acts as a clear indicator of the social and spatial changes which are occurring in any given area.

### 6.1.4 Assessment of plant species

A count of actual plant numbers and particular species was beyond the scope of this research, thus the approximate percentage recorded was based on the general impression of the presence of common genera. This was supported by the personal botanical knowledge of the observer, with reference to selected garden guides specific to recommended native species for home gardens. (Blombery, 1972, Chadwick, 1985, Holliday, 1989, Wrigley and Fagg, et al, 1989).

Assessment was largely based on the number of trees and shrubs present, with ground covers included if they contributed significantly to the gardenscape. Essentially the ratio of native plants to recognisable exotic species of trees, shrubs and annuals provided the broad percentages used in this criterion. Lawn was not included in the percentage of garden plants since this was separately assessed as a proportion of the actual garden occupied by cultivated and irrigated grass, however a definite pattern became apparent between the ratio of Australian plants present and the area of lawn in the front garden.

## 6.2 Individual householder survey

Following the initial windshield survey a questionnaire was designed to elicit information from householders to support and extend the observations made. It was hypothesised that individual garden styles were likely to be influenced by the socio-economic status of the household, and that attitudes to the environment might be reflected in its gardening practices.

Questions were designed to collect three main sets of data:

(a) the socio-economic characteristics of the sample population of householders

(b) householder attitudes to general environmental issues

(c) individual gardening practices, and

(d) factors which have influenced resultant styles

The questionnaire contained 75 questions (see Appendix K).

A stratified random selection of 150 households within the Mitcham LGA was made to include a sample from each Collector's District. One street in each CD was selected by ballot, and a system of random numbers was used to choose the streets numbers of households to be interviewed. The questionnaires were

administered by personal interview only. Four householders were unwilling to participate in the survey. A further seven households were excluded from the sample after a second visit failed to find occupants at home.

An additional set of 49 questionnaires was administered to a self selected group, individuals who had responded to a request for rainfall records. The data for this set was recorded separately but subjected to the same tests as the larger randomly selected group. Statistical tests showed some common results for the two groups but insufficient for them to be synthesised as one set. Detailed analysis of these data is found in Chapter 8.

## 6.3 Interviews

### 6.3.1 Clients at the State Flora retail plant sales outlet (formerly the Woods and Forests Department Nursery) in Belair National Park. (See Appendix J for Interview schedule.)

The aim of this survey was to identify the extent of the market penetration of this particular nursery which claims to have about 30 per cent of retail plant sales in Adelaide. It is also the major outlet specialising in Australian native flora in the study area.

Informal interviews were carried out over five days on two weekends early in October 1989, including one public holiday. An attempt was made to canvas all customers departing from the sales area between 10 am and 4 pm. These dates

were selected being spring which is the season recommended for planting shrubs, particularly native species. Seventy individuals agreed to participate in the survey. Others were missed when several customers departed at the same time. Only five persons declined to respond.

As all interviewees had purchased native plants the questions were designed to identify reasons for choice of plants, and this particular supply source. Questions were included to determine the age and style of garden for which the plants were to be used. Statistical tests were not applied to these data as results were not intended to be a major component of the research, rather the responses were used as a guide to preparation of questions for the major household survey questionnaire.

### 6.3.2 Selected individuals

A number of individuals was interviewed who had a particular interest in the cultivation of native plants. These interviews were recorded and later transcribed.

Included in this group were people who had been involved with the Society for Growing Australian Plants in its early years, others currently or previously employed by local governments to maintain gardens and street plantations, and persons in management positions with private and government plant nurseries. Also interviewed were Gavin Walkley, founding president of the Australian Institute of Landscape Architects and Jon Lamb, a media personality with extended involvement in the presentation of programmes for Adelaide home gardeners.

The aim of conducting these interviews was to establish an oral history base for information not otherwise available. It was expected that the views and opinions expressed would contribute to the discussion of factors influencing present garden fashions.

## 6.4 Investigation of relevant policy documents pertinent to garden practices

### 6.4.1 Local government (Mitcham Council)

The only relevant regulation pertaining to front gardens is the required minimum 'set back' of the house from the front boundary, a specified distance of eight metres. This has ensured a potential 'display' area between the perimeter and the dwelling, requiring the owner/occupant to make some design decision as to how to utilise this space. Corner allotments are required to limit fence heights to one metre within six metres of the kerb. This has generally resulted in an angled corner set-back, often with low shrubs outside the fence, or used as a pedestrian entrance.

Newer subdivisions such as Quinton Hills estate, east of Ayliffe's Road, have encumbrances on the titles requiring that any trees planted are selected from a specific list of nominated Australian native species. A spokesperson from the Council Planning Section indicated that compliance with the encumbrance would be difficult to enforce, and by observation there is already a number of well established exotic tree species in the development. Such encumbrances have been established by estate developers to sustain a desired future character of the

subdivision, rather than as a Council requirement. The required absence of front fences and stipulation of acceptable materials for side fences have imposed minimal basic design controls on new areas.

Section 361 of the Local Government Act does empower the Council to make owners remove any overhanging branches or protruding roots which present a hazard to the public users of footpaths. A spokesperson from the Council implied that residents are theoretically required to make application to the Council to extend lawns or gardens beyond the property boundary to the kerbside, but as no specific by-laws or regulations exist this approval is rarely sought. Providing that the maintenance and expenses are met by the householder, and the development does not impede other members of the public, the Council has adopted a *laissez faire* approach to such development.

### 6.4.2 Engineering and Water Supply Department

Regulations of this department which may have influenced domestic garden options are confined to a list, revised at regular intervals, of tree and shrub species prohibited within given distances of water and sewerage pipes. The majority of these species are Australian natives.

In addition, as part of the current programme to reduce water consumption, recent policies have aimed at encouraging landowners to plant Australian plant species with relatively low water requirements. Advice to home gardeners on the suitability of native plants is regularly included with rates notices.

## 6.5 Review of media influence on domestic gardens

A selection of currently popular Australian garden magazines was reviewed and the publishers contacted to establish the annual circulation numbers of these in Australia.

*Your Garden,* the longest continuously running magazine still in publication, was sampled for content and specific reference to Australian native plants from 1958 to the present.

Questions were included in the household survey to identify particular radio and television programmes patronised by householders, and which newspaper garden sections were read. The commercial television program *Burke's Backyard* and the ABC *Gardening Australia* were both viewed widely.

Chapter 8 includes detailed analysis of the above investigations.

# CHAPTER SEVEN

## RESULTS OF THE FIELD STUDIES - THE WINDSHIELD SURVEY

### 7.1 Purpose of the survey

A preliminary survey, conducted between September 1988 and February 1989, was designed to identify patterns which might establish relationships between the approximate construction date of dwellings and associated design features present in front gardens. A total of 5573 dwellings within the study area were surveyed at street level, no direct contact being made with residents. Four CDs, Waite Institute (0804), Urrbrae High School (0803), Flinders University (1505), and Woolworths Big W store (1504) were excluded from both surveys as they were considered to be only marginally residential.

There appeared to be a strong association between the percentage of Australian native plants growing in front gardens and the ages of dwellings. Homes constructed post 1970 featured a significantly greater number of Australian native trees and a small proportion of exotic trees when compared with older dwellings. this was also apparent in the different types of street trees in older and newer suburbs.

This survey also revealed a marked difference between the Plains and the Hills sectors of the study area, a dichotomy which is discussed further in Section 8.3. The physical boundary between the Hills and the Plains sectors is most easily identified from Map 5.4, with the contour lines clearly identifying the escarpment. The political division, for the purpose of this study, can be identified from postcodes, see Map 5.2.

As the number of houses within each age group varied considerably data have been converted to percentages of dwellings in each age group to facilitate the comparative study of the characteristics of each group.

Some discrepancies arose in classifying the gardens of houses built in the 1980s and renovations of pre 1940s dwellings. Where gardens had not been developed the data did not differentiate between new and recently renovated homes. Where landscaping had been commenced featuring wood chips, moulding and moss rocks, with lawn excluded, it was presumed that these were likely to be developed with a high percentage of native plants.

Generally gardens of pre 1940 dwellings, with restoration completed, indicated a tendency towards greater inclusion of native plants as design features, although often mature trees or shrubs were retained and incorporated into the present layout. Some cottage style gardens heavily utilised Australian plant materials (Plate 7.1), while only six 'traditional' cottage gardens (Plate 7.2) were observed with totally exotic plant content. These traditional cottage gardens were all located in Hawthorn, a suburb containing many expensively restored pre-1940s houses.

Plate 7.1 Cottage style garden at Hawthorndene, featuring predominantly Australian native plants. This garden was redeveloped in 1990 from conventional layout, after a change of ownership.

Plate 7.2 Hawthorn villa, circa 1900. This garden was completely redesigned during restoration in the 1990s to present a traditional English cottage style, featuring all exotic species of annuals and herbaceous borders.

Plate 7.1

Plate 7.2

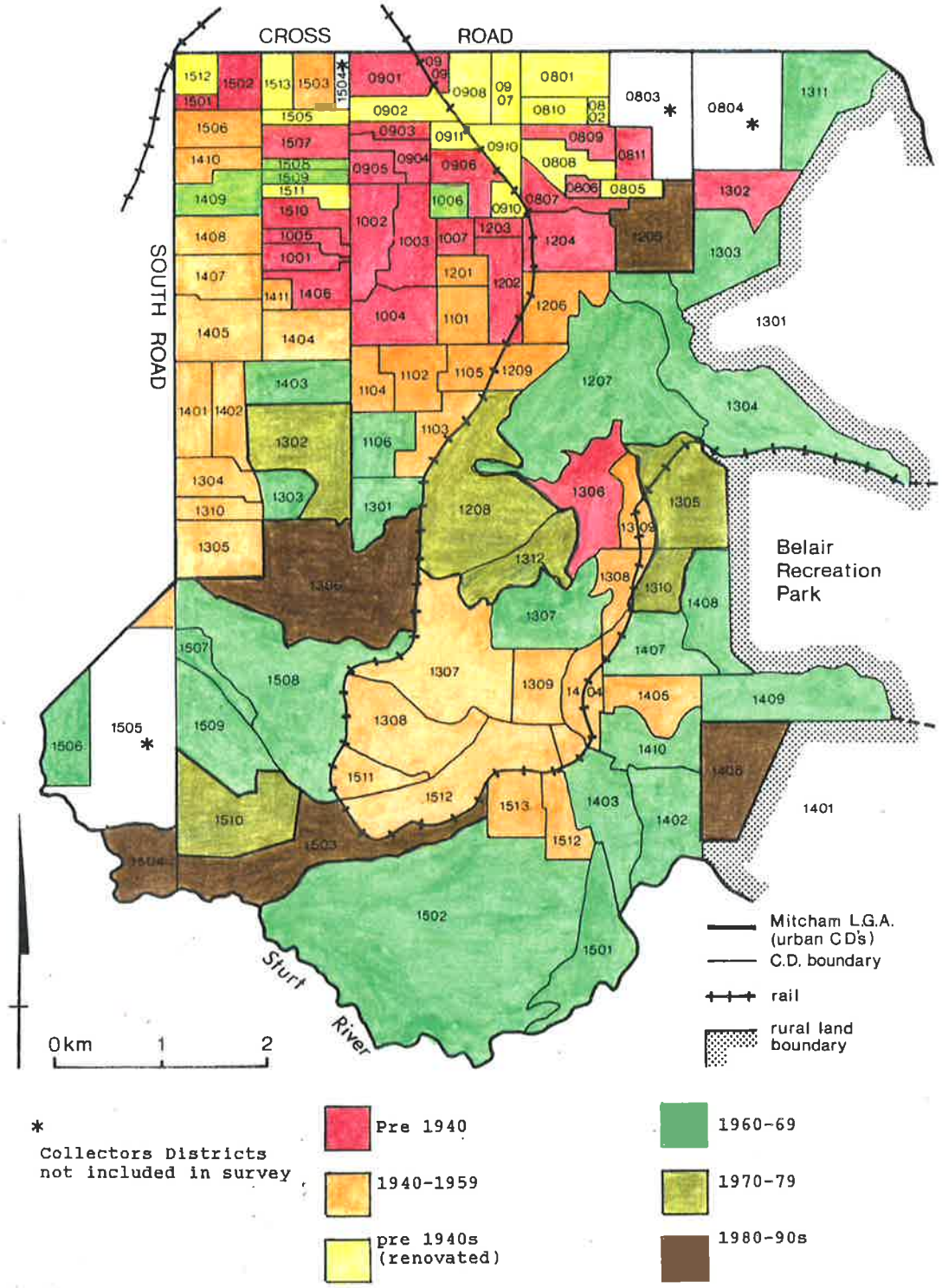
There is little evidence from this survey to support an eastern state claims that cottage gardens have superseded the native garden, at least not within this study area, rather there appeared to be a blending of native and exotic species, specifically to provide spring colour through the judicious use of bulbs and flowering annuals.

## 7.2 Age of dwellings

As the first hypothesis for this research proposed a likely association between the age of dwelling construction and the garden style it was necessary to identify the spatial distribution of houses of different ages.

Map 7.1 represents the distribution of houses, by the age group most highly represented in the survey sample within each CD. The resulting pattern correlates with Map 5.8 (after Marshall 1964), accepting that dwellings were frequently built some years after initial subdivision and sale of land. Prior to the 1960s most of the housing development was confined to the plains, north of Daws Road and Springbank Road. A more detailed discussion of residential development in the Mitcham Council area has been included in Chapter 5.

Table 7.1 shows the age distribution of dwellings surveyed. Almost half of the dwellings for the study area were constructed in the immediate Post World War II period, predominantly on the Plains area. From the 1970s onwards development has gradually moved from the foothills to the Hills area, presenting new home owners with a completely different set of challenges in designing and maintaining gardens. The soil type, topography and climate are markedly different from those experienced on the Plains.




**MAP 7.1: Age of construction of dwellings**

**(Windshield survey 1989-90)**

| | NUMBER (n = 5573) | PERCENTAGE OF TOTAL |
|---|---|---|
| PRE 1940 | 993 | 17.82 |
| PRE 1940 REN. | 746 | 10.96 |
| 1940 - 59 | 1752 | 28.21 |
| 1960s | 1215 | 21.80 |
| 1970s | 580 | 10.41 |
| 1980 - 90s | 467 | 8.38 |

**Table 7.1** **Distribution of dwellings surveyed, by their age of construction. (Windshield survey)**

| | NUMBER OF DWELLINGS (n = 5573) | PERCENTAGE OF TOTAL |
|---|---|---|
| NO NATIVE PLANTS | 1724 | 30.93 |
| <25% ANP | 1301 | 23.34 |
| 25 - 75% ANP | 1752 | 31.44 |
| >75% ANP | 796 | 14.28 |

**Table 7.2 Proportion of Australian plants in front gardens. (Windshield survey)**

## 7.3 Distribution of Australian native plants in front gardens

For the purpose of this survey the term 'native plants' is used to denote Australian species as distinct from exotic species of overseas origin.[1]

Table 7.2 shows the relative proportions of the total dwellings in the survey sample according to the percentage of Australian native plants (ANP) identified. Initially a series of maps was drawn for each class then data were combined to produce Map 7.2 (more than 25 per cent Australian native plants present in the front garden). This category was broad, but subjectively based on the general impression of some degree of deliberate intention to cultivate Australian plants in the garden. It usually included one or two Australian trees, which in the Hills area were frequently old *Eucalyptus* spp., remnants of local native vegetation spared when new houses were built. It was considered relevant to include these as it was assumed that their retention indicated some sympathy with the natural environment, particularly when compared with other gardens where all native trees had been removed and replaced with wholly exotic species.

By comparison, the high representation (31 per cent) of gardens with no native plants, as indicated on Map 7.3, is associated with dwellings constructed in the pre 1960s period. A much higher proportion of gardens without Australian plants are located on the Plains sector of the study area than in the Hills, however a blend of both native and exotic species has emerged as a favoured pattern in plant choice.

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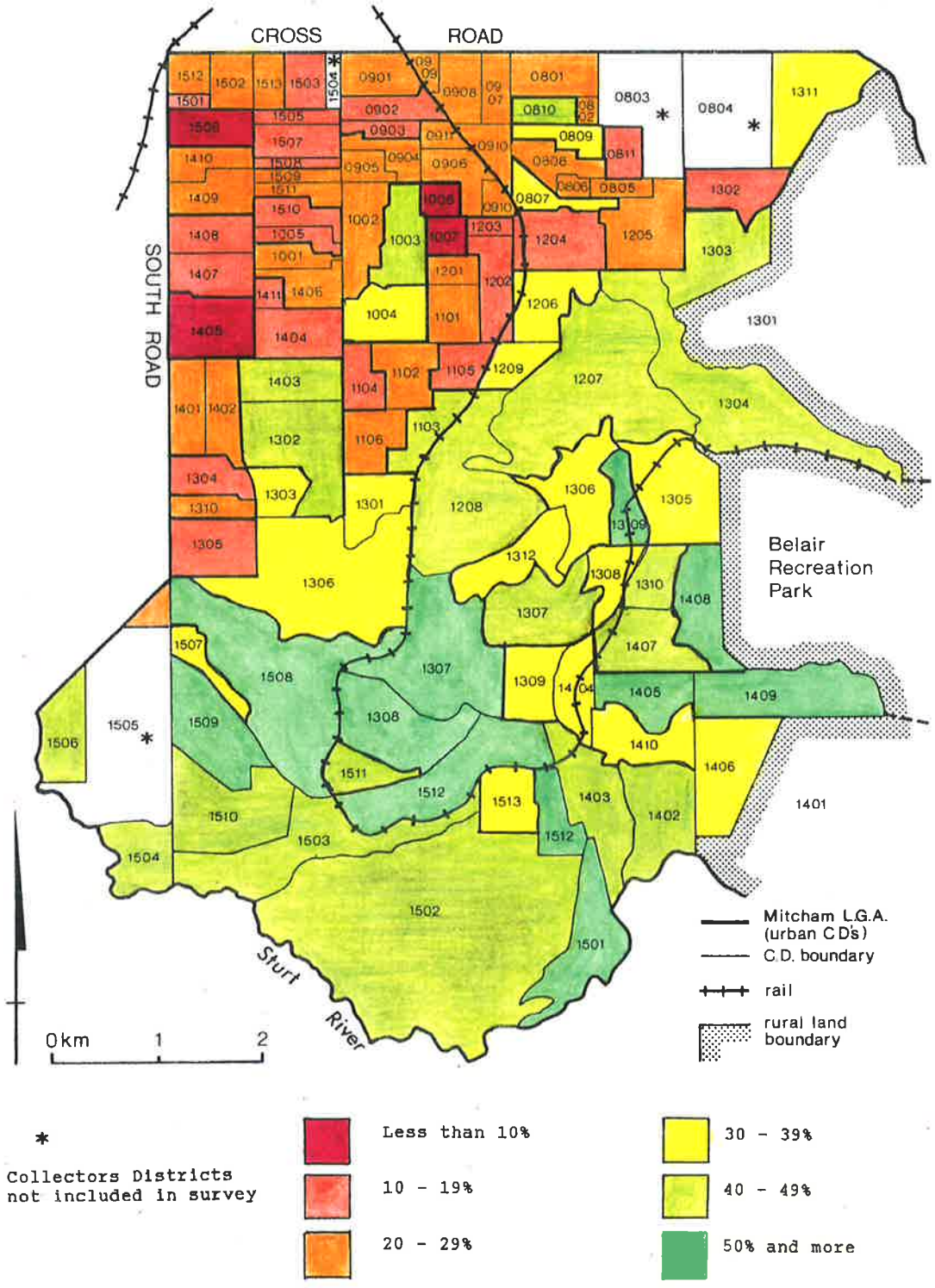
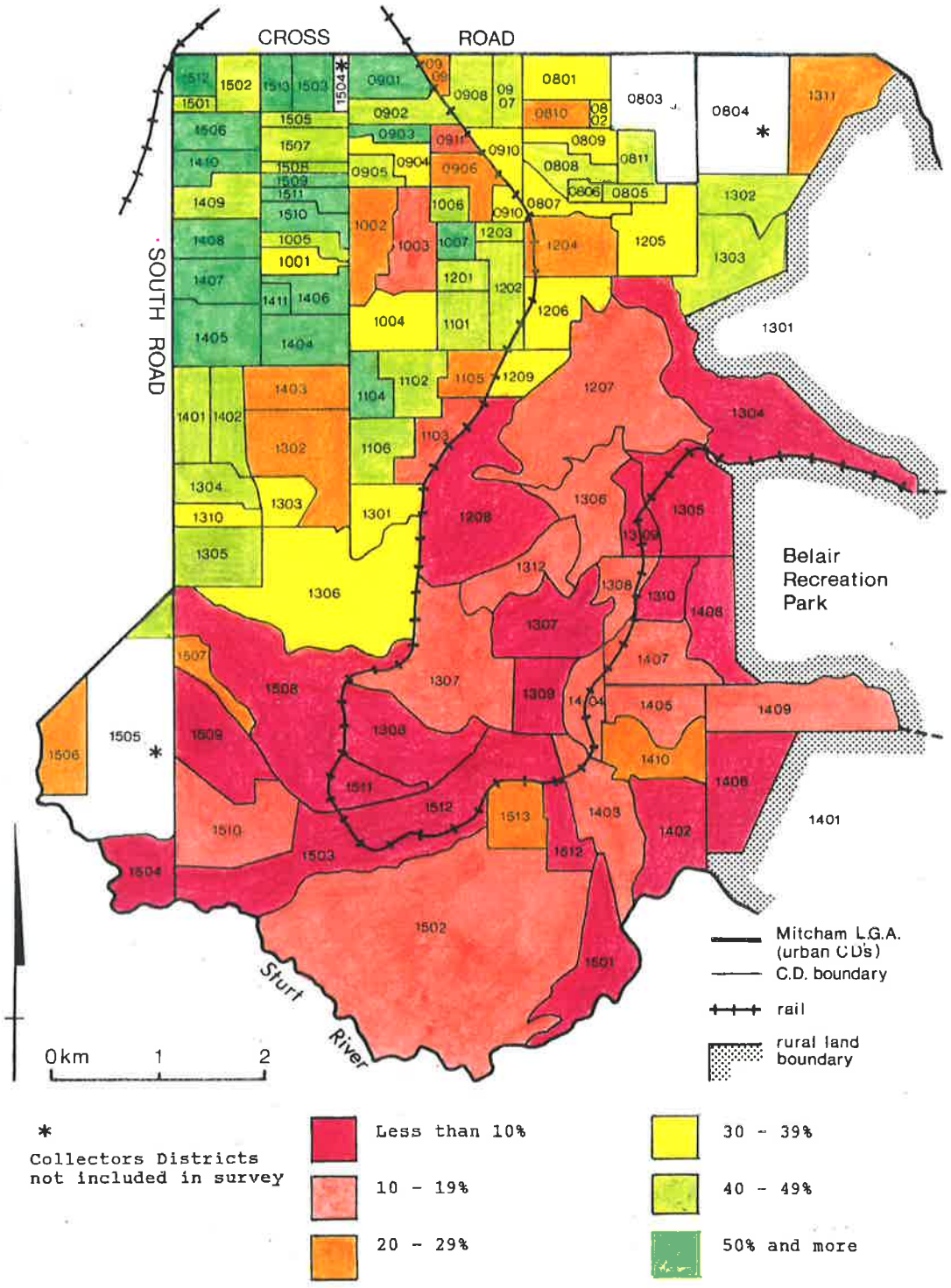
1 See Appendix F for a more detailed discussion of terminology related to Australian native plants.




**MAP 7.2: Percentage of dwellings per Collectors District with 25-75% Australian plants present in the front garden**

**(Windshield survey 1989-90)**




MAP 7.3: Dwellings with no Australian native plants by percentage of all dwellings (Windshield survey 1989-90)

Easily identified species of trees and shrubs commonly occurring include:

*Acacia baileyana* (Cootamundra wattle)

*Agonis flexuosa* (WA Willow Myrtle)

*Callistemon viminalis* (Weeping bottlebrush)

*Eucalyptus citriodora* (Lemon scented gum)

*E. ficifolia* (Flowering gum)

*Grevillea robusta* (Silky Oak) and other *Grevillea* spp

*Hymenosporum flavum* (Native Frangipanni)

*Pittosporum undulatum* (Mock Orange)

*Melaleuca armillaris* (Honey myrtle)

*Schefflera actinophylla* (Umbrella Tree)

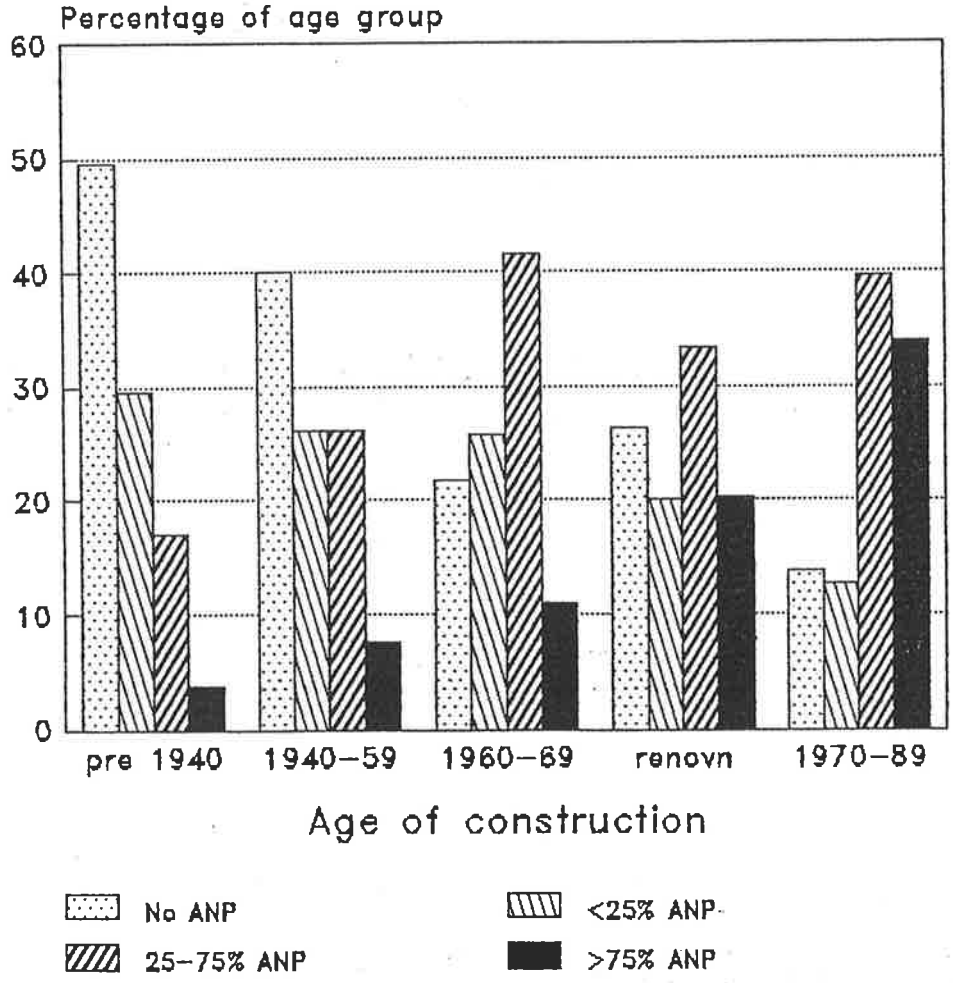
*Syzygium paniculatum* (Lilly Pilly or Brush Cherry)

Correlation of data for the cultivation of Australian native species, as a percentage of total plants, in gardens of different age dwellings is represented in Figure 7.1. The two most notable features of this graph are:

(a) the inverse relationship between the percentage of Australian plants and gardens of older houses, and

(b) the positive correlation between greater use of Australian plants in gardens of younger and renovated dwellings.

This suggests relatively limited use of Australian native plants prior to World War II, with a gradual increase during the Post War reconstruction period, and an accelerated growth from the 1960s onwards, peaking in the 1970s.




n=5573 ANP = Aust. native plants

Figure 7.1 Australian plants present in the front gardens of houses according to age of dwellings

(Source: Windshield survey)

Plates 5.1 - 5.6 and Plates 7.3 and 7.4 illustrate typical differences in garden style and dwelling ages in the suburbs of Hawthorn (Plains) and Glenalta (Hills). The slight increase in number of gardens with no native plants for restored houses may be partly explained by the fact that, due to very recent completion of construction work, there was a general lack of garden development. Additionally, many of these houses are located in the more affluent suburbs, which may account for the use of more expensive exotic plants, extensive lawns and elaborate, landscaped gardens, designed and maintained by professional landscape garden services. A local landscape designer specialising in cottage style gardens, commented that he was currently including an increasing number of smaller native shrubs in new and restored gardens. Clients had made their selection of plants such as *Eriostemon* spp, *Thryptomene* spp. and similar small flowered fragrant species, based on their showy springtime flowering effect rather than because they were Australian native shrubs.

Data support the apparent inclination towards more widespread use of Australian native plants from the 1960s, with 1970's and 1980's figures indicating a stronger tendency towards higher proportions of Australian plant material than exotic. It appears that the 'native garden' phenomenon which gathered momentum in the 1960s actually gained highest favour from 1970s onwards (Plates 7.5, 7.6). Combination of data for the periods 1970-80s suggests more pronounced moves towards the cultivation of Australian plants and does not support the waning of interest in native gardens suggested by some professional landscapers and nurserymen.

Plate 7.3 Informal style garden as bush setting for 1970s contemporary bungalow, Glenalta.

Plate 7.4 Contemporary 1980s home set in an 'all native' bush garden, Glenalta.

Plate 7.3

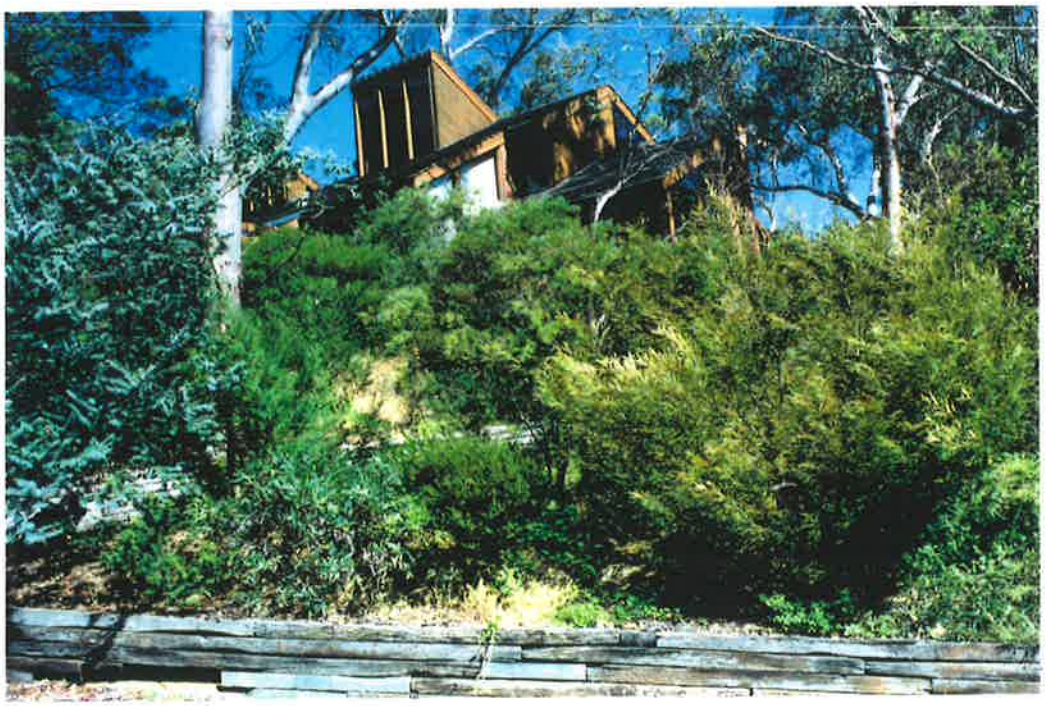


Plate 7.4

Plate 7.5 Contemporary 1970s home with a bush garden, Glenalta

Plate 7.6 Pre 1940s bungalow, Kingswood, which was redesigned with a native garden in the 1980s.

Plate 7.5

Plate 7.6

If the assumption is made that dwellings built from the 1970s onwards, or recently restored, have been occupied by the current households for up to 20 years, it is probable that the present occupants are largely responsible for the existent garden design. The ABS *Social Atlas of Adelaide* (1986 Census, p.41), indicates limited in-migration or out-migration in most of the CDs where houses are predominantly of 1970-1980s construction, reflecting a relatively stable population, in the past five year period. This has been discussed in section 5.2.

Variation in the choice of Australian species grown in the different areas probably reflects soil and climatic differences between the plains and the hills areas. On the plains those CDs displaying the highest incidence of intense use of Australian native plants coincide closely with those CDs which are undergoing rejuvenation of older homes. It may be anticipated that more 'Australian style' gardens will develop in those areas previously dominated by exotic garden species, particularly as older residents are replaced by younger household units.

By the 1980s there had been some move away from the true 'Bush garden'. Many of the species planted in the 1960s were inappropriate for small domestic allotments. Taken out of their natural habitat, well watered and fertilised in the home garden, species often developed well beyond their normal characteristics. The splendid Lemon scented gum *(E. citriodora)* can grow into a huge tree, becoming dangerous in small gardens with shedding limbs, while the widely promoted screening plant *Melaleuca armillaris,* unattractive and senescent at about twenty years of age, creates expensive problems when its roots interfere with sewerage pipes. The unfortunate selection of unsuitable species led to an

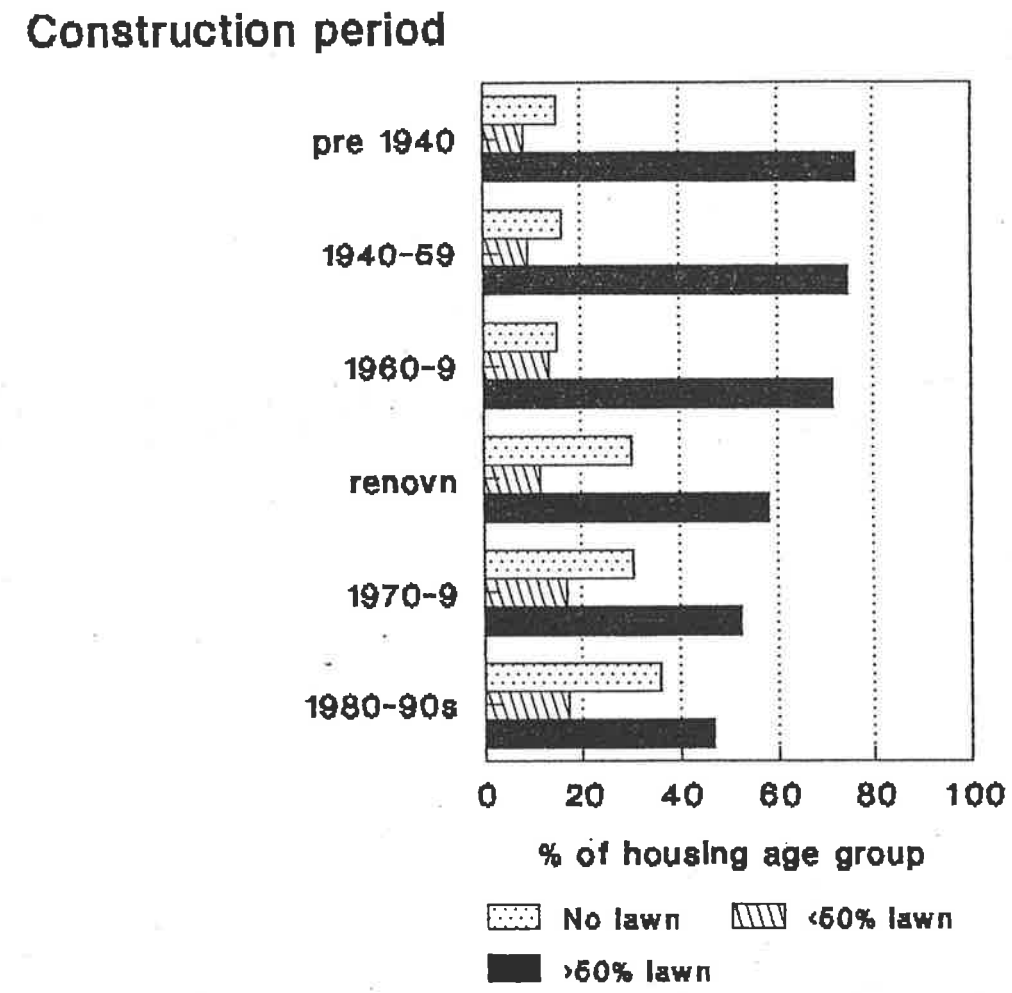
inevitable backlash against all native plants with, in some cases, the complete replacement of Australian plants by exotic species. From the 1980s enthusiasts have been attempting to re-educate the public in more careful selection of appropriate and attractive species.

## 7.4 Lawns and native plants

It was observed that the area of the front garden disposed of as lawn appeared to correspond closely with both the age of the house and the percentage of Australian native plants present. The data for Figure 7.2 reveal a direct reduction in area of lawn as the age of dwellings decreases.

The trend away from large expanses of perennial lawns has been marked since the 1960s, both in the increasing number of dwellings with no lawn and the deceasing number of newer dwellings with large (over 50 per cent) areas of lawns, but confirms that lawns are still very much part of the traditional Australian front garden, with most dwellings surveyed having some lawn present, and only 20 per cent of the sampled gardens without lawn. The Hills garden shown in Plate 7.1 was redesigned by the owners in 1991 with the complete removal of a large area of lawn after allowing the grass to die off over the previous two summers. Plate 7.7 illustrates a similar development on the Plains. In contrast Plate 7.8 shows a Glenalta (Hills) garden which has retained an extensive area of front lawn.

It is significant that those dwellings constructed in the 1970s and 1980s have




n= 5673

Figure 7.2 Area of front gardens occupied by lawn.

(Source: Windshield survey)

markedly reduced areas of lawn, when compared with older homes which suggests a changing fashion in garden styles. Additionally, it indicates a growing awareness of the limitations of South Australia's water supplies, reinforced by the reduced water allowances per household and the rapidly escalating charges for additional water used.

With greater leisure time now, and more sophisticated activities available, families have demanded a release from the constraints of maintaining lawns. The absence of lawn often coincides with the high incidence of native shrubbery and the elimination of lawn, replaced by bark and ground covers, (Plates 7.3 to 7.6). The area of lawn is generally inversely proportional to the percentage of garden disposed of as native trees and shrubs.

The comparison between gardens of the Plains and the Hills is highlighted in Map 7.4 which shows that gardens with lawns absent occur at a higher frequency in the Hills than on the Plains, while the opposite trend can be observed with gardens containing larger areas of lawn.

Prior to the end of World War II lawns were generally composed of mono-species grasses, mostly imported, such as the widespread Buffalo grass *(Stenotaphrum secundum)* first described from North America. Other species cultivated included Kikuyu grass *(Pennisetum clandestinum)* a native of East Africa, Lippia *(Phyla nodiflora)* a native of tropical and sub-tropical America, and Couch-grass *(Cynodon dactylon)* naturally occurring over most of southern Australia (Jessop, 1986).

Plate 7.7 1960s house, Hawthorn. The front lawn has been recently removed and replaced with an exotic cottage style garden.

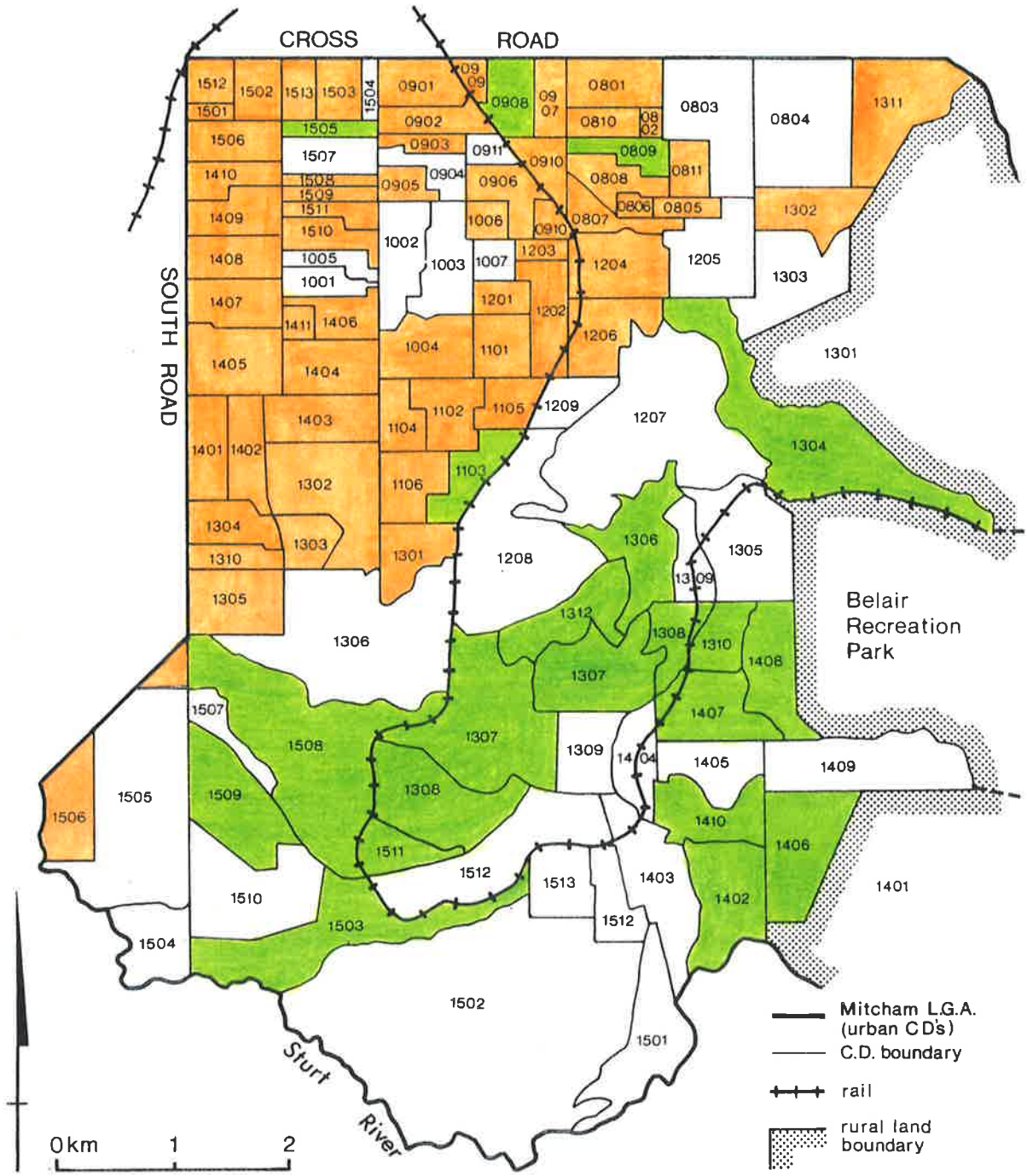
Plate 7.8 1960s conventional house, Glenalta, with perennial lawn extended to the kerb. The formal garden contains all exotic plants.

Plate 7.7

Plate 7.8

According to interviews with elderly householders, prior to 1945 suburban lawns were frequently established by exchange of rhizomes or sods of turf from friends and neighbours, or the transfer of plant material from the front lawn to the back as commonly occurred with other garden plant cuttings and layered pieces. Purchase of lawn seed was not widespread until post World War II when, in 1947, M.F. Hodge, seed merchant of Adelaide, offered four choices of lawn seed mixtures. In 1950 Munn's Lawn Co. introduced a new grass, Kentucky Blue grass *(Poa pratensis)* from America, to the Adelaide market, followed in 1956 by Salt Water Couch *(Paspalum vaginatum)* from South Africa, Tom Thumb *(Dichondra repens)* in 1972, and Santa Ana, a hybrid cultivar of *Cynodon dactylon* (couch) in 1981 (Swinbourne, 1982).

The new lawn varieties were introduced to offer perennial green lawns combining winter and summer growth species. The rising cost and increasing salinity of Adelaide's water from the River Murray in recent decades meant that the more sensitive European grasses fared poorly. The tropical grasses tended to grow rank with irrigation in summer and demanded more frequent mowing, a disadvantage in low maintenance gardens. Grasses such as the Santa Ana are relatively drought resistant and can thus survive with limited water in summer, making them attractive for those who have chosen to retain lawns. The common Couch-grass withers quickly in Adelaide's summer and has, in recent years, proved a key indicator of those gardens where water application has been reduced (Plate 7.9). Specific gardens observed over several years have tended to pass through this phase prior to the ultimate demise of the grass lawn in favour of ground covers, paved areas and mulched shrub beds.




**MAP 7.4: Percentage of front garden occupied by lawn**

**(Windshield survey 1989-90)**

There is a growing interest in cultivation and conservation of native grasses as ideally suited to the local environment. As most of these species are annual winter growing plants their use indicates acceptance of an expanse of dead dry lawn in summer. The perennial native grasses tend to be coarser and grow in a tuft habit, being more suited to landscaping features than lawn.

## 7.5 Front fences

Fences are defined as any physical barriers which mark the end of private land and the commencement of public land, or the boundary between adjoining private properties, and as such are recognised as significant, and very visual design features. Selected data on fences were included noting variation in height and materials, as well as their actual presence.

Where fences are not present may householders have extended their gardens and/or lawns as far as the roadway or kerb, (Plates 7.5, 7.8), while others have boundaries clearly delineated by the presence of footpaths, placement of rocks, sleepers or shrubs, particularly in the older Plains suburbs. The presence of absence of front fences shown on Map 7.5 closely relates to both the percentage of native plants cultivated and the age of the dwellings, as indicated in Figure 7.1. Where a large proportion of the plants present in front gardens are Australian natives (Plate 7.4), data indicate a low incidence of front fences, while both low and high fences appear more frequently in front of gardens where fewer natives are cultivated, (Plates 5.3 to 5.9). Discussion of Council regulations in section 6.4, pertaining to local streetscapes, suggests that the Mitcham Council

Plate 7.9 Seasonal front lawn, Hawthorndene, which has been allowed to die off in the drier summer months.

Plate 7.10 Austerity 1920s bungalow, in Westbourne Park. The original front fence has been removed and not replaced.

Plate 7.9

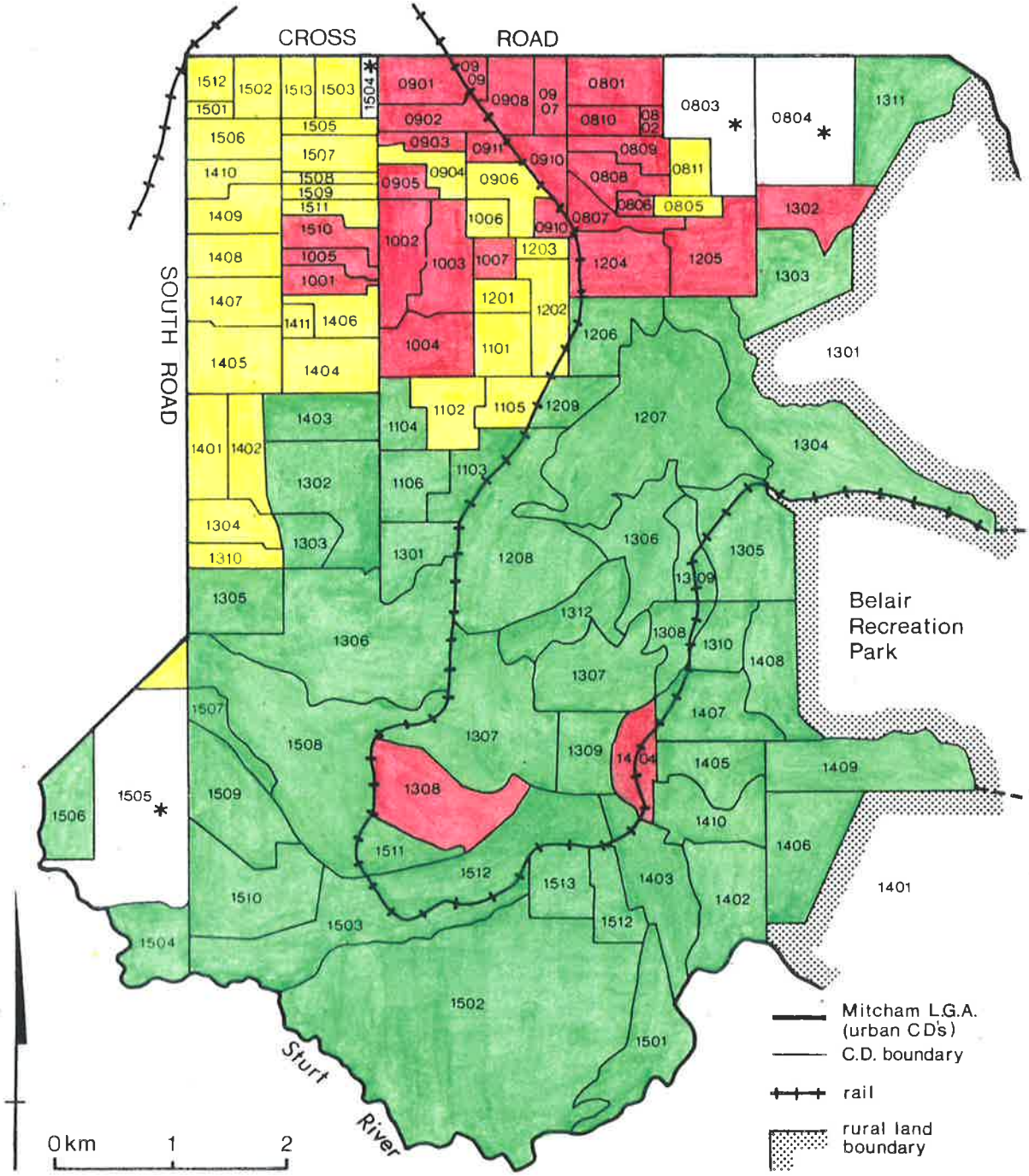
Plate 7.10

places few restrictions on householders with regard to development of the nature strip or front boundaries.

Similarly younger dwellings displayed a decreasing number of fences when compared with older dwellings. The highest fences feature most strongly where older pre 1940s houses have been extensively renovated (Plate 5.2). Traditionally a feature of pre World War II homes, front fences were usually at least one metre high, and even today the majority of houses of that period retain old style fences, constructed from wood, cyclone wire or hedges. Where restoration of these houses was not apparent and the garden style does not show significant change in style but the front fence is absent (Plate 7.10), it is probable that the old fences had fallen into a state of disrepair and were removed, but not replaced, due to the expense involved.

In the pre 1940 period the house yard, back and front, constituted the main play area for children and the front fence provided not only the boundary, or limit of freedom, but also a secure space within which very young children could play safely, away from traffic without close supervision of a parent. It is thus reasonable to assume that where older residents still occupy these houses young children will not usually be resident, thus eliminating the need for a fence.

In the immediate post war period there was a move away from high fences to low structures (Plates 5.7, 5.8), or none at all. A possible explanation for this change may be that in the austerity period building materials were scarce thus restricting the householder from building substantial fences. Also at this time




## MAP 7.5: Characteristics of front fences

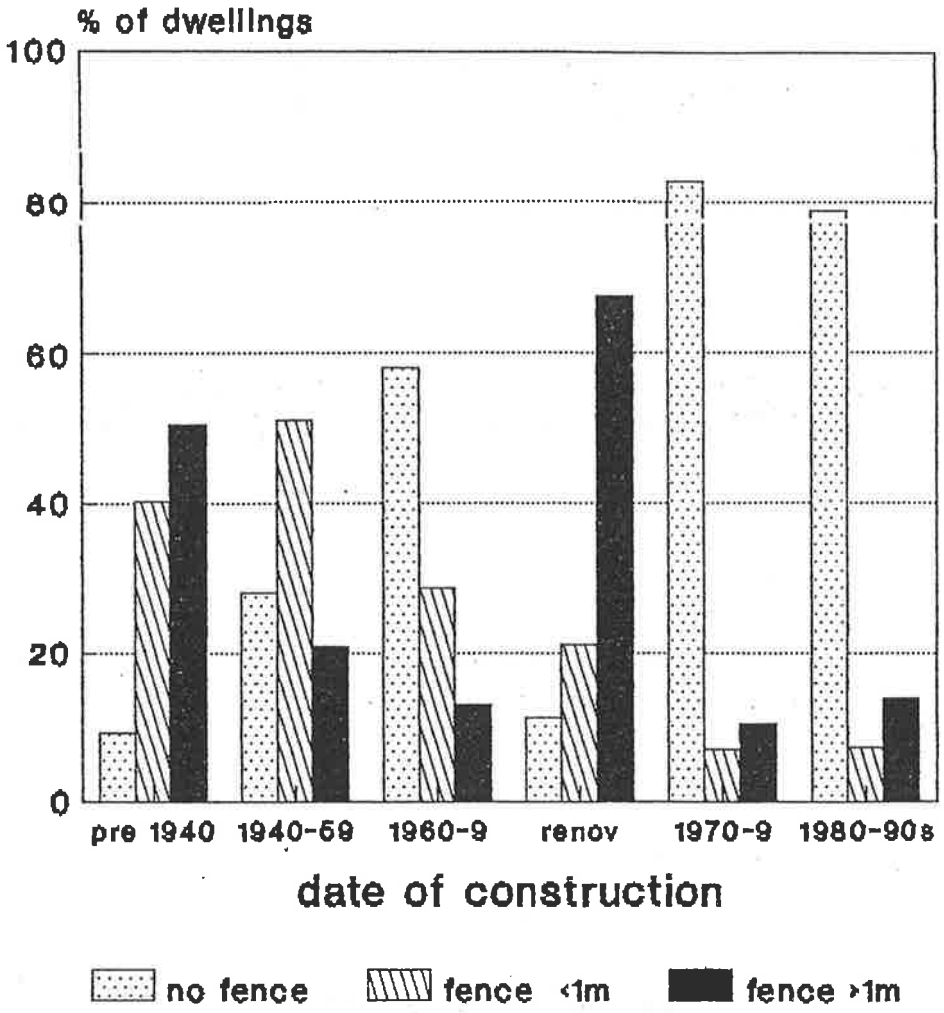
(Windshield survey 1989–90)

overseas influences in garden designs were increasingly promoted in glossy magazines, particularly from the USA. The North American home garden rarely featured fences, front or back. Fiske et al (1987) suggest that a great deal of our history of suburban living can be seen to derive from, or be paralleled by, movements in California. *(Myths of Oz,* p.50).

Fiske et al (1987) also comment that privacy, such as achieved by the construction of high fences, may be construed as something only affordable by the wealthy, thus as an expression of elitism it does not conform to the social values of middle class suburbia:

> *Property that is hidden from view fails to conform to the values of the suburban community: It is a message without a reader, an owner talking to himself (a sure sign of social deviance) or to his close friends (an equally sure one of elitism). Secrecy is the sign of elitism, the mark of a 'tall poppy' that requires the egalitarian public to cut it down.'*
>
> (p.31)

Figure 7.3 indicates that the fashion of eliminating front fences was well established by the 1960s (Plate 7.11) and reached its peak in the 1970s, however by the 1980s there was observed a gradual return to fences, often high (up to 2m), and built of solid materials such as brush (Plates 5.2, 7.7, 7.12), timber, Colorbond, and cast metal security fences, denoting as desire for greater privacy and/or defence against intruders.




n = 5573 renov = renovation

Figure 7.3 Type of front fence by age of dwelling.

(Source: Windshield survey)

## 7.6 Trees

It was observed that Australian trees were generally more commonly cultivated in gardens established after 1960. For houses built in the 1980s, and also renovated properties, the reduced number of Australian trees may be a reflection of the newness of the gardens, the criterior for recording trees being that they must have reached a minimum of two metres in height. Although many of the recent plantings contained a high percentage of Australian plants, the trees were still immature and below the designated height of two metres.

Exotic tree species were more widely cultivated in the older gardens on the Plains but were often mixed with native species in the Hills gardens to provide autumn colour. The data suggest that there has been a definite move away from all exotic gardens since the 1940s, being particularly pronounced in the 1970-80 period, with the peak occurring in the 1980s. It should be noted that many houses which have undergone restoration have maintained mature exotic species, which were present prior to restoration, while in the Hills areas many tall mature Eucalypts were present in both old and new gardens, probably remnants of the original natural vegetation.

## 7.7 'Nature Strips'

The term 'nature strip' is commonly used in South Australia to denote the space between the front boundary of private property and the kerbside. This space is variously considered by the adjoining property owners or occupants as an extension of their front garden, or an area whose maintenance is the sole responsibility of the local government.

Plate 7.11 Streetscape in Panorama, developed in the 1960-70s period, showing all gardens designed without front fences.

Plate 7.12 Streetscape in Hawthorn. Note the high brush fences, nature strip with well maintained summer lawns, and attempts to gentrify the Stobie (electricity) poles.

Plate 7.11

Plate 7.12

The presence or absence of front fences, as shown in Map 7.5 appeared significant in indicating how the householder viewed the adjacent nature strip. Where front fences were absent the householder had frequently extended the house garden to the kerbside, incorporating the nature strip in the garden design and disregarding the legal boundary (Plates 7.8, 7.11). It was observed that this pattern occurred more frequently in the newer foothills and Hills suburbs (Plates 7.4, 7.5) of the study area, as well as in small pockets within the more exclusive older districts.

For the purpose of this survey the treatment of nature strips has been classified into five categories, the percentages of dwellings represented in each class being given in Table 7.3.

| TYPE OF DEVELOPMENT | PERCENTAGE OF DWELLINGS |
|---|---|
| UNDEVELOPED | 73.1 |
| DEVELOPED WITH NATIVE PLANTS ONLY | 5.8 |
| DEVELOPED WITH EXOTIC PLANTS ONLY | 5.6 |
| DEVELOPED WITH MIXTURE OF NATIVE/EXOTIC | 4.7 |
| DEVELOPED WITH LAWN ONLY * | 10.7 |
| * in the Winter months this figure would probably increase as the natural growing season continues | |

**Table 7.3 Classification of nature strips by type of development. (Windshield survey)**

In the post World War II period through to the 1980s, there was increased development of nature strips particularly with regards to the use of lawn, although by the 1970s this had begun to decline and fell away sharply from the 1980s onwards, coinciding with a return to high front fences, for security or privacy. From this time there have also been major publicity programmes, with associated increased charges for additional use, to encourage conservation of water. Lawn nature strips have thus become largely seasonal streetscape features.

The 1960-70 houses displayed a higher incidence of exotic plants on nature strips, usually low shrubs and hardy groundcovers, such as *Geranium, Agapanthus* and *Gazania,* while the 1970-80s period houses exhibited increased cultivation of Australian natives often in conjunction with exotics (i.e. a mixture) and lawn.

In recent years there has also been an increasing level of expectation of local government involvement in environmental management, including the responsibility for streetscape maintenance.

### 7.8 'Non-gardens'

A small number of dwellings (n=68) were classified as having *no garden,* based on complete absence of maintained lawn, shrubs or annual plantings, and general neglect or deterioration of any former garden. On some occasions there were old trees present which showed no evidence of recent pruning or other maintenance, being overgrown, with dead limbs. Of these garden most were pre 1940 houses, perhaps rented, occupied by aged occupants, deceased estates or

recently sold and not yet restored by new occupants. It was observed in a number of situations that structural renovations were generally undertaken before attention was directed to establishing or re-establishing the garden.

Houses in the 1980s age, which had neither lawn nor Australian native plants, were either very recently completed houses with no gardening commenced, or with 'dry garden' rockeries on steep slopes where lawn would have been impossible to manage. Of those houses undergoing restoration, work had generally not been started on the garden.

The high percentage of dwellings recorded as having no lawn (see Map 7.4), may in part be explained by the fact that many of these were lower cost housing, with occupants on limited incomes such as aged pensioners and other welfare recipients. These dwellings were located predominantly in those CDs which are shown by the ABS *Social Atlas of Adelaide* (1986) to contain a high proportion of rental accommodation, dwellings which showed signs of general neglect and/or total lack of interest in gardening of any type. It was observed that many of these houses had large areas of dead grass in summer which appeared to have been lawn during the winter, with tenants or occupants either unwilling or unable to afford additional water costs incurred by maintaining green lawns through summer.

It was not possible to confirm or discard these suppositions until individual household interviews were completed later.

## 7.9 Conclusions

Over all, the percentage area of lawn present generally showed a strong negative association with the percentage of Australian plants present.

Over half the gardens with more than 75 per cent Australian native plants still maintain at least some lawn, but with a marked decline in large lawns. The move to smaller lawns or their complete removal was particularly significant in the houses of the 1970s and 1980s.

It also became apparent as the survey progressed that classification of lawns present or absent changed with the seasons. The survey was commenced in September, after a rather wet winter, and continued into January with extended hot dry weather. What had appeared as good lawns earlier were later obviously not being maintained, irrigation was not practised and the grass left to dry off. Seasonal winter lawns, rather than lush expanses of perennial grass have become increasingly apparent both in the Hills and on the Plains over the last few days.

In the more affluent suburbs, e.g. Springfield, Urrbrae and Glenalta, extensive lawns were generally well maintained, well watered and growing vigorously, both inside and outside the perimeters of the properties, particularly where front fences were absent and the lawn continued into the street as an extension of the front garden (see Map 7.4).

A similar observation was made of the nature strips. It seems that while the

grass was green and growing, many occupants mowed the nature strip in front of their houses, but as soon as the natural growing season passed, this practice ceased.

By the 1960s local councils were beginning to plant a wider range of Australian street trees and shrubs on plantations, or nature strip areas, as well as in local parks. During the 1960-70s most Councils operated 'tree giveaway' programmes to encourage residents to improve the amenity value of their area. This probably helped develop an awareness of the suitability of Australian plants for use in domestic cultivation, many species being still unfamiliar to the average home gardener at that time.

Although any planting on the nature strip is supposed to be undertaken only with the consent of the Council, it is doubtful whether many residents adhere closely to this by-law. Likewise, the Council is unlikely to object to any attempts by ratepayers to improve the streetscape, unless public access to footpaths is restricted by such development.

There has been recent concern shown by conservationists that some native plant species indigenous to the local area have become endangered through uncontrolled residents' development of nature strips. It has been proposed that the Council more closely police disturbance of any remnant native roadside vegetation, particularly in the Hills section of the study area.

# CHAPTER EIGHT

## RESULTS OF THE FIELD STUDIES - THE HOUSEHOLDER QUESTIONNAIRE

From the initial windshield survey and interview of customers at the Woods and Forests Nursery at Belair, certain questions emerged as significant to this research and provided the basis for formulation of the final questionnaire to be administered to selected householders.[1] Included in the householder survey schedule were questions designed to collect three main sets of information to explain observations made during earlier investigations. These sets of information are grouped as follows:

(a) socio-economic characteristics

(b) attitudes to general environmental issues

(c) garden tastes and practices.

It was hypothesised that individual garden styles were likely to be influenced by the socio-economic status of the householder and that attitudes to the

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1 See Appendix K for sample questionnaire.

environment might be reflected in their gardening practices. Simple statistical tests (Chi square) were run to identify which questions were likely to have significance to the study when related to the number of Australian plants present. As the Hills-Plains dichotomy became apparent tests were also run to select significant data which are further discussed in chapter 9. Where possible these data have been compared with ABS census data (1986) and results of the windshield survey.

This research was specifically designed to be of a qualitative nature however the collection of empirical data and analysis applying simple quantitative tests require discussion to validate the results as evidence to support the hypotheses postulated.

## 8.1 Socio-economic characteristics of the sample

Questions specifically addressing socio-economic influences were designed to provide data on:

(a) the nature of occupancy and residential mobility

(b) age and ethnicity of occupants

(c) allocation of household income on gardens

(d) occupation, income and education

Only six variables indicated any probability of being significant in a discussion of the number of native plants present in the front garden.

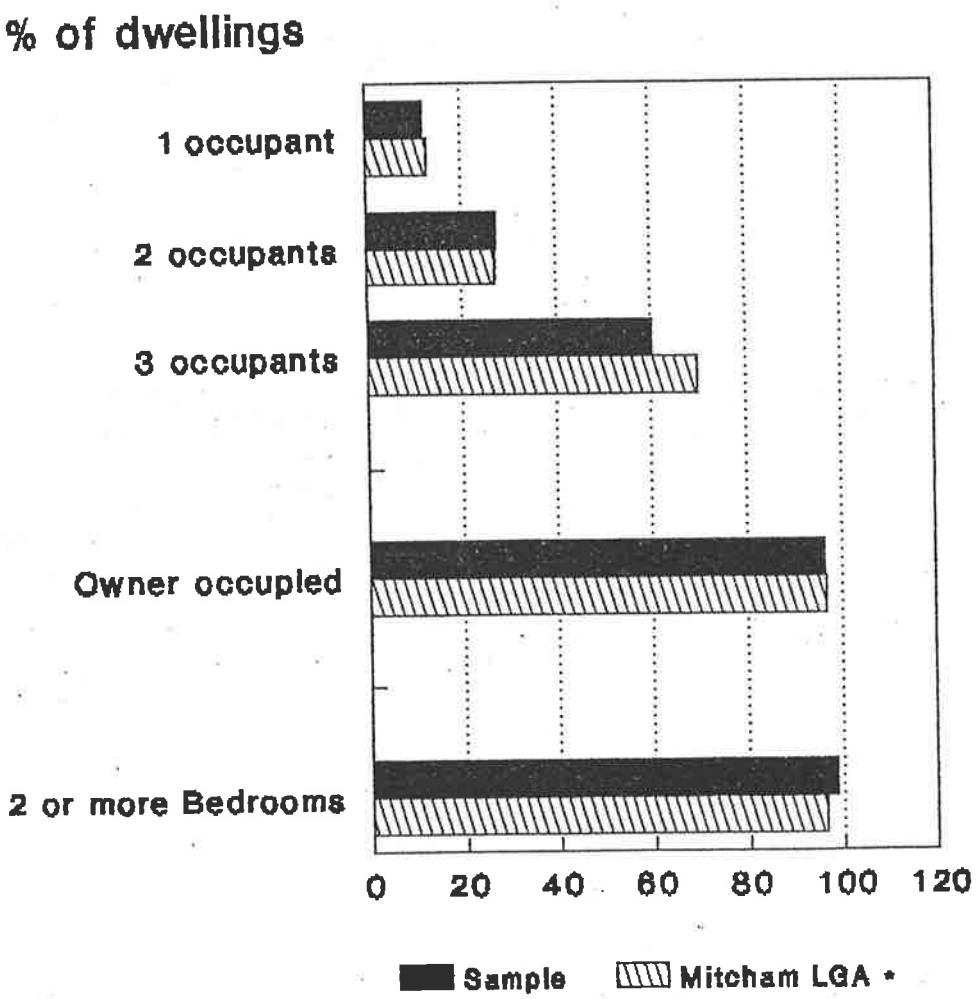
### 8.1.1. The nature of occupancy of dwellings, household composition and residential mobility

Responses suggested that the sample represented predominantly conventional nuclear families or former family households, with the house size indicating current or past occupation by parents and children. A comparison of 1986 Census data for Mitcham LGA and selected household characteristics from the interview schedule confirmed that the sample was representative of the study area with regards to the size of houses, the number of occupants and the level of ownership (See Figure 8.1).

Data from both the survey and the 1986 Census indicated relatively limited residential mobility within the study area. The survey indicated that 60.4 per cent of householders had been resident at their current address for ten years or more, with a further 18 per cent having lived previously in a different dwelling but in the same area.

Over 90 per cent of the respondents indicated that they had chosen their home simply because they liked the area, whether it was on the Plains or in the Hills. Enthusiastic gardeners have been willing to either accept any limitations of their particular physical environment or were prepared to invest time, effort and income towards achieving something beyond the natural potential of the area.

The age structure of head(s) of household (Table 8.1), indicates a middle to older age pattern prevails in the study area. One quarter (25.9%) of households had three or more adults resident, either adult children or aged relatives, while over half (55.4%) had no children aged under 18 years currently living at home.




* ABS 1986 Census Sample n = 139

Figure 8.1 Occupancy characteristics of survey sample, compared with Mitcham LGA.

(Source: Householder survey, ABS Census 1986)

| AGE GROUP | NUMBER OF HOUSEHOLDS (n = 139) | PERCENTAGE OF HOUSEHOLDS |
|---|---|---|
| 65 YEARS AND OVER | 42 | 30 |
| 40 - 64 YEARS | 67 | 48.2 |
| 18 - 39 YEARS | 30 | 21.6 |

**Table 8.1 Age structure of Heads of Households. (Household interview schedule)**

Only 38 per cent of households had a single generation living at home with most of the remainder comprised of two generations, except for two households which recorded three generations (either parent or grandchild of head of household). The majority of households (82%) had both male and female heads of households. Of the households with single heads eighteen were female, widows or single parents, compared with six male heads, mainly widowers.

These data may be used to infer that with reduced family commitments the occupants could well be in the position of having more time to devote to gardening, given the inclination and sufficient physical fitness levels. Additionally, with the financial burden of raising a young school going family somewhat relieved, more disposable household income could be directed towards gardening, if the owners so desired.

The householder survey confirmed that over 80 per cent of adult residents had been born in Australia, the only other significant country of origin being the UK.

This pattern is similar to ABS data shown in Table 5.4, taken from the 1986 Census, and suggests that a strong Anglo-Saxon cultural background is likely to have influenced attitudes towards developing domestic garden styles and practices within the study area.

### 8.1.2 Allocation of household income on garden maintenance

Householders generally found it extremely difficult to indicate precisely the time or estimated expenditure invested in their gardens however data suggest that most householders interviewed had sufficient disposable income to allocate at least some portion to the garden, a large proportion of this being the cost of additional water. The small number of rental properties (n=5) included in the survey were conspicuous by a lack of interest in gardening displayed by occupants, maintenance generally being considered the responsibility of the landlord. Of those who used regular lawn-mowing and/or garden services (23%), almost all were aged persons, unable to personally maintain gardens to former standards. The majority used no outside services, tending their gardens themselves.

To the keen gardener the cost of additional water was considered a minor expense compared with other inputs, essential to maintain the particular standard and style of garden desired. Several pensioners with extremely high water bills commented that, as gardening was their main pastime, they considered $5-10 per week for water not an unreasonable expense. Significantly, the older generation of gardeners generally still preferred the conventional water-demanding perennial green lawns and showy colourful summer annuals.

Additionally, the high cost of installation of water saving devices, offset against relatively small additional water charges, requires considerable time before any real savings can be achieved. Further discussion of time and cost is found in 8.6.3.

### 8.1.3 Occupation, employment, income and education

The survey results showed that two thirds of the households had one or more persons working full time, including those self employed. Only 2.9 per cent of households had members of the household unemployed compared with 1986 ABS Census figures for Mitcham LGA which showed 4.9 per cent of the labour force was unemployed.[2] Of households which had one or more members retired 20 per cent were not receiving aged pensions, indicating some degree of private financial independence and higher disposable household income than for the wider metropolitan community.

The most significant category of employment was professional, with over 50 per cent of heads of households and 25 per cent of partners classifying themselves in this group. There was a high representation of both partners working, with administration (33 per cent of heads of households) and trade occupations (22 per cent) featuring significantly also. Sales and clerical occupations ranked highly for partners. The eight per cent classed as 'Not Applicable' accounts for both retired and unemployed persons, while 48 per cent of households had only one partner employed.

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[2] The 1991 ABS Census data indicated that this had risen to 7.76 per cent for the Mitcham LGA, compared with the ASD of 11.68 per cent (Rudd, 1993 p.86).

Combined household income for the sample has been compared with ABS 1986 data for Mitcham LGA and the Adelaide Statistical Division in Figure 8.2. It should be noted that the survey sample excluded medium density dwellings which may have precluded lower income households including students. It should also be noted that with a two year period between the 1986 Census and collection of data for this research some variation in income would be expected, particularly in the higher bracket.[3]

An added indicator of relative affluence in the study area can be drawn from data stating that over one third of householders' children had either attended, or were still attending, private secondary schools, education obviously rating as a high priority for family expenditure. The educational level of the household was rated by the highest standard attained by parents and any children who had completed their education. Figure 8.3 further reflects an above average socio-economic level of the sample as indicated by the educational levels of parents.[4]

The sample survey results concur with the social characteristics of the population discussed in chapter 5, using data from the 1986 ABS Census, i.e. that the population of Mitcham LGA is a relatively stable group, with middle to high income levels, essentially living in owner occupied dwellings, housing family units with English speaking backgrounds.

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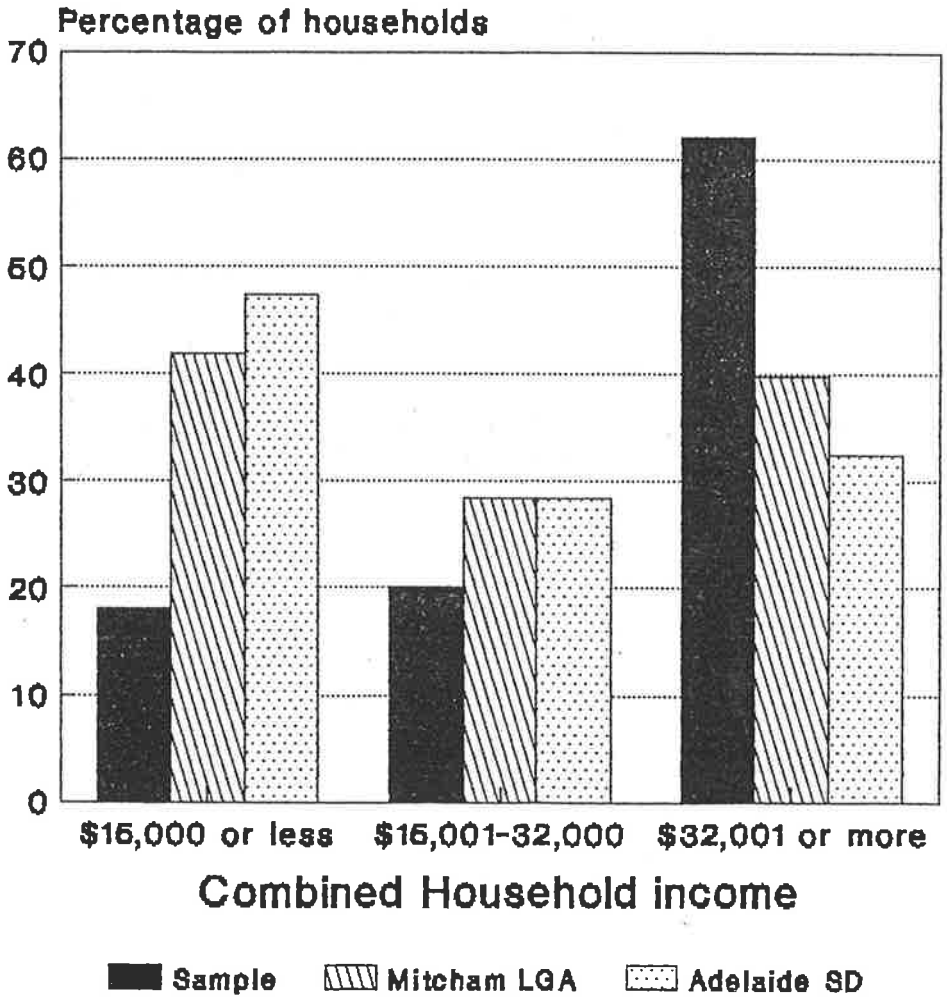
[3] The 1991 ABS Census data showed that 36.4 per cent of individual incomes for the Mitcham LGA exceeded $30,000, compared with the Adelaide SD of 21.1 per cent (Rudd, 1993 p.92).

[4] In the 1991 ABS Census 23.2 per cent of Mitcham's population had diploma qualifications or higher, compared with 12.7 per cent for the Adelaide SD (Rudd, 1993, p.70).




* = 1986 ABS Census data

Figure 8.2 Household income. Comparison of survey sample, Mitcham LGA and Adelaide Statistical Division.

(Source: Householder survey, ABS Census 1986)

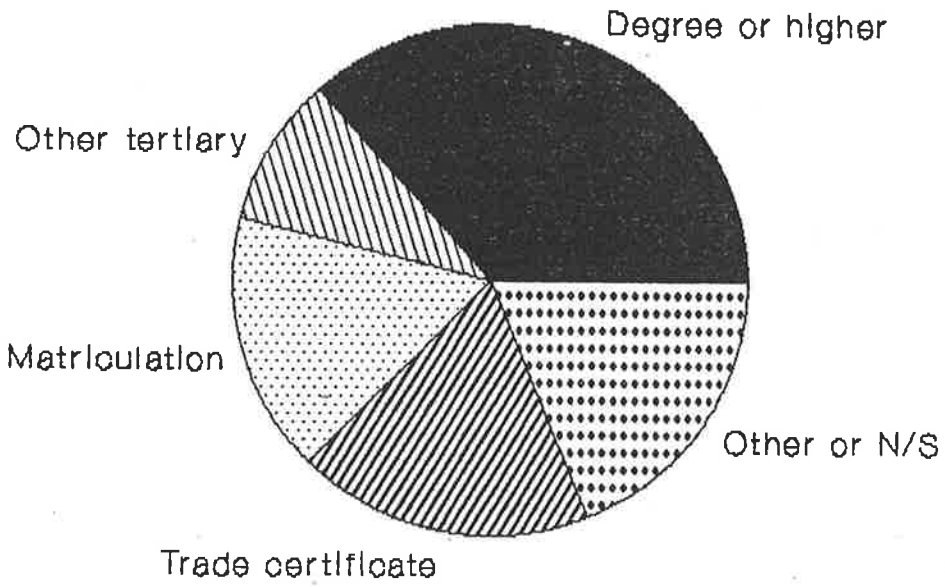
## 8.2 Attitudes to environmental issues

Specific questions were designed to ascertain general attitudes of householders to current environmental issues, particularly in relation to National Parks and their use of open space for recreational activities. Responses indicated a fairly widespread recreational use of national parks and other public open space both locally and beyond, however there was no significant link between these responses and particular garden styles.

The majority of householders interviewed had visited the Adelaide Botanical Gardens in recent years specifically to view the Bi-Centennial Conservatory. Over two thirds of the interviewees regularly visit Wittunga Botanic Gardens at Blackwood, a popular picnic and walking venue within the study area. Local Council reserves were regularly used for recreational activities by many of the surveyed households. A large proportion (83.6%) had visited Belair and other National Parks and Conservation Parks in South Australia during the past five years.

As many householders had difficulty recognising whether tree species commonly grown in Adelaide gardens were native to Australia or exotic the interviewer personally appraised the garden and recorded the response to Qu 56 as an observation. Very few gardens completely lacked trees while most gardens had at least some native species, even if immature, i.e. below two metres in height. The distribution of trees is shown in Figure 8.4.

Although the focus of this study was the front garden any overview of changing




n = 139

Figure 8.3 Level of education of heads of households.

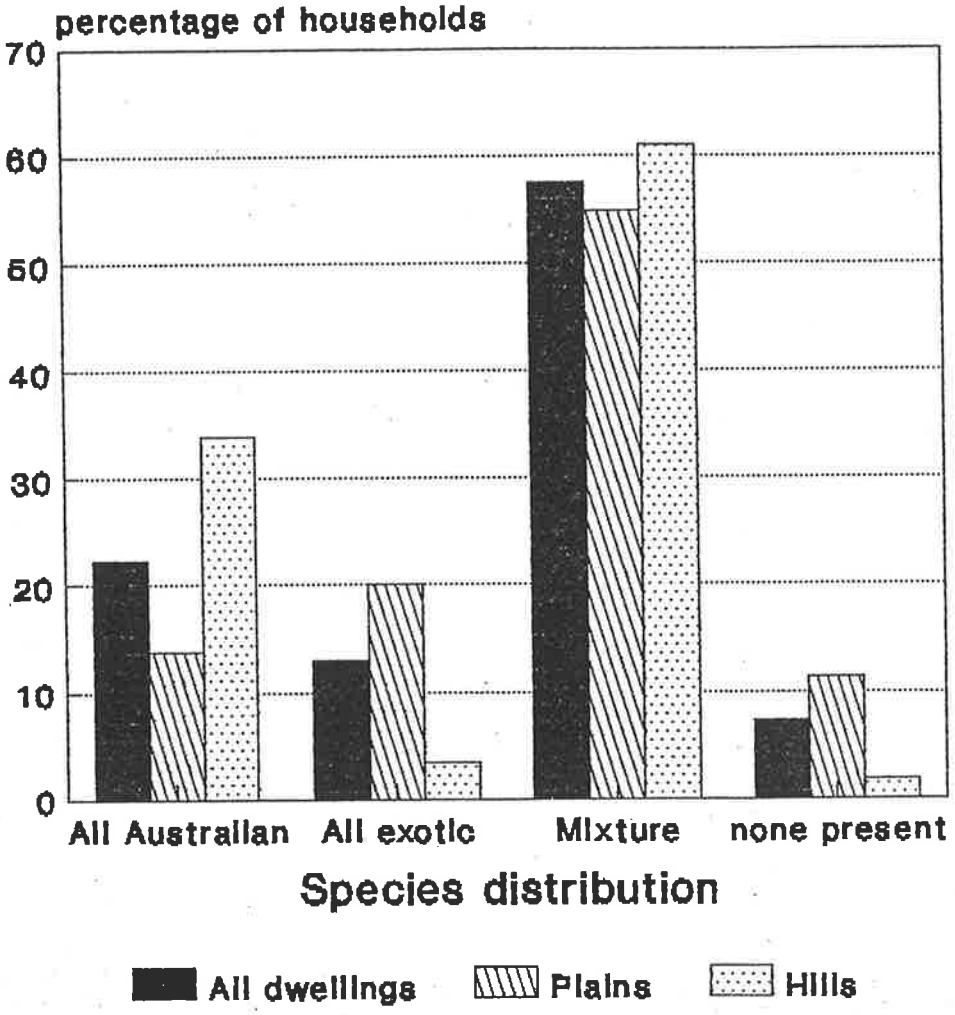
(Source: Householder survey)

attitudes to gardens cannot overlook the change in use of back yards over recent decades. From the former strictly utilitarian economic value the backyard has become the back garden, a 'room outdoors' with aesthetics an important design feature, landscaped around the patio, barbecue and shaded area. Mediterranean fruit trees, well suited to Adelaide's climate, thrive in almost every suburban backyard. Other features likely to be present in backyards indicating individual levels of environmental concern included incinerators, rainwater tanks and compost.

At the time of interviews Mitcham Council was one of the few suburban councils which still allowed burning of household refuse on private property, albeit with certain restrictions as to times and types of material permissible. The survey results indicated a growing concern for air pollution, with very few respondents actually still using their incinerators.

Almost one fifth of surveyed householders had rain gauges, regularly keeping rainfall records, both as a guide for watering the garden and simply for interest. A separate survey referred to in chapter 5 located over 100 households in the Mitcham LGA which kept rainfall records, some extending over long periods.

In spite of Adelaide's dry summer less than two thirds of households had rainwater tanks, this water being used largely for washing clothes, or watering ferns and other salt sensitive plants. Only a few respondents indicated that they used rainwater for human consumption which was surprising considering the generally vocal concern for Adelaide's poor water qualities of taste, clarity and the quantity of chemicals used to ensure safe levels of potability.




n = 139

Figure 8.4 Distribution of Australian and exotic tree species in front gardens.

(Source: Householder survey)

Two thirds of households saved food scraps, garden prunings and grass cuttings to make compost in bins, heaps or trenched pits, indicating a renewed and growing interest in both waste recycling and organic (low chemical) gardening.

## 8.3 Front garden design features

A series of questions was designed to determine:

(a) the styles of garden represented in the area

(b) attitudes of householders to the cultivation of Australian native plants as opposed to exotic species

(c) specific garden practices with regard to use of water and nutrients, and

(d) reasons for changing garden styles and practices.

### 8.3.1 Lawns

Lawns have traditionally been accepted as a major component of Australian front gardens. This design feature was introduced by early settlers from England with its cooler, more humid climate, in an attempt to recreate a familiar landscape in the strange and seemingly harsh new country. Early this century suburban Adelaide, by then securely supplied with reticulated water, boasted neatly maintained front gardens. Lawns had become the hallmark of conservative suburban respectability or, perhaps as in North America, a taming of the wild frontier (Hech, 1975).

In the 1960s, when front fences were largely dispensed with, the front lawn often merged with the 'nature strip' to produce a continuous swathe of manicured grass from the front of the house to the kerbside. Observation of front gardens suggests that this convention may now be changing. The link between front fences and nature strips has been discussed earlier in Chapter 7.

Reduced areas are being set aside for lawns and a significant number of households had dispensed with them entirely. Less than half the gardens surveyed had more than 50 per cent of the space between the house and the front boundary occupied by lawn. These results varied from the findings of the initial windshield survey which revealed a much higher proportion of gardens (67%) with more than fifty per cent lawn. This anomaly may in part be accounted for by time elapsed between the two surveys allowing for seasonal changes, some variation in garden practices, and occupants of the new dwellings having developed gardens. The discrepancy may have been compounded by a difference in methods of sample selection for the two surveys, and the actual size of the samples.

Until the 1960s the two main varieties of perennial grasses suitable for lawns and widely used were Lippia *(Phyla nodiflora)* and Buffalo grass *(Stenotaphrum secundum)* which required limited application of water in summer to survive. Lippia created problems as its prolific flowering attracted bees making it hazardous in play areas for young children. Buffalo grass was extremely coarse and unpleasant, if durable, as a surface for playgrounds. In more recent years there has been widespread adoption of Saltwater couch *(Paspalum vaginatum)* and Santa Ana *(Cynodon dactylon cv)*, newer varieties which can withstand reduced irrigation and

tolerate the increasing salt levels of Adelaide's water.

The windshield survey, chapter 7 identified a growing acceptance of lawns as seasonal garden features. Clovers *(Trifolium* spp) and couch, as well as the native grasses now gaining favour, form excellent winter grasses thriving on the natural winter rains, the ephemerals setting seed in late spring, or becoming dormant during the hot dry months. This practical approach indicates that a lush green lawn may no longer be the essential hallmark of acceptable garden standards. Indeed the perpetuation of such features in the more affluent Australian suburbs may in time come to be regarded as resource wastage, even profligate environmental extravagance. Public opinion is already questioning the extensive use of irrigation in Adelaide's parks and gardens, in a city with limited water storage capacity and ever rising costs of providing reticulated supplies.

Almost one third (32%) of householders indicated that the had significantly reduced the area of their front lawn or completely removed it over the previous five years, marking a definite change in attitudes to lawns. Of the 14 per cent who had actually increased the size of their lawns, some were newly established gardens while others belonged to elderly people seeking lower maintenance styles which could be kept in order by lawn mowing and home garden services.

The main reasons why people had reduced the size of their lawns included over 20 per cent of the sample confirming that water costs were influencing their garden practices. 10 per cent had moved to smaller lawns as maintenance reduction with a further 27 per cent having changed the style of their gardens i.e.

had increased the area of shrubs and ground covers, or were developing cottage style gardens.

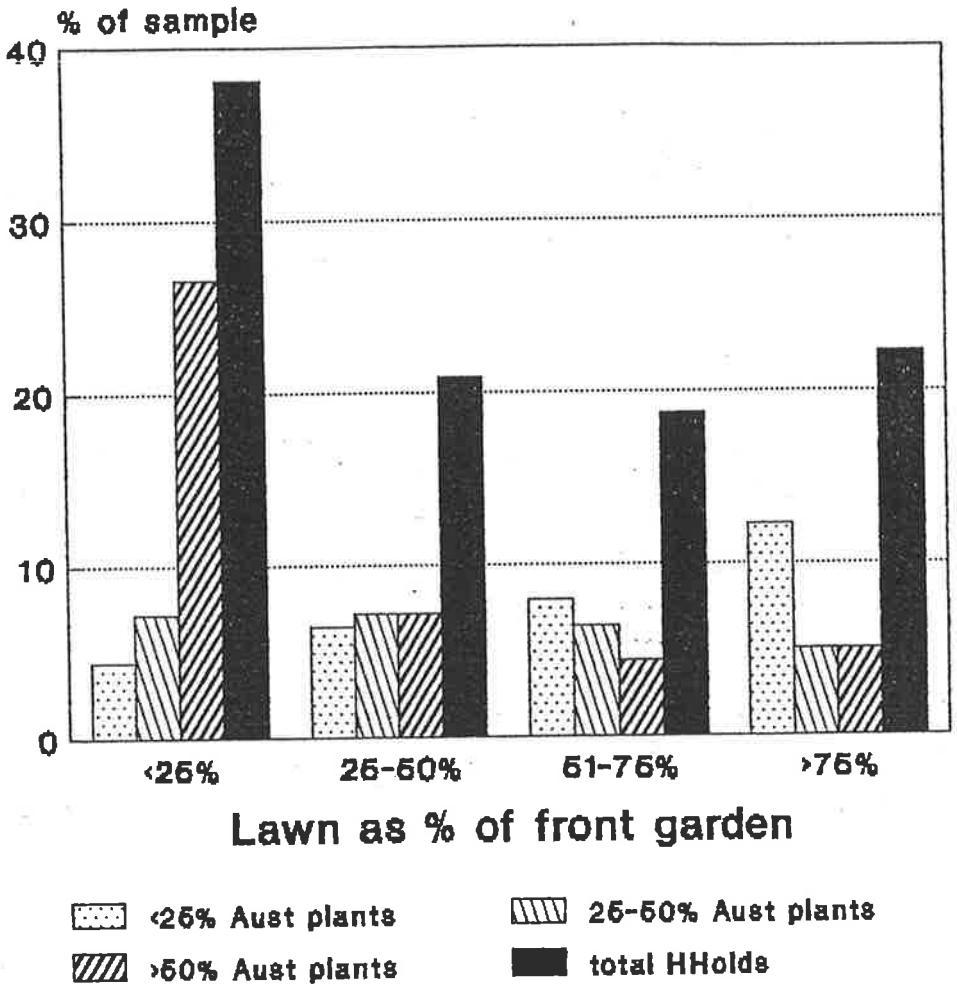
The Chi square test identified a strong relationship between the area of lawn and the percentage of Australian plants cultivated, as represented in Figure 8.5. Gardens with large areas of front lawn contained relatively small numbers of Australian plants while those gardens displaying high proportion of Australian plants were associated with smaller areas of lawn. These results supported observations made during the windshield survey.

### 8.3.2 Front fences

The fence has throughout the history of gardens been a statement declaring the boundary of one's territory, a demarcation between private and public space, and a defence against external elements both physical and psychological.

Section 7.4 contains a discussion of observations made during the windshield survey, relating front fence type to both the age of dwellings (see Figure 7.3) and the percentage of Australian plants. These observations were reinforced by data collected during householder interviews.

The survey results showed that a little over half the dwellings sampled had no front fences (refer to Map 7.5), and of these 80 per cent had more than 25 per cent Australian native plants. Although this was most obvious in the suburbs where properties had been developed almost exclusively after the 1960s, some




n = 139

Figure 8.5 Area of front gardens occupied by lawn, compared with the percentage of Australian native plants present.

(Source: Householder survey)

homes in older suburbs undergoing renewal had also dispensed with the front fence. In some subdivisions, actual encumbrances have been placed on titles prohibiting the erection of front fences.

In many parts of the Hills sector of the study area the land slopes steeply from the boundary to the dwellings (see Plate 7.4), and construction of fences would be impractical as well as out of sympathy with the natural spirit, the *genius loci,* of the local environment. The absence of front fences as a North American design influence has been discussed in section 3.1.5.

It was found that low to medium height (under 1m.) fences were generally associated with houses constructed in the period from the late 1930s to the mid 1950s, partly as a fashion which deliberately displayed the house, and partly as a response to shortages of labour and materials during World War II and the post war reconstruction *Austerity* period. Metal and masonry, or a combination of these, were the most common types of fencing material featuring on 40 per cent of the properties. Under 10 per cent of houses had fences constructed from vegetative material which includes wood, brush *(Leptosperum* spp) and living hedges.

It was anticipated that an increasing incidence of housebreaking may have influenced the style and nature of front gardens but no conclusive data emerged to support this. A spokesperson from the South Australian Police Department suggested that fences worked both to deter and facilitate burglars, depending on the structural material, e.g. trees and dense shrubs which could provide screening from the street. As housebreaking reports were confined to time of day and method of entry, the police could offer no data relevant

to gardens, nor was it possible to obtain statistical support for the spokesperson's personal opinion.

Of the survey sample 32.5 per cent of the dwellings had been subjected to forced entry but responses did not indicate that the style or layout of the gardens had been altered as a result, rather alternate methods of protection had been taken including installation of alarm systems, improved door and window security, and the acquisition of dogs. Views were mixed as to whether front fences were advantageous or disadvantageous as far as home security was concerned.

Change in the definition of the front boundary frequently coincided with a change of ownership. In the older established suburbs most streets contain a mixture of fencing types, some the original or replica style, others in forms anachronistic with the period of construction of the dwelling. Some residents occupying older homes had removed the front fence in the 1960s and 1970s, in keeping with the fashion of the day (Plate 7.10). Others had dismantled derelict fences but not replaced them for practical reasons such as the high cost of replacement.

### 8.3.3 Garden styles

Deciding on a system of classification of gardens was not straightforward as many gardens contained elements common to several styles, while other gardens were found to be eclectic in form and content. Halkett (1975) established a classification of *plain* and *elaborate* gardens but as his system was inappropriate for this present research where the accent has been placed on the use of specific

plant materials and the division of style into conventional and innovative layouts, the following six categories were adopted, Table 8.2 showing their relative representation within the sample.

| GARDEN STYLE | NUMBER OF HOUSEHOLDS ( n = 139 ) | PERCENTAGE OF HOUSEHOLDS |
|---|---|---|
| Conventional with ANP* | 57 | 41.0 |
| Conventional without ANP | 40 | 28.8 |
| Bush garden with ANP | 24 | 17.4 |
| Cottage garden with ANP | 12 | 8.6 |
| Cottage garden all exotic | 4 | 2.8 |
| Garden not established | 2 | 1.4 |

**Table 8.2** **A classification of front garden styles. (Household interview schedule)**
*** ANP = Australian Native Plants**

70 per cent of all gardens were classified as *conventional,* a general form which includes some lawn, non planted areas (driveway, paths etc), trees and/or shrubs and some flowering seasonal/annual plants (Plates 5.1 to 5.8).

The *bush garden* and true *cottage gardens* lacked lawns, the differentiation being based on the species of plants (Plates 7.3 to 7.6). *Bush gardens* were predominantly planted with trees, shrubs and groundcovers of Australian origin, while *cottage gardens* usually comprised paved or gravel paths between beds of annual flowers, small perennial shrubs and flowering herbs such as lavender (Plates 7.1, 7.2).

Most garden styles have developed over time reflecting the taste, skills and preferences of the occupants. Very few interviewees had sought the assistance of professional landscaper services in the design and structure of their gardens, nor in the general maintenance.

Almost three quarters (73.4%) of the gardens were mature established plantings while 18 per cent were relatively recent, surrounding either new dwellings or older houses renovated by new owners. The remainder were either totally undeveloped, neglected or senescent.

Just over half (54%) the gardens had informal layouts, either contrived to effect a natural appearance, or having been developed *ad hoc* without apparent overall planning. The remaining 46 per cent were more formally designed, disposed of as well kept lawn, ordered beds of flowering plants, rows of rose bushes or carefully pruned shrubs and symmetrical paths.

The most common type of paving for driveways and paths was concrete, particularly for those dwellings built in the 1950-60s period. Quartzite or dolomite gravel was also quite widely used for driveways, both for the older style homes on the Plains and for some of the newer homes in the Hills. A small percentage of the newer dwellings in the foothills and the older Plains homes had brick paving or slate, while the remainder had earth only or a combination of two or more of the above paving types.

Most gardens had some form of ornamentation such as water, rocks, or statues,

often with a combination of more than one (Plates 8.1, 8.2). Almost half the gardens had some type of water feature including ponds, bird baths, fountains or waterfalls but excluding swimming pools which were generally located in backyards. Some form of garden structure, such as arbours, arches, trellises, gazebos, shade houses and/or pergolas, ironwork and permanent garden or outdoors furniture, was common to the majority of dwellings (Plates 8.3, 8.4).

## 8.4 Attitudes of householders to the cultivation of Australian native plants relative to exotic species

A series of questions was designed to establish how householders perceived the place and relative importance of native plants in their gardens, compared with the cultivation of exotic species.

One of the major problems encountered in collecting this data was that many householders were unable to differentiate between Australian and exotic species. Even quite experienced gardeners were surprised to learn that many trees and shrubs, notably the *Jacaranda mimosaefolia* and Peppercorn *(Schinus molle)*, both indigenous to South America but commonly grown in Adelaide gardens, were originally introduced to this country by Europeans. A typical comment made was, *'If they are growing in Australia, doesn't that make them Australian?'*

Only a small percentage (12.2%) of gardens had no native plants present. Many gardens already had native trees present when the current owners purchased their properties, with other additional trees planted later. The majority of gardeners indicated a more recent preference towards the planting of shrubs and

Plate 8.1 Fountain with a statue as garden ornamentation. 1990s restoration of a 1920-30s Californian bungalow, in Westbourne Park.

Plate 8.2 Oriental stone lantern, used as an ornament in an old Blackwood garden, was purchased after the owners had returned from a visit to Japan.

Plate 8.1

Plate 8.2

Plate 8.3 Torrens Park front garden, decorated with wrought iron and an old wheelbarrow, containing annual flowers.

Plate 8.4 'The room outside', with a brick paved patio, pergola and outdoor furniture, Hawthorndene.

Plate 8.3

Plate 8.4

groundcovers, perhaps learning lessons from past experiences with overgrown tree species unsuited to small suburban gardens.

In relation to future garden plans, the majority (59%) of interviewees indicated quite strongly that they intended to plant more native plants, as well as replacing any that died, while the remainder had no plans to plant more, either because they disliked them or because their gardens were already fully developed.

When questioned about the removal of Australian native plants, most of those who had removed Australian native plants from their gardens had done so for practical reasons, e.g. the trees had died, grown too big, caused allergies or the family needed the space for a pool or house extensions. Others had been removed because the householder found them unattractive or had replaced them with other preferred species.

The most significant period when householders first planted Australian natives was the 1970-1980s (see Figure 8.6). This pattern appeared much the same for both the Hills and the Plains with a slightly higher number in the Hills in the 1980s period, a time when many new dwellings were being constructed in this area. This graph also highlights the greater number of Plains gardens which lack native plants.

When asked where native plants had been purchased, more than one third (34.4%) stated that they had bought them from the Woods and Forests Nursery at Belair. The remainder had obtained plants from various sources such as other local

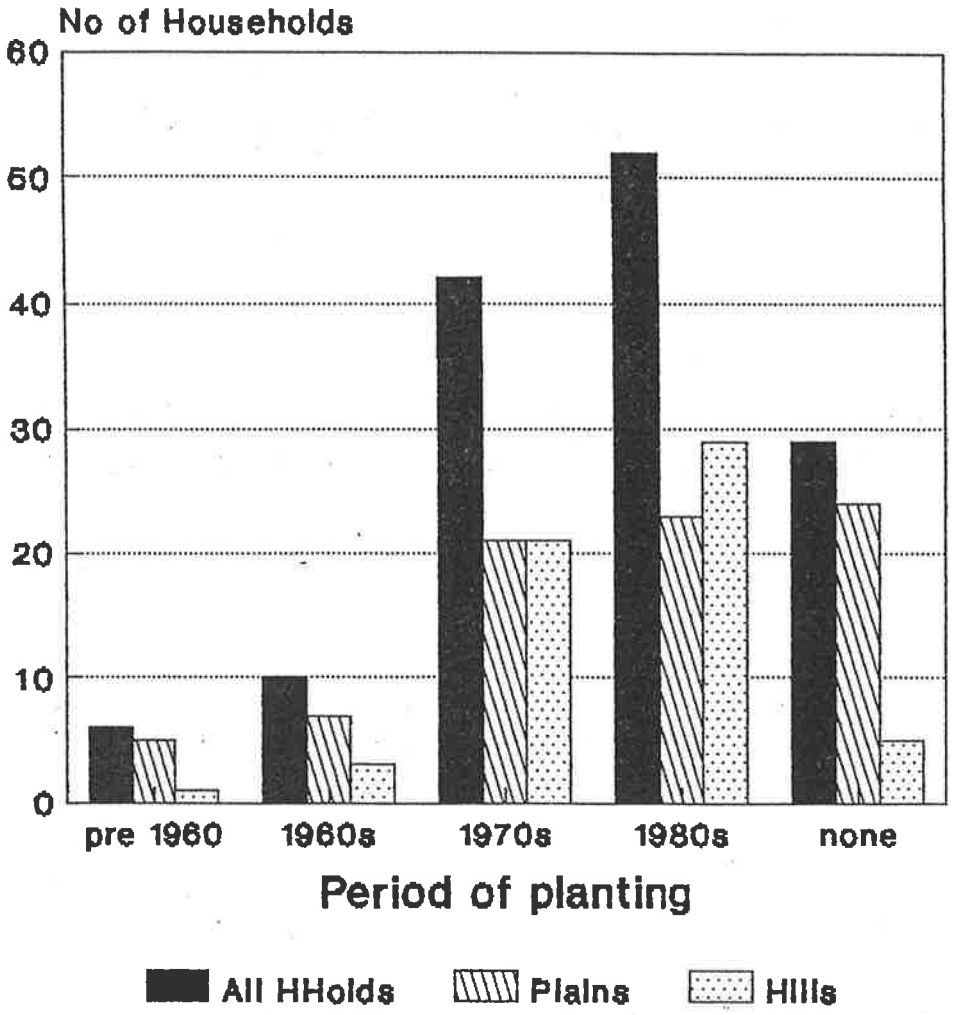



Figure 8.6 Period during which Australian native plants were first planted.

(Source: Householder survey)

nurseries, the Society for Growing Australian Plants (SGAP) native plant sales, supermarkets, friends and neighbours, while a few had propagated plants themselves from seeds or cuttings. The most common reason given for choice of native plants was practical, i.e. the perception that they survive better than exotics, use less water, require less maintenance and suit the soil and climate. Many householders stated that they had purchased Australian native plants for environmental reasons, such as to attract birds to the garden or because they judged them as appropriate for the area. This was particularly so in the Hills where people felt that native plants were more in harmony with the prevailing bush atmosphere.

Responses were mixed when interviewees were asked how they had made specific selections of plants. Professional advice included information given by staff at nurseries and the Botanic Gardens, or gardening courses such as those offered by the Workers Educational Association (WEA) and TAFE Colleges. Some householders had sought advice from landscape gardeners or had depended on these professionals to select suitable plants when establishing a new garden. Others used books and magazines for ideas, with only a few acknowledging radio and television programmes as a source of ideas on species selection.

Personal experience included duplication of plants which had been successfully cultivated in their own gardens or had been observed in gardens of friends, neighbours and other local gardens. Spontaneous choice included chance purchases from displays at supermarkets and street stalls, or purchase of another plant from a nursery when the particularly species desired was not available at that time.

The household survey has suggested that books and availability of plant material probably have the greatest influence on what people actually grow. However, as these aspects have been difficult to assess quantitatively, the discussion following is more of a qualitative nature.

## 8.5 Specific functions of the external environments of dwellings

Much has been written about the functions of gardens, particularly those attached to private dwellings, whether the grand and gracious stately homes or the modest suburban house on a quarter acre block.

In his survey of metropolitan Adelaide, the use and design of residential gardens, Halkett (1975) concluded that the role of the private gardens was of considerable importance to individuals and must not be underestimated in future urban planning. Halkett (1975, p.177) stated that the residential garden is one of the three main elements of the suburban landscape, the others being the dwellings and the streetscape or public domain.

This present research identified that few households ever used their *front gardens* for outdoor living, most regularly use their *backyards* throughout the year, weather permitting, whilst others used backyards only occasionally for social and recreational activities. A small group never use any outside areas, back or front, although some older respondents indicated that the outside area had been in frequent use when their families were still living at home. The slightly higher proportion of Hills dwellers who use their front gardens may be explained by the

more innovative orientation of houses on irregular shaped blocks, designed to maximise views and solar aspect in winter rather than conventionally sited to face the street. Topographic features have further influenced homes in the Hills to develop gardens at the side rather than the front or back.

## 8.6 Garden practices - time, water, cost, nutrients

### 8.6.1 Composting and mulching

A relatively high number of households made compost by various methods. The older age group followed the trenching method, while the younger people had commercially manufactured composting bins. Some quite innovative methods of mulching were demonstrated using a variety of recycled materials such as old Super-phosphate bags, oil drums and newspaper. Garbage bags were utilised and a number of respondents had mechanical mulchers for weeds and prunings which were then added to household food scraps. Fallen leaves and lawn cuttings were salvaged, although often these were placed directly on to the garden as mulch.

Compost making did not appear limited to any specific groups, either by age, occupation, income, suburban location, environmental awareness or additional water use. Probably the only trend which was apparent suggested that the more enthusiastic gardeners were more likely to make compost than other non-gardeners, which suggests that enthusiastic gardeners also cut across all these groups.

### 8.6.2 Household gardener and time spent

Questions were included in the questionnaire to assess the amount of time and income allocated to garden maintenance, and to determine forms of garden practices generally employed. For almost half (42.4%) the households gardening was a joint activity of both partners. Generally the females assumed responsibility for the garden design and plant selection, the general weeding and lighter tasks, while the males did the heavier manual labour, lawn maintenance, digging and carrying.

Where gardening was the sole responsibility of one member of the household, in 53.5 per cent of cases this activity was carried out by females compared with 46.6 per cent males. These categories included those households where there was only one head of house, which reflects a slight higher proportion of single women - widows, divorced/separated, and supporting mothers.

Gardening still remains a significant leisure and recreational activity with over half the respondents indicating that they spent as much time as possible in their gardens, and genuinely seemed to enjoy this activity, which supports claims of the therapeutic and psychological benefits of this activity (Kaplan, 1973). Gardeners generally found it difficult to quantify the number of hours per week devoted to gardening[5], and answered this question in the general way, such as:

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[5] Halkett (1975, p.93) found that 79 per cent of householders worked in their gardens at least once a week, 20 per cent daily.

(a) as little as possible

(b) as much as necessary

(c) as much as possible

These responses gave some indication of the priority given to gardening as a proportion of time available for leisure activities, which was generally reinforced in the observed style and state of gardens[6]. The most carefully tended gardens were managed by retired or non-working household members, or weekend hobby gardeners who had few other outside interests to make demands on their time. Of those who spent very little time in the garden, five were living in the rental properties, while the remaining two properties were owned by business couples who employed a garden service claiming no time was available to work in the garden themselves.

### 8.6.3 Cost of gardening

Again householders found it difficult to place an accurate figure spent on their gardens. Most running costs were generally incorporated into normal household expenditure with only major works such as recent establishment of a new lawn, paving or irrigation system likely to be noted as specific garden costs. The average cost of gardening as stated by the amount of income spent per household on maintaining the garden was between $100 and $200, including excess water charges, garden services, purchase of plants, fertilisers, pesticides,

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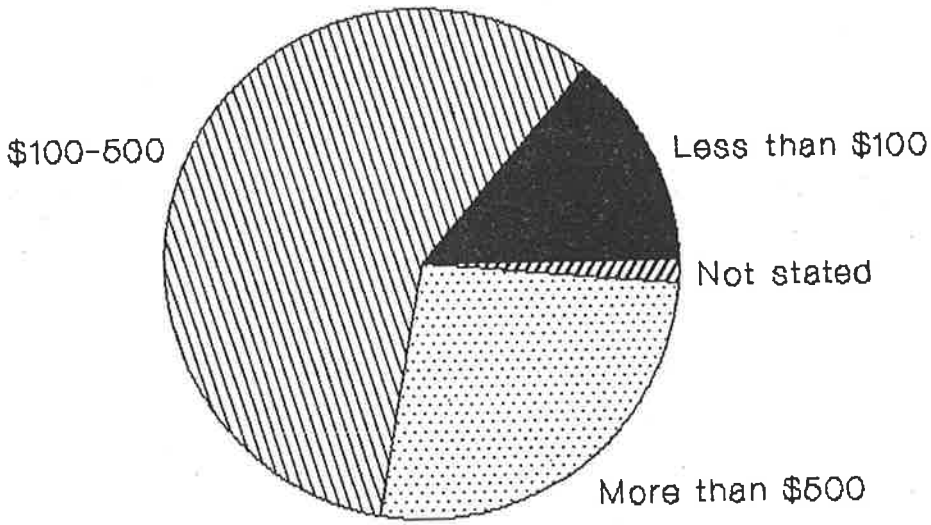
[6] Although Halkett (1975, p.97) did not recognise any apparent relationships between frequency of gardening and garden style, he did establish a significant relationship between quality of maintenance of front gardens and frequency of gardening.

lawnmower fuel, tools and equipment (see Figure 8.7).

Dr Philippa Mathias, Nursery Industry Development Officer, NSW, supplied ABS data on the Australian nursery industry, which estimated the value of sales from growing of nursery material for 1989-1990 for South Australia as $17,657,000. This amount is supported by a conservative figure of the estimated value of wholesale plant nursery production alone, in South Australia in 1991, being $30 per head or population (Gail Barth, Department of Primary Production, personal communication). These figures do not include cost of additional water, landscaping materials, purchase of chemicals, fertilisers, tools or irrigation equipment.

Larger amounts were obviously spent by those in the early stages of garden development or redevelopment, and those who regularly employed outside services such as lawnmowing. Lawn mowing contractors were mainly used by aged residents, particularly women, and at $10 per fortnight this cost alone would exceed $200 per annum.

Two elderly sisters, assured the interviewer that they spent almost nothing on their garden. It was their main activity, spending all their daylight hours gardening. They made compost from all the weeds and household food scraps, kept ducks and hens which provided ample manure and kept the problem of snails at bay. They had no lawn and watered only by hand in the early morning or cool of the evening. They collected seeds where possible, dried them to plant the following year and exchanged roots and cuttings of plants with neighbours and friends. Herbs were grown among the vegetables to control insect pests,




n = 139

Figure 8.7 Householder expenditure on gardening, including cost of excess water.

(Source: Householder survey

and grubs were removed by hand and fed to the fowls. They were self sufficient in fruit, vegetables and eggs, and used no chemicals as pesticides, a thrifty household of unconsciously practising conservationists.

### 8.6.4 Additional water use

Additional water charges constituted the major expense in established gardens and although most householders complained about rising costs and the policy of increased charges, they were still prepared to pay the extra charges to maintain the standard and type of garden they liked. Most favoured a 'user pays' water pricing system rather than rating based on the size and value of the property. Very high water users included households with grass tennis courts and swimming pools.

Over half (51.8%) the respondents had reduced their water consumption over the previous year, intentionally or otherwise, the following explanations being given for the reduction:

(a) allowing the lawn to die off during the summer

(b) removing the lawn completely

(c) replacing annual flowers with hardy shrubs

(d) changing the garden style, which included a loss of garden area due to house extensions

(e) as a direct response to advertising and educational programmes

It was noted that householders in the Hills area, with its slightly higher annual rainfall, used greater quantities of water than those on the Plains. Possible explanations for this may be related to the steeper terrain and shallower soils with reduced water retention capacity and increased runoff. There is a common perception that the Hills, being cooler and moister can support plants such as azaleas, hydrangeas and camellias, genera indigenous to cooler, more humid climates, whereas in reality the Hills area still experiences a hot dry summer which requires extensive irrigation to maintain the more hydrophytic exotic species.

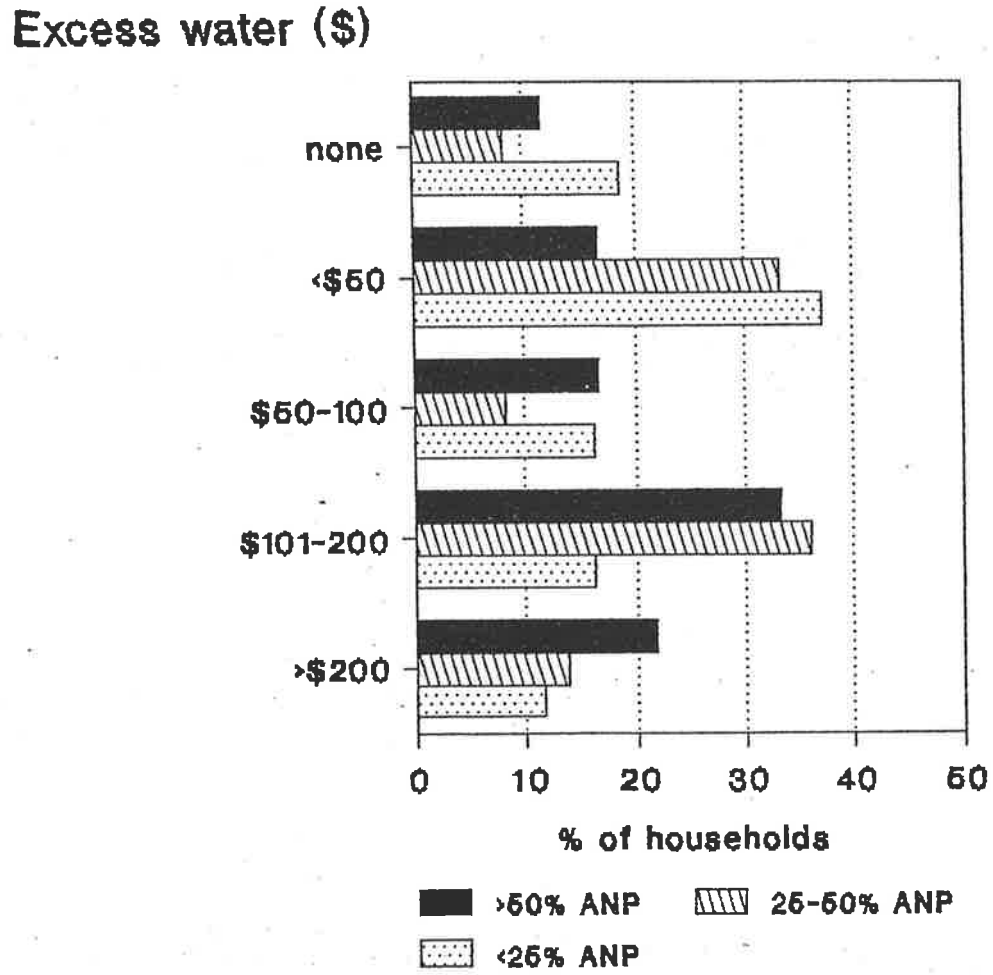
In spite of the claim that Australian plants use less water the results of the survey results shown in Figure 8.8 tend to dispute this premise. Households with more than 50 per cent of their gardens planted to native species feature more strongly in the upper end of the scale of additional water use, while households with fewer native plants appear to be using less additional water. This may be explained by observing that:

(a) Hills gardens tend to feature more native plants than Plains gardens

(b) many of the popular Australian tree and shrub species cultivated in Adelaide gardens are indigenous to the east coast where more humid summers prevail

(c) many of the Hills gardens have been more recently developed, requiring regular summer watering until plants are established

(d) the nature of Hills soils and topography, as mentioned above, contribute to less efficient water utilisation.




n=139

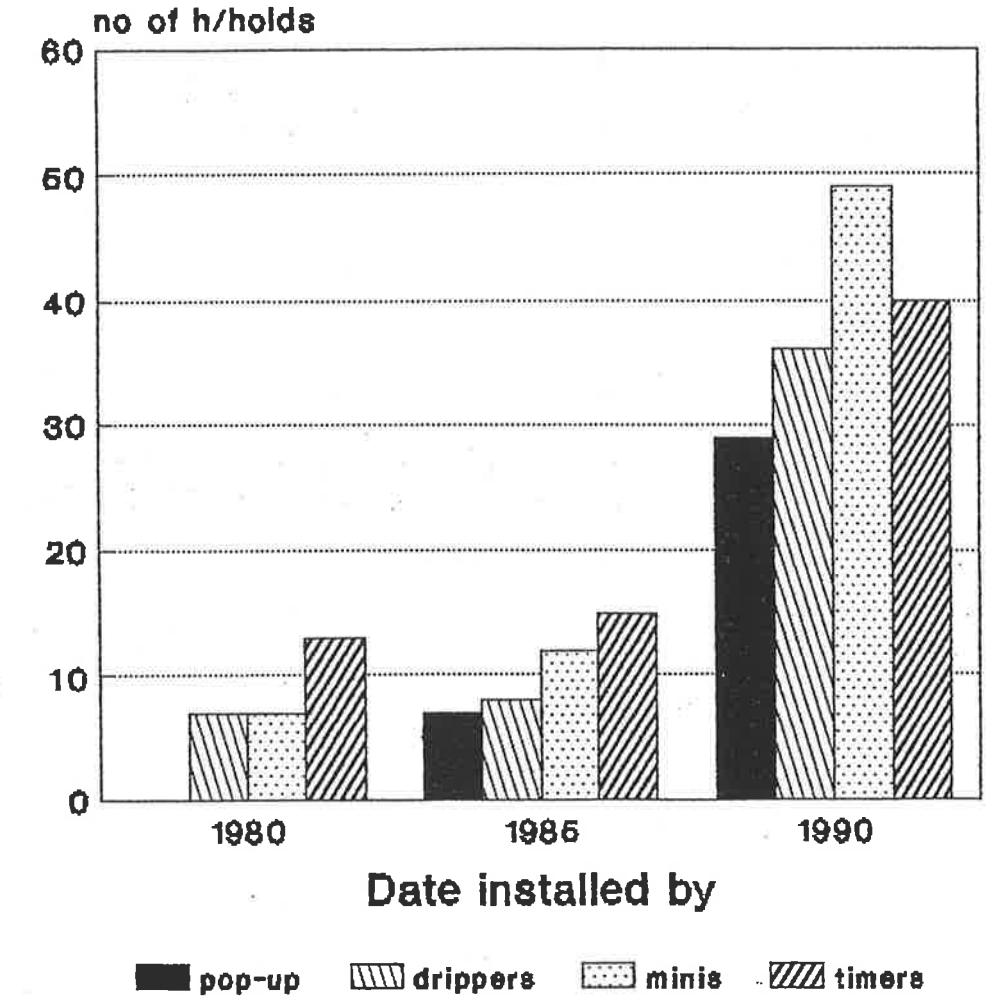
Figure 8.8 Cost of excess water according to the percentage of Australian native plants present.

(Source: Householder survey)

### 8.6.5 Irrigation methods

Methods of domestic garden irrigation varied, mostly a combination of traditional and modern systems. Traditional methods of watering gardens included hand held hoses, watering cans, or movable sprinklers attached to hoses, while modern methods ranged from fixed irrigation systems with tap timers to fully automated computer operated watering programmes.

Although pop-up sprinklers are generally installed to irrigate lawns, the survey showed that of the relatively few such systems (n=36), all had been installed since 1985. Tap timers, mini sprinkler and dripper systems have been in use since pre 1980 but their application has increased significantly since 1985 (see Figure 8.9), largely due too more competitive prices and the improved quality of products. Mini sprinklers and dripper systems appear to have proliferated rapidly over recent years paralleled with the planting of natives species, although drippers in particular have been widely installed in gardens with smaller proportions of Australian plants as well. Initially developed for commercial horticultural applications the concept of micro-irrigation has been readily transferred to the domestic garden, creating a much expanded market for these products, South Australian sales currently exceeding $5 million per year (Wingfield Plastics, spokesperson). Plate 7.2 illustrates the use of modern watering technology, somewhat anachronistic in this rather carefully researched 'authentic' 19th century cottage garden.




No = 139

Figure 8.9. Period of installation of water saving devices.

(Source: Householder survey)

### 8.6.6 Soil awareness

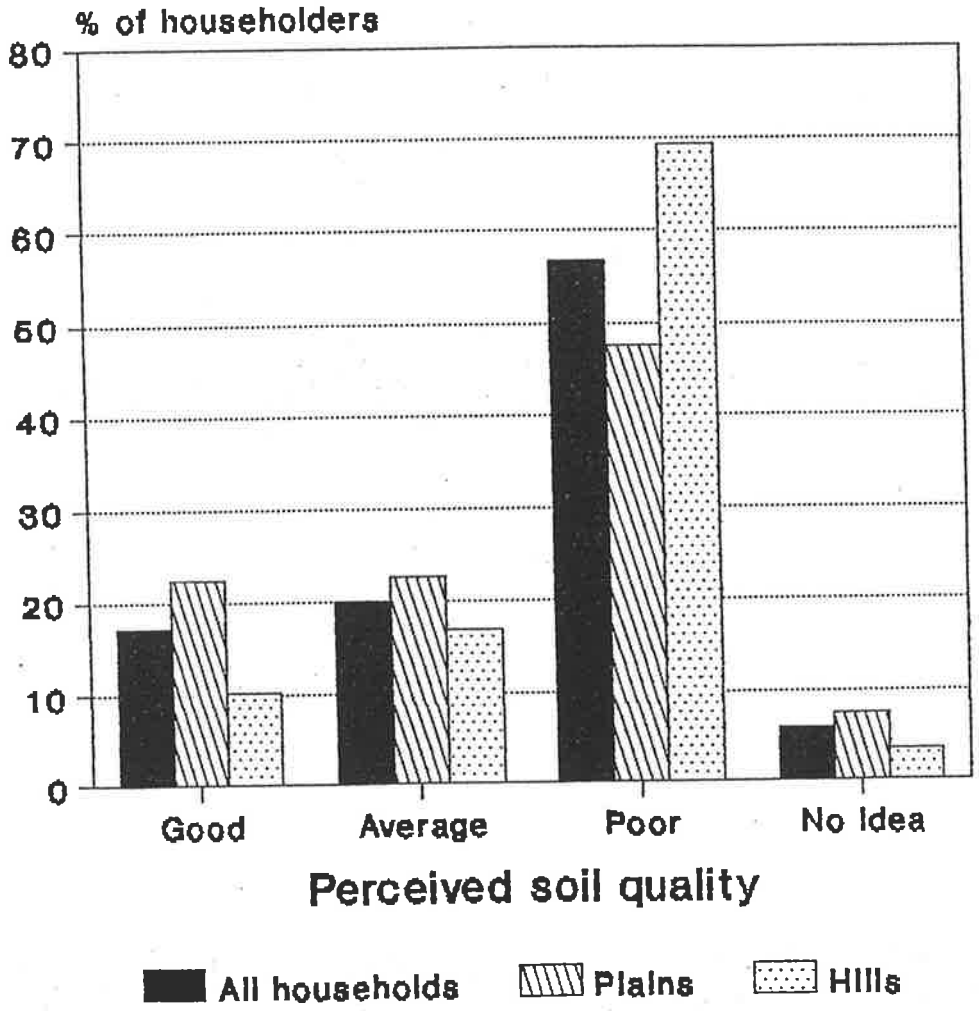
Six questions were soil related, assessing both the gardeners' knowledge of their own soil characteristics and steps taken to modify the soil environment.

Most householders considered their soils to be naturally low in fertility, with less than 20 per cent rating the soil as good. The areas of perceived good soil closely approximated former stream beds in the suburbs of Mitcham and Torrens Park, and where gardens had undergone many years of cultivation, composting and topdressing to develop 'built' soils (Anthroposols). When the soil fertility data was analysed by postcode (i.e. Hills/Plains) responses indicated that the hills residents perceived their soils to be much poorer than those on the Plains (see Figure 8.10).

Most householders were able to correctly give at least one characteristic of their garden soil. The best known characteristics were approximate depth and texture (66.2% of householders).

The more enthusiastic gardeners indicated some knowledge of soil chemistry (pH), understanding that soil was acidic or alkaline and what needed to be added to the soil to grow specific plants with low or high tolerance to lime, particularly with the cultivation of vegetables.

Use of chemical and organic fertilisers, compost and other organic matter, the addition of minerals (gypsum in particular), and the introduction of new soil, or




N = 139

Figure 8.10 Householders' perception of soils.

(Source: Householder survey)

topdressing, from outside the region have combined to produce 'built' soils of improved texture, friability and general fertility.

Sand and loam had commonly been applied to topdress lawns but in the Hills where much of the soil is shallow and low in nutrients, additional garden soil has also been introduced. On some older properties new occupants indicated that although they had not purchased new soil themselves, they assumed that additional soil had been introduced by previous owners.

Except for those householders who did not garden (n=4) all had added some form of fertilisers to the garden, organic fertiliser only (manure, mulch, compost, seaweed, blood and bone), chemical fertilisers (superphosphate, Complete D or similar products), or combination of both chemical and organic fertilisers. Other chemicals used included mineral supplements and soil improvers such as dolomite, lime, gypsum and iron chellates (particularly for citrus).

Most householders regularly used some form of mulch in their garden to conserve moisture and control weed growth. Common forms of mulch included homemade compost, lawn clippings, pea straw, wood chips and/or pine bark.

Considering the past agricultural and horticultural land use in much of the study area prior to urban development, it is relevant at this point to include some discussion of modification of the natural soils since European settlement. As late as the 1960s parts of the Plains sector near Edwardstown and St Marys were used for sheep pastures or cultivated as wheat fields, vineyards and almond orchards while much of

the Hills area supported dairying and horticulture - stone fruit, apples and pears.

Soil investigations by Richard Merry (1986, CSIRO Soils Division) revealed varying levels of chemical residues in former horticultural land in the study area, particularly with regard to the presence of heavy metals in the soils. As extensive areas of former orchard land were resumed for urban development these studies were concerned primarily with identifying soil toxicity, potentially detrimental to human health. Results indicated that although present in significant quantities copper, lead and arsenic were well stabilised in the soil, presenting little hazard to residents. Certainly the chemical and nutrients levels of these soils would have been markedly altered by extended periods of cultivation, as well as undergoing some degree of structural modification. Merry has also suggested that in the Hills area roadworks, site levelling of steep allotments and, prior to the 1970s, the use of septic systems with extensive effluent discharge, have significantly altered the original soil characteristics of much of the study area, contributing to ongoing soil management problems for home gardeners (Richard Merry, personal communication).

### 8.6.7 Relationship between soil fertility and the cultivation of Australian native plants

General comments made by Hills residents indicated that topography and poor soil fertility have strongly influenced their choice of plants with a growing preference for native Australian species, increasingly those known to be indigenous to the local area, indicating some acceptance of local environmental limitations and acknowledging unsuccessful cultivation of many exotic species.

There is, however, a strong perception amongst gardeners that all Australian native plants are more tolerant to poor soils and minimal water, simply because they are Australian, without recognising the wide range of natural environments to which many commonly grown plants are endemic. Both the Woods and Forests Nursery at Belair and the Society for Growing Australian Plants attempt to guide customers at their plant sales outlets to choose species which are naturally adapted to both the specific climatic and soil environments of their particular areas. Modern gardening books also encourage home gardeners to ascertain their soil characteristics, specifically depth, texture and pH, before commencing planting to ensure a better survival rate of selected plant species.

### 8.6.8 Level of maintenance required

Householders were asked to indicate the level of maintenance they perceived necessary for their gardens, however individual responses did not always correspond with the observed style or state of gardens. Some apparently high maintenance gardens were not considered as such by their owners, while other seemingly low maintenance gardens were perceived as too time consuming, which probably reflects the individual's level of interest in gardening and willingness to allocate time to garden care.

An interesting contrast was repeatedly noted between back and front gardens. In considering general time allocation to gardening most householders could not specify time spent in different sections of their gardens. Front gardens which lacked interest and apparent effort disguised enthusiastic gardeners who devoted

most of their time to producing and maintaining delightful private rear gardens. Proud to have these inspected and admired, the owners commented that as long as the front was neat and tidy they preferred to enhance the area they used regularly. Petty theft of ornaments, pot plants, plants actually growing in the ground, and garden furniture had discouraged some residents from maintaining the front garden as a show place.

## 8.7 Changing garden styles and practices

Eight questions were included to determine how gardening is changing and what factors have influenced these changes.

### 8.7.1 Influence of the Media

Chapter 4 contains a discussion of the role of the media in influencing garden fashions however the following survey results have been included here to support the earlier discussion.

Table 8.3 indicates the nature of popular media influence on gardening practices through newspapers, magazines, radio and television with regard to new ideas including plant selection. Approximately half the surveyed sample (51.8%) regularly read the garden section in the local daily paper the *Advertiser,* while only a small proportion (23%) read the garden pages in the weekly paper the *Sunday Mail.* The remainder indicated that they did not read any newspapers specifically for garden advice.

| MEDIA SOURCE | NUMBER OF HOUSEHOLDS ( n = 139 ) | PERCENTAGE OF SAMPLE |
|---|---|---|
| The Advertiser | 72 | 51.8 |
| Sunday Mail | 32 | 23.0 |
| Garden magazines | 37 | 26.6 |
| Womens Weekly | 24 | 17.3 |
| ABC radio | 43 | 30.9 |
| 5DN radio | 25 | 18.0 |
| Burke's Backyard | 106 | 76.2 |
| Gardening Australia | 16 | 11.5 |

**Table 8.3 Influence of selected media sources. (Household interview schedule)**

Of those who read garden magazines, *Your Garden* was the most popular, while others confined their garden reading to sections in general magazines such as the *Womens Weekly.*

The most popular radio garden programme was the ABC session presented by Jon Lamb, particularly among the middle and older aged gardeners, with 30.9% regular listeners to the ABC. A further 18 per cent listened to the 5DN (commercial radio) garden programme. *Burke's Backyard* had by far the widest regular television coverage. Comments were made however that much of the content of the Sydney based programme was largely inappropriate for Adelaide's soil types and climate. The keen gardeners who watched the ABC TV programme *Gardening Australia*, felt that this was a more valuable series.

Most serious gardeners commented that their garden ideas had come predominantly from books while others had taken courses in garden design. A few had used the services of landscape gardeners or had taken ideas from friends' and neighbours' gardens. Generally most gardens seem to have evolved without any overall design, the plant choice depending on species available or advice from nurserymen. Plants themselves have, in time, dictated the direction in which gardens have developed, relative to the micro-environments created, such as shade or nutrient competition.

### 8.7.2 Layout

Just over half (53.2%) the residents had maintained the same basic layout present when they first occupied the house, or first established the garden, while the remainder had changed the layout significantly. Slightly less than half (43.2%) had increased the proportion of Australian native trees and shrubs since occupancy commenced while a smaller number (11.5%) had decreased the number of native plants, particularly having removed existing trees without replacing them. About one third of the householders (33.8%) were now growing more annual flowers, often for colour amongst the native shrubs, while those who were growing less annual flowers believed they consumed too much time and water, preferring perennial shrubs and ground covers.

### 8.7.3 Future gardens

With reference to the desired size of future gardens, data suggests that the majority (51%) would prefer smaller gardens next time, which was not surprising

considering the age cohorts present (refer to Table 5.1).

With a high proportion of older aged groups the chores of gardening become increasingly demanding. As advanced age can often be accompanied by gradual deterioration of health both the physical and financial resources needed to maintain large gardens are likely to be diminished in the future. The 30-39 year and 40-49 year age groups were generally content to retain their current size gardens, while those who would prefer larger gardens (17%) were generally enthusiastic gardeners, and/or those families with small children and pets.

## 8.8 Importance of the local streetscape

A comparison of data from the two field surveys shows much the same pattern of nature strip development, predominantly undeveloped, or with seasonal lawn only. Questions were designed to determine how far the streetscape both influences, and is influenced by, the adjacent residential gardens.

Most of the footpaths on the Plains were paved, in concrete, bitumen or paving blocks, while dwellings with unpaved footpaths, either bare earth or gravel were mainly located in the Hills where the steep terrain creates logistical problems in construction of paths. Currently (1993) the Mitcham Council has undertaken an extensive programme of street paving in Hills and foothills areas which until recently lacked defined footpaths. Unfortunately this project has been restricted to relatively level streets at present.

Newer residential areas, particularly in foothills suburbs where front fences are absent, feature lawns and gardens extending over Council land between the property boundary and the road (Plates 7.8, 7.11). Where these areas are maintained at the householders' expense they are regarded by the adjacent property owners as part of their private property. Without boundary markers it is difficult to determine whether the land is private or public property, passersby being actively discouraged from 'trespassing', by placement of physical barriers such as garden plants, sleepers and rocks.

The nature strip has traditionally been common land with some Councils planting trees and/or shrubs and providing minimal maintenance. Within the Mitcham Council area some streets are planted and others not. Until recently, the Mitcham Council has been content for householders to develop the nature strip and maintain it at their own expense, the level of development clearly indicating the degree of interest in gardening shown by the occupant of the adjacent dwelling. Where front fences were absent and the front garden consisted of a large area of lawn, extending beyond the boundary, the lawn on the nature strip was generally better attended.

Relatively few (35.3%) householders had actually planted anything on the nature strip themselves which suggests that anything growing there would have been planted by the Council or previous occupants of the dwelling, had colonised the ground from neighbouring gardens, or was remnant native vegetation.

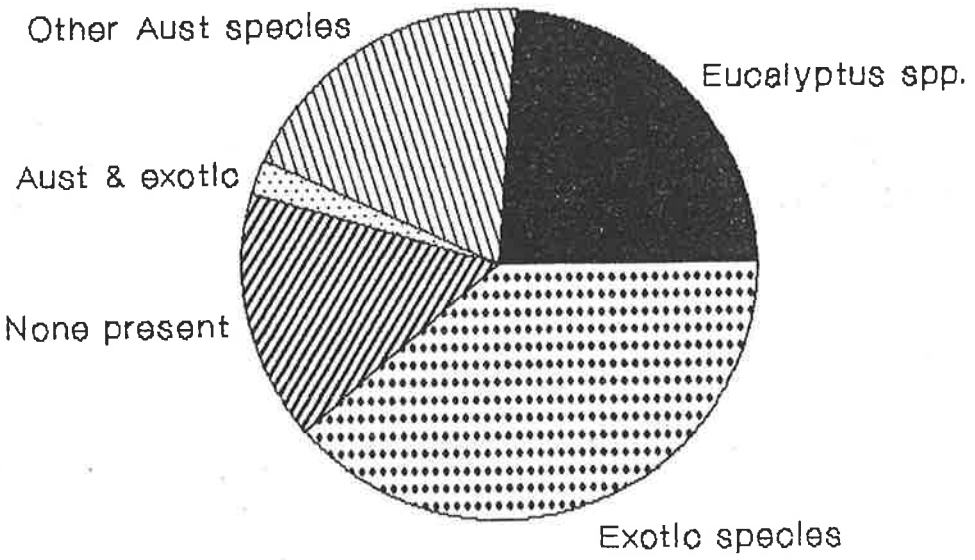
A large proportion of properties with undeveloped nature strips were in the older

suburbs on the Plains, although where houses had been renovated marked efforts to develop the nature strips were apparent. With major expenditure on dwelling restoration, such as apparent in Hawthorn, the additional cost of maintaining the nature strip would be relatively insignificant. Attempts to disguise Stobie poles (concrete and steel electricity standards) with geraniums and other climbing plants is a common street feature throughout Adelaide (Plate 7.12).

Only 6.4 per cent of the households indicated that they had sought Council approval before planting anything on the nature strips or even knew that they were required to do so. The remainder had definitely not sought Council approval, were unsure or had planted nothing so the question was not relevant. As far as maintenance of nature strips was concerned, residents were divided as to whose responsibility this was but generally householders accepted at least some role in care of the streetscape.

The nature of street trees varied considerably throughout the study area, as shown in Figure 8.11. A spokesperson for the Mitcham Council commented that local residents regularly request the planting or removal of particular species of trees and shrubs in their street. These requests are met where possible, within the guidelines and planting policies of the Council and the Engineering and Water Supply Department. Certain species have proved undesirable due to problems associated with water supply and sewerage pipes (David Deare, pers. comm.).

Complaints are received by the Council from residents about the mess created by particular trees at certain times of the year, with flowers, leaves and fruit dropping




**Percentage of households (n = 139).**

Figure 8.11 Distribution of Australian and exotic species as street trees.

(Source: Householder survey)

to the footpath. Several species including the Queensland Box *(Lophostemon confertus* syn *Tristania conferta)* and the White Cedar *(Melia azedarach)* are particularly unpopular with residents living nearby, their marble-like fruit creating a hazard to pedestrians. *Jacaranda mimosaefolia,* magnificent when in full bloom, makes very untidy footpaths as the flowers fall, and again later when the seeds drop.

A large number of the Eucalypts present in the Hills area are remnant native vegetation. As most *Eucalyptus* species tend to drop branches and leaves in the hot weather, further planting of tall growing species is currently discouraged by the Council. Additionally there is the associated bushfire hazard in the Hills where branches can interfere with power lines. As a result of successful insurance claims against the Electricity Trust of South Australia (ETSA), following the 1983 Ash Wednesday bushfires, the introduction of annual tree lopping programmes has been deemed necessary.

About half the sample (44.6%) felt that it was very important for their garden to look attractive, and spent many hours working in the front garden solely to that end, compared with the remainder who felt that as long as their garden was tidy there was no problem. They did not wish to impress others but preferred to avoid negative criticism from their neighbours.

Most home owners indicated that they were bothered, in varying degrees, if other gardens in the street were untidy. They felt that this spoilt the tone of the whole street, reducing the value of their properties, and were critical of residents who failed to conform to the average standard of the rest of the community.

Others, however, felt it was of no concern to them what other people did. Living in an untidy environment was an individual choice.

## 8.9 Conclusion

Data from the householder interview schedule confirmed many of the observations made during the windshield survey with regards to the socio-economic status of householders and the length of occupation of dwellings.

Minor differences in the two sets of results may be explained by the variation in sample size, the method of selection and the time elapsed between the execution of the two schedules.

Comparative data suggest that the sample is sufficiently typical of the wider population that trends observed may be used to indicate a similar overall pattern for both Mitcham LGA, the study area, and the wider community of metropolitan Adelaide. Spatial patterns emerging from the survey revealed a marked dichotomy in the sample studied, initiating the following discussion of the differences between the Plains and the Hills sectors of Mitcham LGA in chapter 9.

# CHAPTER NINE

## THE HILLS-PLAINS DICHOTOMY

Household survey data were collected and primarily analysed by Collectors' Districts within the Mitcham Local Government Area. Due to the limited sample size (139 household questionnaires) it was necessary to consolidate data into fewer but larger classes, namely Subdivisions (N=11) to produce statistically valid tests (Chi-square). When this still proved unsatisfactory, with the number of counts in each cell frequently falling below five, Chi square tests were then run using post codes. Map 5.2 represents post code areas for the Mitcham LGA, showing the division into Hills and Plains sectors.

This selected two groups of households based on post code boundaries 5050, 5051 and 5052 for the Hills, and 5039, 5041, 5042 and 5062 for the Plains. It is recognised that some duality exists where post code boundaries include both Hills and Plains along the escarpment, particularly with post code areas 5052 and 5042. For the purpose of this study 5052 (suburb of Lynton) has been included

in the Hills area and 5042 (suburb of Pasadena) in the Plains.[1]

## 9.1 Rationale for using the Hills-Plains dichotomy

The rationale for separation into these two groups came from the preliminary windshield survey of 5573 residential allotments. Maps 7.1 to 7.5 produced from this survey data indicated a distinct variation between the Hills and Plains suburbs of the Mitcham Council District, particularly in respect to the age of dwellings and types of front gardens. This also approximates the Council's division into Plains and Hills Wards, indicating the existence of a political and administrative dichotomy, based on the natural physical boundary of the escarpment of the Mount Lofty Ranges. The marked physical differences between the two areas have previously been discussed in Chapter 5 of this study, and displayed in Maps 5.3 to 5.6. Spatially the areas covered are approximately the same but the number of households is less in the Hills than on the Plains. The resultant ratio of the sample is 59 Hills households to 80 Plains households.[2] As this division seemed appropriate for analysis of certain variables, statistical tests were run to identify if and how far the dichotomy extended into garden styles and practices.

Raw data from the windshield survey which revealed pronounced differences

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1 Rudd (1993) includes the suburbs of Belair, Glenalta, Blackwood, Hawthorndene, Eden Hills, Bellevue Heights and parts of Coromandel Valley as the Hills Zone. She has provided a profile of each sector on page 105.

2 The 1991 ABS Census data classifies 36.6 per cent of Mitcham's total population as residing in the Hills and 63.4 per cent on the Plains.

between the Hills and the Plains sectors of the study area was supported by the householder survey. The dichotomy which emerged dictated cross tabulation of data to identify if these differences were sufficiently significant to reflect contrasting garden patterns.

Sixteen variables which were expected to be statistically significant revealed no identifiable differences between the two areas. With scores $P > 0.05$ using Chi-square, the Null Hypothesis Theory held and these variables were eliminated from further statistical analysis.

Strong support for the Hills-Plains division was identified in 43 variables which, with probability scores of $P < 0.05$ using the Chi-square test, rejected the Null Hypothesis theory. Discussion of selected variables will follow later in this section.

Chi Square probability tests were run for all variables ($n=117$) controlling for:

(a) post code selection for the Hills and Plains, and

(b) the percentage of Australian native plants in front gardens.

Strong associations were found between characteristics of the sample relative to both residential location and attitudes to the cultivation of Australian plants. Forty variables rejected the Null Hypothesis Theory for both controls. Variables controlled only by the percentage of Australian Native Plants present indicated that the Null Hypothesis Theory held for 65 cases and could be rejected for 52

cases, while variables controlled by post code (Hills/Plains) indicated the Null Hypothesis Theory held for 61 cases and could be rejected for 56 cases.

## 9.2 Demographic characteristics of the study area

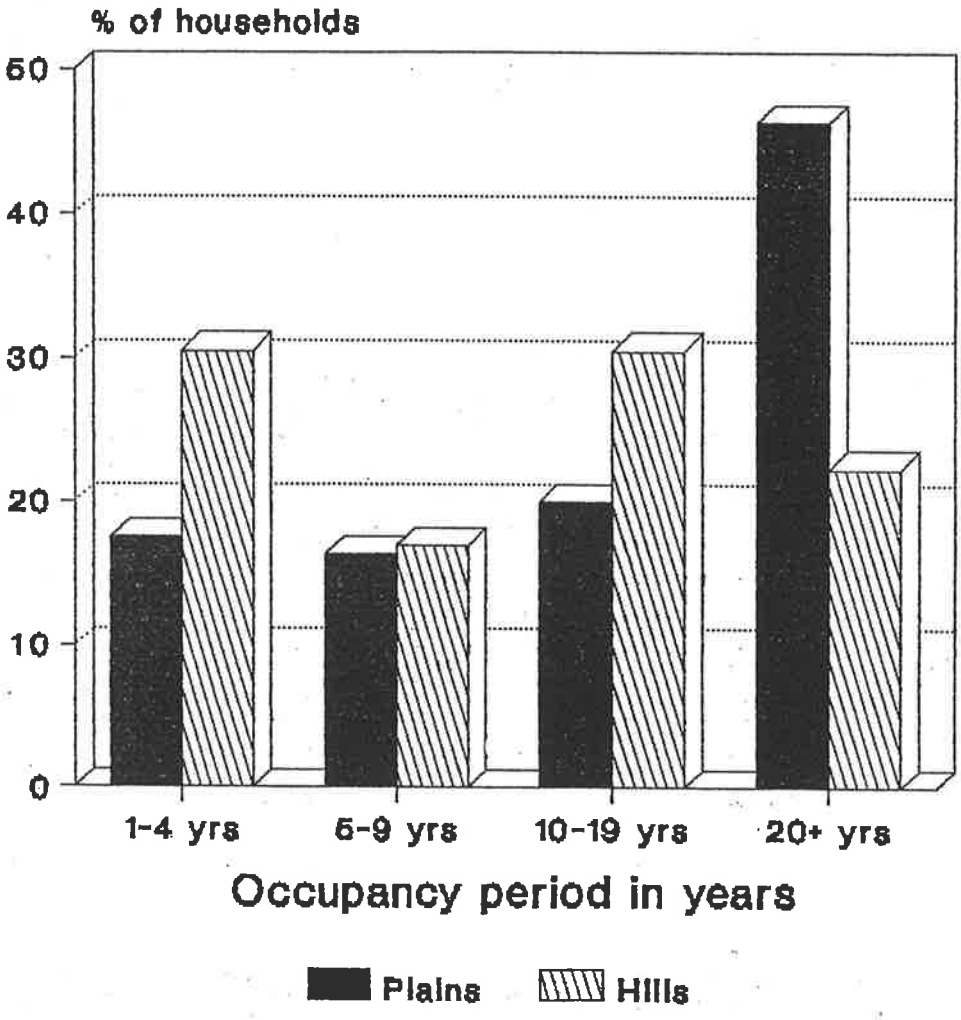
With changing lifestyles, greater personal mobility, increased leisure time and the move towards more informal social activities, a major modification of domestic outdoor space has occurred, particularly with regard to the use of back garden/yards (Halkett, 1975). The age structure of the community under study was therefore considered to be relevant to garden design.

It was not possible from the initial observation survey to determine the nature and length of occupancy of the present residents, however the following observed patterns were generally supported by household interviews:

(a) neglected gardens are likely to be associated with owner occupiers who are aged and/or infirm persons, no longer having the resources, financial or physical, to maintain their gardens to desired standards,

(b) newly developed gardens surrounding old homes suggest a recent change of ownership, with the current occupants probably much younger than the former household.

Figure 9.1 indicates that within the sample the highest proportion of long term residents was located on the Plains. Two significant groups were identified in the




N = 139

Figure 9.1 Length of residential occupancy - a comparison of Plain and Hills dwellers.

(Source: Householder survey)

Hills, new householders and those having resided in the area for up to twenty years.

A comparison of the percentage of Australian plants cultivated in front gardens of Plains and Hills dwellings is given in Figure 9.2. When the number of years of occupancy is compared with the percentage of native plants present in gardens for each area, (Table 9.1) the longer term residents of the Plains have shown a clear preference away from native plants, while Hills residents of all length terms favour a higher proportion of Australian plants. This pattern indicates less interest in growing native plants by those Plains householders who have occupied their current dwelling for over 20 years. In the 5-19 years categories there was more evidence of interest in cultivation of native species in line with fashion of the 1970s. The relatively few gardens in the one to four year category with native plants may reflect the restoration of older homes on the Plains, the gardens either unaltered as yet or returned to a style appropriate to the age of the house.

| | Plains (n = 80) | | | Hills (n = 59) | | |
|---|---|---|---|---|---|---|
| Years Occup. | Percentage of Aust. native plants | | | Percentage of Aust. native plants | | |
| | < 25% | 25-50% | > 50% | <25% | 25-50% | >50% |
| 1 - 4 | 7 | 6 | 1 | 2 | 4 | 12 |
| 5 - 9 | 4 | 2 | 7 | 0 | 4 | 6 |
| 10 - 19 | 5 | 8 | 3 | 1 | 3 | 14 |
| 20+ | 24 | 7 | 6 | 0 | 2 | 11 |
| Total number of households | 40 | 23 | 17 | 3 | 13 | 43 |

**Table 9.1** **Years of occupancy by percentage of Australian plants present in the front garden by number of households, comparing Plains and Hills. (Household interview schedule)**

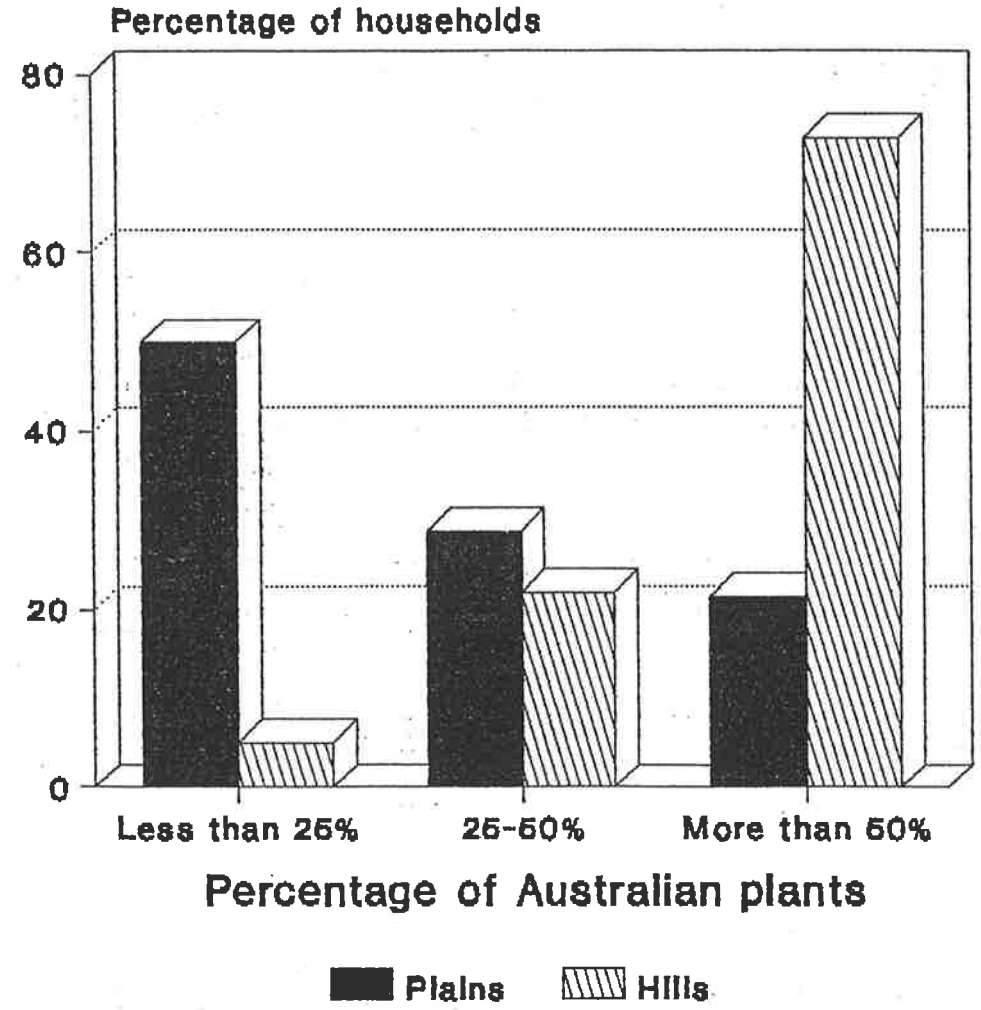



Figure 9.2 Percentage of Australian native plants present in front gardens - a comparison of Plain and Hills dwellers.

(Source: Householder survey)

Distribution of population by the age of household head(s), controlled for the area of location, indicated a high proportion of the middle age group residing in the Hills, a more significant proportion of the older people living on the Plains and a growing number of younger households being established in older dwellings or on redeveloped sites.

The windshield survey identified considerable variation in the ages of dwellings throughout the study area, shown on Maps 5.8 and 7.1, which was supplemented by the household survey. Figure 9.3 shows the disparity of distribution of old and new homes between the Hills and the Plains. The criteria for assessing the age of houses has been discussed earlier in Chapter 5.3, in association with the sequence of land development.

During the 1956-1969 period housing development was at much the same level in both areas but, from the 1970s to the present, most of the new homes under construction are located in the Hills area and foothills suburbs such as Lynton and Pasadena. Any new dwellings being built on the Plains are largely redevelopment old house sites or subdivisions of larger allotments, such as former tennis courts and hammer head blocks.

Data from the *Mitcham Housing Study 1986-2006* (Mowling 1989), presented in Table 9.2, show the number of private dwellings sold, by post code, within the Mitcham LGA in 1986 and 1989. This can be used as an indicator of suburbs where changes in occupancy have been most marked. Post code areas 5041, 5051 and 5062 are identified as the most active in real estate sales.[3]

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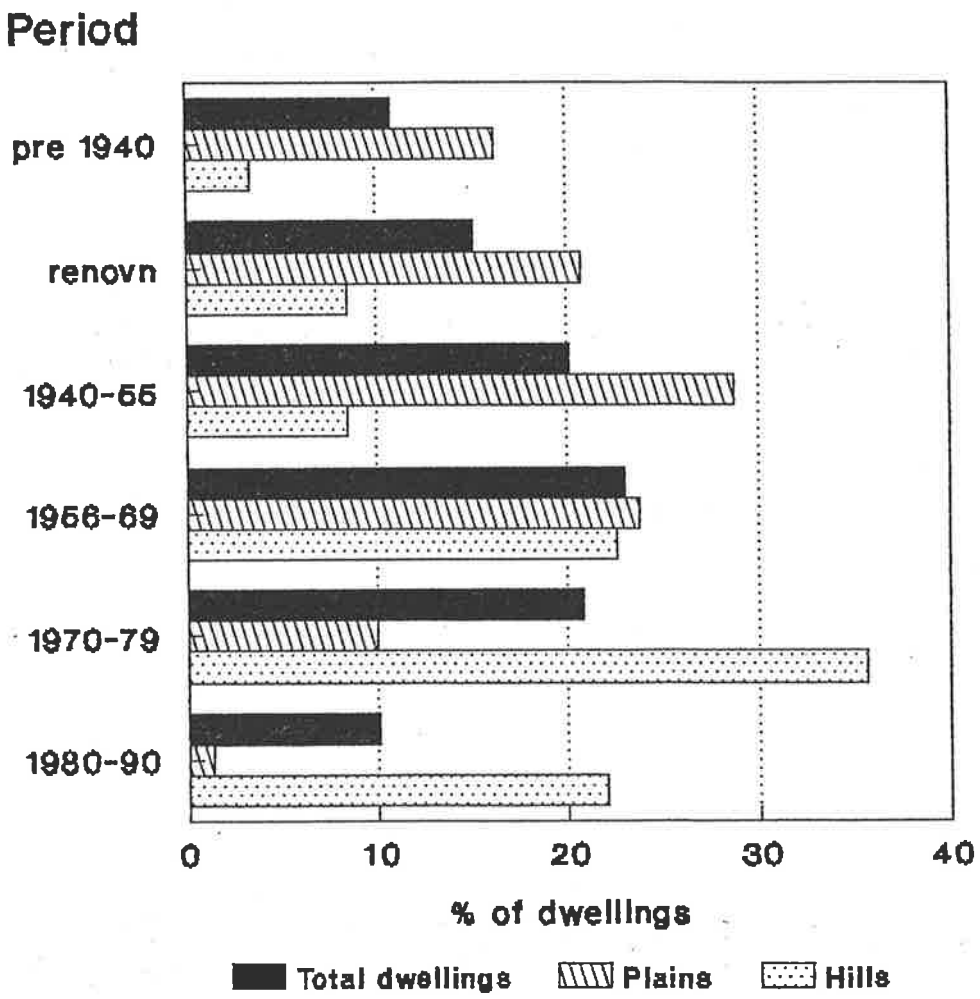
[3] See Map 5.2 for post code areas, and Appendix B for suburbs within the Mitcham LGA.




n = 139

Figure 9.3 Age of dwellings - a comparison of the Plains and Hills sectors of the study area.

(Source: Householder survey)

| POSTCODES | NO. OF 1986 SALES | NO. OF 1989 SALES |
|---|---|---|
| Plains | | |
| 5039 | 27 | 33 |
| 5041 | 119 | 90 |
| 5042 | 58 | 46 |
| 5062 | 149 | 124 |
| Hills | | |
| 5050 | 56 | 35 |
| 5051 | 96 | 76 |
| 5052 | 61 | 47 |

**Table 9.2 House sales in Mitcham LGA 1986/1989. (Mowling 1989)**

The Census 1986 data (Rogers, 1988) indicate the following characteristics of suburbs in post codes 5041, 5051 and 5062:

(a) a high percentage of persons aged 65 years and over

(b) a high percentage of persons aged 60 years and over living alone

(c) a high percentage of owner occupied dwellings

(d) a high percentage of persons occupying the same dwelling as 5 years ago

(e) a low occupancy rate less than 2.4 persons per dwelling

(f) negative net population change

Post code 5041 includes the suburbs Clarence Gardens, Westbourne Park, Colonel Light Gardens, Daw Park and Panorama. Post code 5062 includes the suburbs of Kingswood, Hawthorn, Torrens Park, Springfield, Mitcham and Clapham. Both

these areas contain older homes, predominantly pre 1960s. As these suburbs are undergoing renewal and redevelopment, it is probable that the major area of sales is these older dwellings.

In the Hills post code area 5051 (Blackwood) many of the early 1900s houses are currently being refurbished, while poor quality post World War II houses on large allotments have been recently demolished, replaced with modern solid construction dwellings. These homes benefit from the medium land values and location within relatively easy commuting distance of the city. Larger blocks have been subdivided for redevelopment as medium density home units.

As post code 5039 (Edwardstown) is a relatively small suburb and the only significant commercial/industrial zone in the Mitcham LGA, the limited number of homes sold in this area does not clearly reflect the proportion of changing ownership of predominantly pre 1960 dwellings. This suburb has recently experienced invasion of a former residential zone by light manufacturing and warehousing activities. Minimal landscaping with vegetative cover has occurred here, as indicated on Map 5.7 (Goodwins and Noyce, 1993), with Edwardstown being given a 'greenness' rating of less than 40 compared with the Mitcham LGA's overall rating of over 60.

Post codes 5050, 5042 and 5052 which cover the foothills and Hills area, contain predominantly newer homes, occupied by younger families. These areas contain a high concentration of persons having lived in the same dwelling for over 5 years (Rogers 1988, p.33) and an occupancy ratio of over 2.8 persons per dwelling.

The 1986 Census data for these post code areas also indicated:

(a) a high percentage of owner occupied dwellings

(b) a high percentage of dwellings still being purchased

(c) a very small percentage of rental dwellings

(d) population growth between -5 and +5 per cent

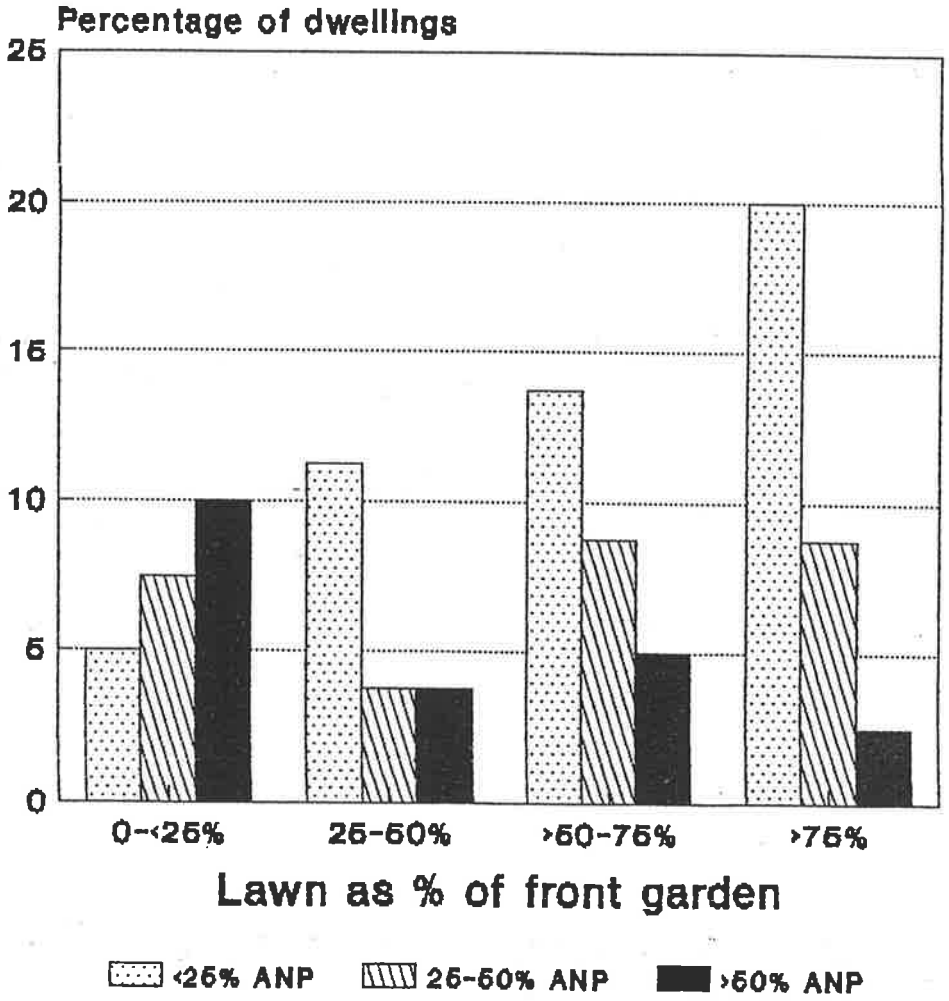
(e) a high percentage of couples with dependent children only (under 15 years or full time students under 20 years)

1991 Census data revealed very little change in these demographic characteristics.

## 9.3 Garden characteristics

Analysis of data presented in Figure 9.2 indicates that the number of Australian plants grown in the front gardens of the Hills homes differs noticeably from the Plains gardens.

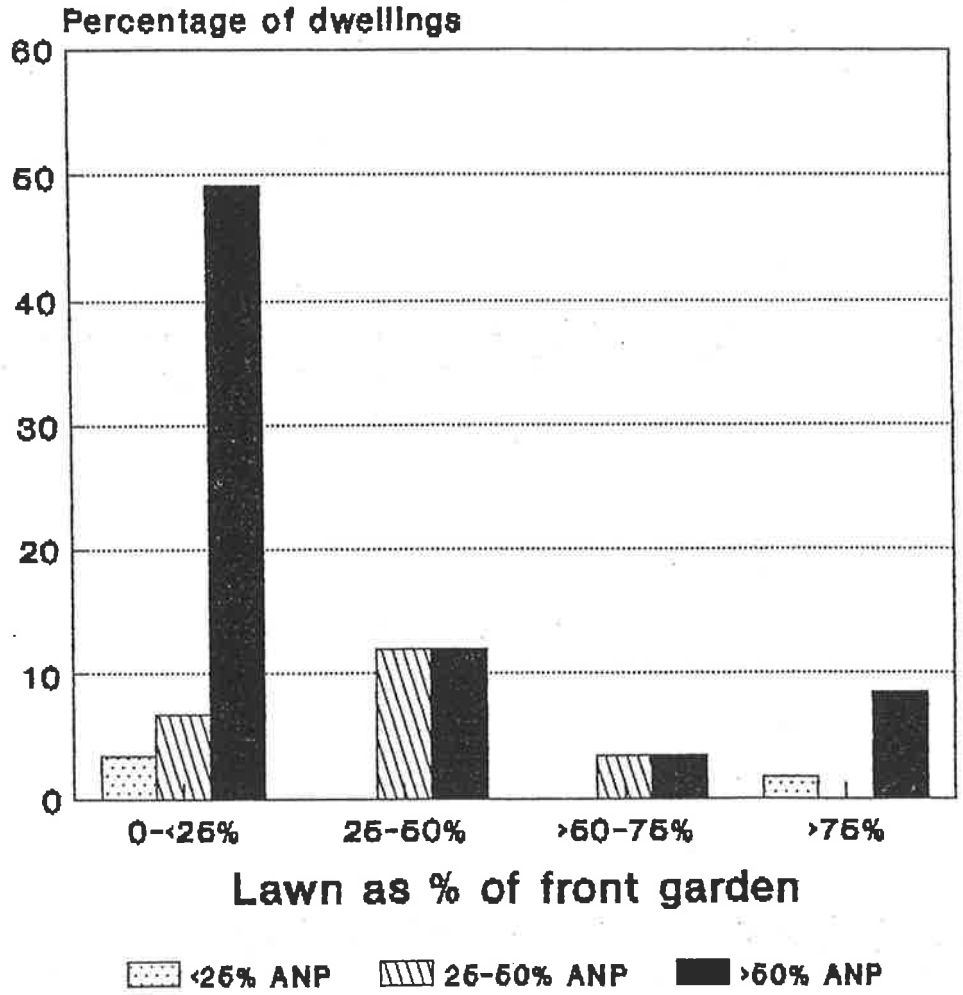
When the data were analysed by region (Hills/Plains) and cross tabulated by area of lawn in the front garden and percentage of Australian native plants present, the numbers were too small for statistical validity, however data shown in Figures 9.4 and 9.5 infer that these garden design features further reinforce the dichotomy.




n = 80

Figure 9.4. Area of front garden occupied by lawn compared with the percentage of Australian native plants present - Plains dwellings.

(Source: Householder survey)




n = 59

Figure 9.5 Area of front garden occupied by lawn compared with the percentage of Australian native plants present - Hills dwellings.

(Source: Householder survey)

Survey results further suggest that:

(a) the cultivation of Australian native plants is much more widespread in the Hills suburbs than on the Plains

(b) Plains gardens have a high proportion of the gardens with less than 25 per cent of the plants being Australian indigenous species

(c) in the Hills over 70 per cent of the gardens contained at least 50 per cent native plants

(d) a few 'all native' gardens were identified on the Plains and, conversely some *all exotic* gardens occurred in the Hills.

The large number of Hills gardens with only Australian trees (or a mixture of both Australian and exotic) may be explained by the considerable numbers of *Eucalyptus* spp. surviving as small stands of remnant native vegetation after the land was subdivided. *E. odorata* (Peppermint Box), commonly occurring as roadside vegetation in the Hills, self seeds readily in adjacent domestic gardens and on nature strips (see Plate 9.1).

Many Hills residents, having chosen to live in a semi-rural environment, indicated strong positive attitudes towards both retention and re-establishment of native bush around their homes. Plate 9.2 shows the semi-rural nature of the suburb of Glenalta, only minutes away from the main Blackwood shopping centre. By contrast, however, a high percentage of Hills gardens with exotic species as well as natives may be explained in terms of the climate. The Hills are marginally cooler both in summer and winter, making ornamental deciduous trees attractive additions to the garden,

Plate 9.1 Remnant and regeneration *Eucalyptus* spp. retained as suburban roadside vegetation, Blackwood.

Plate 9.2 Semi-rural streetscape, minutes from the main shopping centre at Blackwood.

Plate 9.1

Plate 9.2

providing shade in summer and adding colour and contrast to the garden in autumn. For keen gardeners the fallen leaves make good compost while the bare branches allow winter sun to penetrate to the ground and, if appropriately positioned, assist in natural solar heating of the house itself.

The older residents of the Plains tend to have maintained more traditional English garden styles featuring flowering annuals, perennial shrubs, roses and expanses of lawn but generally deficient in trees. Other than some conifers most trees were perceived by older householders to be untidy, the deciduous species shedding leaves in autumn, while native evergreen trees shed bark and branches when under stress, all year round, although particularly in hot, dry weather. A predominance of exotic street trees in the Plains suburbs may have influenced Plains dwellers to conform with the streetscape in their selection of garden species (Plates 9.3 and 9.4).

The higher income suburbs, such as Springfield, Urrbrae, Hawthorn and parts of Glenalta displayed a notable dearth of Australian tree and shrub species, both in street and private gardens. These more exotic streetscapes of shady deciduous trees, set in extended lush green lawns, suggest that the rising cost of water necessary to maintain such gardenscapes is not a limiting factor in choice of garden layout and composition.

Plate 9.3 Exotic deciduous trees line Plains suburban streets, Hawthorn.

Plate 9.4 Exotic *Jacaranda mimosaefolia*, popular as street trees in many Plains suburbs.

Plate 9.3

Plate 9.4

## 9.4 Conclusions

The trends discussed in this section may be explained in terms of the influence of both demographic factors and the different physical environments of the Hills and the Plains sectors of the study area.

Patterns identified from the household survey data supported initial observations that distinct garden preferences were visible in the Hills and Plains, most obviously in major elements of garden design such as the presence or absence of lawn, and the choice of plants cultivated. It has been assumed that basic garden styles are established within the early years of occupation of dwellings, and are likely to reflect styles popular at that time.

The level of development of a garden and the given style is expected to reflect the length of time a particular dwelling has been occupied by the same householder. With extended occupancy periods it is assumed that while some of the original concepts have been retained the garden will have undergone a gradual evolution over time. As tastes and fashions alter, income varies, new plants and products are introduced, gardens will reflect these changes.

Human circumstances such as the death, serious chronic illness, physical incapacity of a partner, or sudden reversal of economic status may lead to modification of an existing garden by the original occupants. It seems likely however, that radical changes from earlier styles can be best explained by a change in ownership, the new occupants projecting a different image. With

different philosophies, greater or lesser physical capacity, and variable financial resources, gardenscapes will be modified or totally redeveloped.

Most of the new homes with recently established gardens are located in the Hills area. A higher proportion of Plains dwellings are older and have established gardens featuring largely non Australian native plant material. The data from the Hills area show a relatively high and sustained level of interest in the cultivation of native plants throughout the time period selected for the study. There is minimal observable difference between the percentage of native plants grown in gardens of recently established homes and those dwellings where occupants have lived for over twenty years.

# CHAPTER TEN

## CONCLUSIONS

Two themes have been followed in this research - the evolution of present day Australian gardens and the cultivation of Australian indigenous species in the urban landscape.

The initial hypotheses have been investigated through a detailed case study of Mitcham LGA in metropolitan Adelaide. Results of two field studies have been used to illustrate characteristics which make the study area both representative of the wider Adelaide suburban community and unique as a relict *locale* of middle-class Anglo-Saxon vernacular culture imposed upon the primaeval Australian landscape.

Adelaide's gardens have undergone significant change since the 1950s, innovations in style and plant content accelerated by changing lifestyles, new technology and greater environmental awareness.

## 10.1 Review of hypotheses

### 10.1.1 Over time domestic garden styles are modified to reflect changing social and economic conditions

The study area offered a broad cross-section of houses, hence gardens, established chronologically over an extended time span. Relict gardens, designed well before the period under review, retain distinctive elements of pre World War II fashions but show one of two recent modifications. Where the original (now aged) residents continue to occupy the premises, front gardens have been simplified to assume a low maintenance character. In other cases, older dwellings are undergoing refurbishment by new owners attracted to the charms of an old house and the challenge of its restoration. There has been a partial return to early heritage style cottage gardens, incorporating modern garden technology and a wider range of plant material including hardier native shrubs and groundcovers.

A study of Mitcham's demographic characteristics revealed a population of above average socio-economic level, more highly educated and affluent than metropolitan Adelaide households in general. It was anticipated that this would be reflected in garden styles but research did not support this premise. The high level of home ownership and relatively limited residential mobility within the study area has contributed to well established domestic gardens. In the relatively small areas of both exceptionally high and low income households front gardens ranged from the lavish, exotic, professionally designed and maintained, to the basic, functional 'non garden', projecting in both cases a lack of personal input

into garden care. The majority of householders, however, exhibited considerable pride in the presentation and maintenance of their front gardens.

It proved difficult to assess gardening costs effectively, however it was noted that some of the highest figures quoted came from householders solely financially dependent on the aged pension, a group often comprising ardent garden lovers prepared to devote considerable time and income on maintaining an attractive formal setting for their homes. The middle-aged group preferred informal low maintenance gardens with reduced areas of lawn and a higher percentage of Australian trees and shrubs, commensurate with their more active lifestyle, combining family commitments, employment and recreational activities away from the home.

The E & W S Department has probably exerted some economic influence on suburban gardens through its water pricing policies in an attempt to reduce domestic water consumption to a level which can be viably and economically sustained from the State's limited resources. A programme of public education has actively promoted the use of indigenous species, reduced areas of lawn and more efficient methods of water application.

### 10.1.2 The use of native plant material has been a significant factor in the evolution of an informal Australian garden style since the 1960s.

Field studies revealed a widespread acceptance of at least some Australian plants in most domestic gardens, the particular number of native plants cultivated increasing significantly in gardens established since the 1960s. Householders were unable to clearly identify reasons for these changes but investigations of

external influences suggest that public exposure to Australian flora used as landscape and gardenscape material increased in this period, accelerated through public education programmes and government environmental policies.

Media promotion, supported by commercial plant nurseries, has further encouraged home gardeners to experiment with new species. However, as fashion demands immediate and large scale availability of a product consequent to promotion, the ultimate determinant as to which species become popular is the ease of propagation, hence production cost.

Use of brick for paths, driveways and patios has become commonplace blending more comfortably into the 'natural' gardenscape with Australian native plants, moss rocks and wood bark mulch. The informal growth habits of many Australian indigenous plants provide a more casual garden appearance in keeping with relaxed modern lifestyles.

### 10.1.3 The nature of the physical environment will exert a strong influence on the type of domestic gardens likely to develop in a particular area

Research revealed a distinct physical dichotomy between the Hills and Plains sectors of the study area, climatically, edaphically and topographically, with comparable variation in garden styles. However, major differences in garden styles between the two sectors were related more directly to the topography and the period of garden establishment than to differences in climate and soil. The flat nature of the Plains, with regular shaped allotments, lent itself to the development of more formal gardens with conventional layouts, while informal

natural style gardens were more readily adapted to the more irregular topography of the Hills. Occasional 'native gardens' do appear scattered through Plains suburbs however, while formal gardenscapes can be found in Hills suburbs.

Climate appears to exert less influence on individual plant species cultivated than do soil types. The distinct yet relatively minor differences in temperature for the two sectors can be partially overcome by use of aspect, shade and shelter.[1] Moisture deficiencies can be supplemented with irrigation, but basic soil types provide more serious constraints. The surface soil can be easily modified for shallow rooted grasses and annuals by application of soil additives and mulch, but for deeper rooted trees and shrubs, the nature of the substrate will eventually determine the viability of certain species.

Most native species have a wider tolerance of both soil and climate than exotic plants, however certain species common in the Hills are rare in Plains gardens and vice versa. Hardy species of *Eucalyptus, Acacia, Correa, Callistemon, Melaleuca, Westringia, Grevillea* and *Leptospermum* are cultivated ubiquitously in the study area, while Mallees (dwarf *Eucalyptus)* and other arid land species struggle in the higher rainfall areas. Species of *Crowea, Boronia* and other genera of the Rutaceae family thrive in Hills gardens but defy successful cultivation in the warmer, calcic Plains soils.

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1 Tropical species such as *Pointsettia, Hibiscus, Bougainvillea* and *Frangipanni* will thrive on sunny northern aspects on the Plains but perish at the first frost in the Hills. In contrast the cool temperate genera, *Hydrangea, Camellia* and *Azalea,* are better adapted to the cooler Hills. On the Plains they will survive only in well watered tubs on the shaded southern aspect.

## 10.2 Review of issues to be investigated arising from chapter 1.

In addition to the three basic hypotheses, further questions were posed at the commencement of research which provided guidelines for consequent fieldwork.

### 10.2.1 When did the concept of the 'Bush garden' begin to manifest itself?

Although historical records indicate that interest in the cultivation of Australian native plants extends back to the early colonial days, the main thrust for propagation and cultivation of indigenous species came in the late 1950s, marked by the formation of the Society for Growing Australian Plants (SGAP) in 1958, which coincided with large scale clearance of native vegetation for agricultural pursuits in all states. From the early to mid 1960s authors of guides to the cultivation of Australian plants have been drawn mainly from the ranks of SGAP.

At this time Ellis Stones was developing a naturalistic Australian style in Melbourne gardens using rocks, sleepers, bark mulch and Australian plants. His work and ideas were transmitted through the popular media to become a model for the 'bush garden'.

### 10.2.2 What historical events contributed to and accompanied changing approaches to suburban gardens?

The period following World War II saw major social and economic changes in Australia. Although Adelaide's growth was on a smaller scale than the eastern states urban sprawl encroached into former rural land in the adjacent Adelaide Hills, while the demands placed on the state's limited water resources called for a

new approach to landscape design.

The use of hardy, drought resistant Australian native flora was an experimental exercise in the newly developing suburbs at a time when other countries were re-appraising the possibilities of using indigenous species and moving to 'design with nature' (McHaig, 1969). The postmodern movement which encouraged a greater flexibility in architectural design and experimentation with new materials was quickly adapted to contemporary Australian home styles.

Landscape architecture, emerging as a discrete field during the 1970s, recognised that the unique role of its profession was to link structures with their environment. Modern Australian houses were designed to blend with the bush, using exposed timbers and colours which harmonised with the landscape, while 'bush gardens' provided a setting sympathetic to the *genius loci.*

### 10.2.3 Which groups within society more readily accepted the informality associated with the use of Australian plants?

From the 1960s Adelaide's residents accepted the suitability of their climate for outdoor living and modern homes began to mirror those of California. Informal lifestyles more closely paralleled those of the Mediterranean countries from which some groups of migrants brought their culture to Australia. More formal conventional English style gardens were rejected in favour of an emerging Australian style.

Young homemakers came from increasingly mixed ethnic and cultural back-

grounds, more readily accepting social changes and contemporary innovations. With greater affluence, more flexible mobility and increased leisure time, recreational activities 'went bush', camping and bushwalking. Greater familiarity with the natural environment transposed itself into an acceptance of native plants as garden material well suited to low maintenance attractive outdoor settings for informal social activities.

### 10.2.4 Which sectors of the community actively promoted the use of native flora?

The most active promotion of native flora came from those groups concerned about environmental degradation and large scale loss of native vegetation, people with a strong interest in the propagation of plants and a sound background in botany, both amateur and professional. Unquestionably SGAP has been a dominant force in this field. Membership of SGAP has been consistently drawn from a wide cross-section of the community, suggesting that a concern for nature over-rides social and cultural boundaries. Government promotion of native plants can be traced directly to strong inputs by active members of SGAP as public servants, foresters, teachers and other professional practitioners.

### 10.2.5 Which economic, social and political factors have exercised the greatest influence on the average domestic gardener?

The appearance of the front garden reflects the level of interest the occupants have in their environs, the degree of maintenance and care denoting the priorities of time and income devoted to this activity. Many of the best presented gardens are products of a lifetime's labour of love rather than a substantial financial input. Money spend on the garden was done so

ungrudgingly, viewed as investment in an end result which would give pleasure to the owners and outsiders. Gardening is probably the most cross-cultural activity indulged in by the nation - as a form of personal artistic expression it has become a popular art form, and a distinctive element in the vernacular landscape.

## 10.3 General conclusions

Present day gardens have evolved as part of the long history of amenity horticulture, now largely a leisure activity. They are strongly influenced by a combination of entrepreneurial innovation in plant propagation, technology, marketing and environmental awareness.

It has been determined that Mitcham's front gardens reflect changing social and economic patterns which have occurred within the community over past decades and as such, constitute an important historical medium. This investigation has attempted to establish that the study of domestic gardens is the study of ordinary people, creating and maintaining the vernacular landscape. To the discerning observer, gardens can reveal much about their makers in particular, and social change in general. Gardens are living creations and as such, will change over time in response to both internal and external stimuli.

The variety of landscapes offered within the study area allowed some generalisations to be made about suburban domestic gardens in the wider Adelaide metropolitan area.

Adelaide's front gardens have undergone a major metamorphosis since the 1960s,

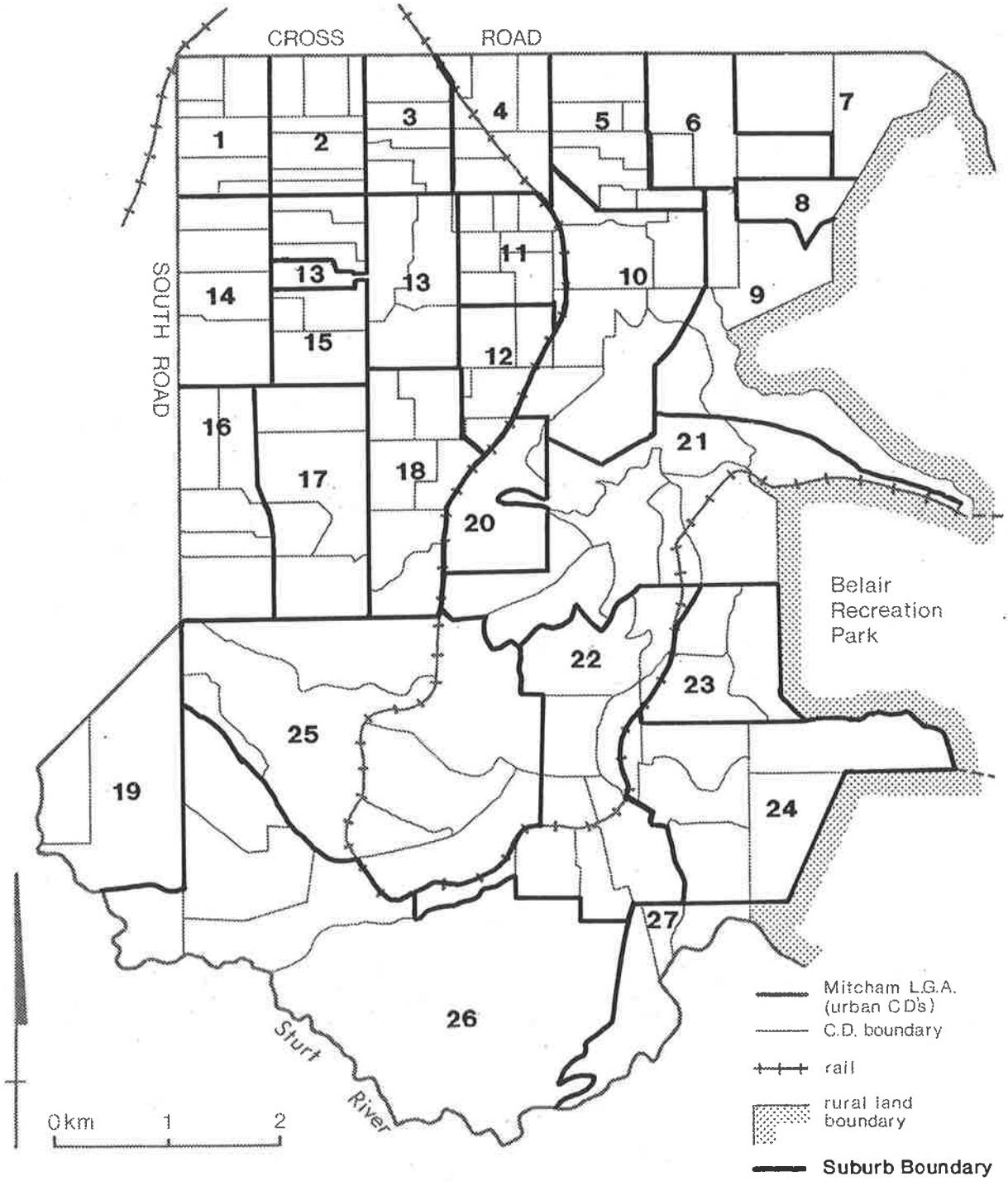
from a conservative formality reflecting common British cultural ancestry, to a less formal and more relaxed modern style. The use of Australian native plants has contributed significantly to this transformation, introducing new materials and new methods to replace the traditional and the orthodox. The acceptance of indigenous species has paralleled a growing confidence in Australian identity, an awareness of the environmental constraints of this land and the assimilation of non-British cultural contributions.

Adelaide's climate, soils and topography differ markedly from other Australian metropolitan areas, except perhaps for Perth, yet despite these differences, suburbs in all these cities have certain common elements: the choice of plants may vary but the trend towards cultivation of local species is well established. Lawns remain popular, although acceptance of these as seasonal features is growing.

It is predicted that a unique 'Australian garden' will continue to evolve in Adelaide with a blending of the informal cottage garden style and the use of hardier native plants, better adapted to the city's dry summers and limited water resources.

The quarter acre block 'house in garden' is expected to remain a standard feature of Australian suburbs. Eclectic in style, the gardens constitute a canvas on which the owners create their own piece of popular art, a facade to enhance their most important asset, their home.

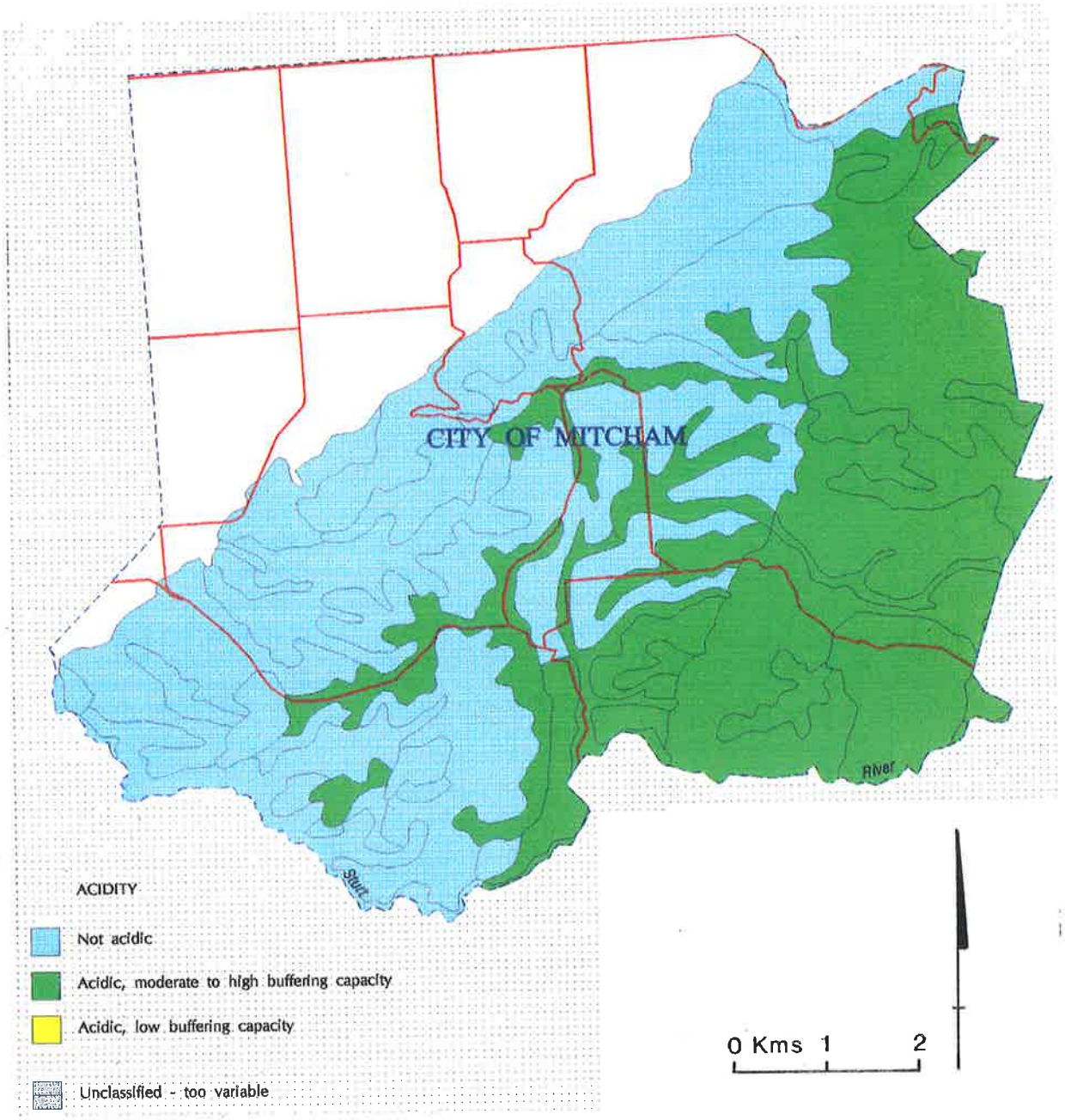
**APPENDIX A** Map of Suburbs of the Mitcham LGA




1. Clarence Gdns
2. Cumberland Pk
3. Westbourne Pk
4. Hawthorn
5. Kingswood
6. Netherby
7. Urrbrae
8. Springfield
9. Mitcham
10. Torrens Pk
11. Lower Mitcham
12. Clapham
13. Col.Light Gdns
14. Melrose Pk (Edwardstown)
15. Daw Pk
16. St Marys
17. Pasadena
18. Panorama
19. Bedford Pk
20. Lynton
21. Belair
22. Blackwood
23. Glenalta
24. Hawthorndene
25. Eden Hills
26. Bellevue Hills
27. Coromandel Vy

Appendix A: Suburbs within the Mitcham LGA (Maschmedt 1993)

**APPENDIX B** Soil acidity Map Mitcham LGA




Map produced by GIS Group - S.A. Department of Primary Industries. December 1993.

## Appendix B: Soil acidity – Mitcham LGA. (Maschmedt 1993)

**APPENDIX C** Soil landscapes of the Adelaide Region

Using the Northcote's 1979 Factual Key, the following Soil-Landscapes and associated dominant soils (Principle Profile Forms) are identified within the study area. The nearest equivalent Great Soil Group (GSG)is indicated.

| Unit | Landscape | Dominant soils (PPF) | GSG |
|---|---|---|---|
| Lb3 | Smooth undulating | Gc1.12 | Solonized brown Soil |
| | | Um6.2 | Terra Rossa-Rendzina-like |
| 01 | Outwash plains | Dr2.23 | Red brown earth |
| | | Dr2.33 | Red brown earth |
| | | Ug5.1 | Black earth |
| 08 | Slopes | Dr2.23 | Red brown earth |
| | | Um6.2 | Terra Rossa/Rendzina |
| | | Ug5.1 | Black earth |
| | | Uf6.11 | Rendzina |
| | | Dy5.4 | Solodized Solonetz and Sodic soils |
| 01 | Hill slopes | Dr2.22 | Non-calcic Brown Soils |
| Tc1 Tc3 | Hills and valleys | Dy3.21 | Yellow Podzolic |
| | | Dy3.22 | Grey-brown Podzolic |
| | | Dy3.41 | Soloths |
| | | Dy3.42 | Soloths |
| | | Dy3.43 | Solodized Solonetz & Sodic soils |
| | | Dy3.61 | Yellow podzolic & Lateritic Podzolic soils |
| | | Dy5.43 | Solodized Solonetz & Sodic soils |
| | | Dr2.22 | Non-Calcic brown soils |
| | | Uc2.2 | Podzolic, humus Podzolic |
| | | Uc2.3 | Podzolic, humus Podzolic |
| | | Uc6.11 | Lithosols |
| D2 | Steep hills | Uc6.11 | Lithosols |
| | | Dy3.22 | Grey-brown Podzolic soils |
| | | Dy3.41 | Soloths |
| | | Dy3.61 | Yellow podzolic & Lateritic Podzolic soils |

APPENDIX D

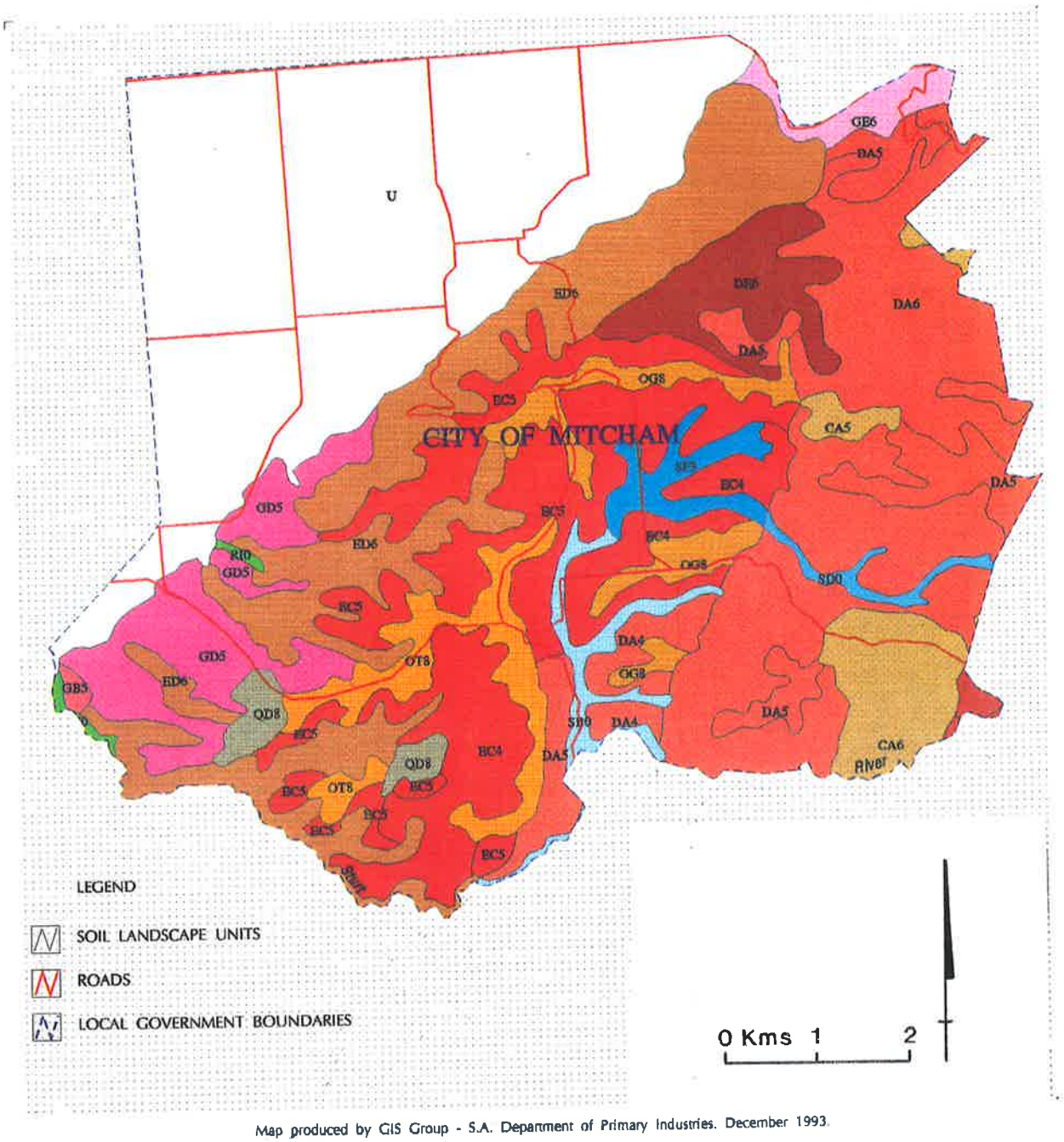
Approximations of different soil classifications for the Mitcham LGA

| Handbook of Aust soils | Factual Key | US Soil taxonomy | World Soil Map |
|---|---|---|---|
| Alluvial | Um1.1 | Ustifluvent | Eutric |
| | Um5.22 | Xerifluvent | Fluvisol |
| | Um5.42 | Torrifluvent | |
| Lithosol | Uc1.4 | Usorthent | Eutric |
| | Uc2.12 | Xerorthent | Regosol |
| | Uc6.11 | Ustochrept | |
| | Uc6.12 | Cambothid | |
| | Um1.4 | Heplargid | |
| Black earth | Ug5.1 | Pellustert | Pellic |
| | Ug5.4 | Chromustert | Chromic |
| | | Torrert | Vertosol |
| Red brown earth | Dr2.13 | Natrixeralf | Orthic |
| | .23 | | |
| | .33 | | |
| | Db1.33 | Palexeralf | Solonetz |
| | Db2.33 | Paleustalf | Chromic |
| | | Haploxeralf | Calcic |
| | | Rhodoxeralf | Albic |
| | | | Luvisol |
| Grey brown and other red, yellow podzolic soils Non-calcic brown soils | Db1.42 | Haplustalf | Orthic |
| | Dr2.12 | Palexeralf | Albic |
| | Dy3.22 | Haploxeralf | Luvisol |
| | Dy3.41 | Haploxerult | Acrisol |
| | | | Ferric |
| Lateritic podzolic | Dy.61 | Palexeralf | |
| | Dy3.81 | | |

(From Moore, Isbell & Northcote 1983 pp.254- )

According to the US Soil Taxonomy Mitcham would be classified in a Xeric class (Mediterranean climatic zone, hot dry summers, cool wet winters). (Merry, Personal communication)

APPENDIX E Soil Landscapes of the MITCHAM LGA MAP
(Maschmedt 1993)




Map produced by GIS Group - S.A. Department of Primary Industries. December 1993.

## Appendix E: Soil landscapes of the Mitcham LGA

(Maschmedt 1993)

**APPENDIX E** Soil Landscapes of the MITCHAM LGA
(Maschmedt 1993)

Legend to accompany map.

The legend summarizes each of the mapped Soil Landscapes, which have a two or three character code:

1st letter: Broad geological or substrate groupings
2nd letter: Defined association of soils or geographic features within broad geological groups
3rd character: Landform descriptor, for those geological/soil association groups which occur in more than one topographic situation

| | | | | | |
|---|---|---|---|---|---|
| 0 | = | drainage depression | 5 | = | moderately steep slopes |
| 1 | = | flat land | 6 | = | steep slopes |
| 2 | = | very gentle slopes | 7 | = | very steep slopes |
| 3 | = | gentle slopes | 8 | = | summit surfaces (plateaux) |
| 4 | = | moderate slopes | 9 | = | windblown landforms |

**C Soil landscapes formed on sandstones and quartzites, mainly of the Stonyfell Quartzite**

CA Rolling to steep low hills and slopes formed on coarse grained sandstones (Upper Sturt/Sheoak Road)

**D Soil landscapes formed on siltstones, shales and dolomites of Precambrian age**

DA Low hills and hills (Upper Sturt, Coromandel Valley)
Main soil: loam over red friable clay forming in siltstone

**E Soil landscapes formed on mixed sandstones, siltstones and quartzites of Precambrian age**

EC Hillslopes and low hills in Belair-Onkaparinga Gorge area (Belair NP, Blackwood, Craigburn).
Main soil: loam over friable red clay forming in weakly calcified siltstone

ED Steep hills from Onkaparinga Gorge to Mt Barker Road, (Bellevue Heights).
Main soil: shallow gravelly sand to loam over siltstone or sandstone.

**G Soil landscapes formed on siltstones and sandstones mantled with carbonates**

GB Low hills to hills on the western escarpment of the ranges (Mitcham foothills).
Main soil: Shallow calcareous loam over highly calcareous siltstone.

GD Low hills to hills from Hackham to Gawler Town Hill (Mitcham foothills).
Main soil: loam over red clay with sporadic carbonate forming in siltstone.

GE Steep hills of the Adelaide Escarpment (Mount Barker Road)
Main soil: clay loam over red brown clay on soft carbonate, grading to siltstone.

**O Soil landscapes formed on deeply weathered and laterized basement rocks and unconsolidated sediments**

*Landscapes developed on mixed Precambrian rocks of lower rainfall areas.*

OG Summit surfaces underlain by kaolinitic siltstone and sandstone. (Belair, Glenalta)
Main soil: loam with ironstone over red clay loam grading to yellow and red clay (lateritic podzolic)

OT Landscapes developed on Tertiary sediments (Blackwood)
Summit surfaces and low rises underlain by kaolinitic Tertiary sand or sandy clay.
Main soil: loamy sand with ironstone over yellow and red sandy clay to clay loam (lateritic podzolic)

**G Soil landscapes formed on clays of Pleistocene age Hindmarsh and Blanchetown Clay)**

QD Elevated plains and summit surfaces of the Barossa and Flagstaff Hill areas (Bellevue Heights, Eden Hills).
Main soils: black cracking clay. Sandy clay loam over brown and grey clay.

**R Soil landscapes formed on alluvium of the Pooraka Formation mantled with carbonate**

*St Vincent Basin*

R1 Pediments: flats and drainage depression. ('Terraces' in scarp front of Sturt Gorge).
Main soil; sandy loam over yellow brown and grey brown clay on class 1 $CO_3$.

**S Soil landscapes formed on non-calcified sediments of the Pooraka Formation.**

*Landscapes occurring throughout the Ranges and formed on clayey to sandy alluvium derived from the erosion of basement rocks*

SB Drainage depressions and flats on mixed sandy and clayey alluvium (Coromandel Valley).
Main soil: loamy sand to loam over brown, grey and red sandy clay to clay.

SD Drainage depressions and flats on clayey alluvium (Belair National Park).
Main soils: dark clay loam over black clay. Loam over brown, grey and red clay.

SF Lower slopes and low rises on ironstone gravelly clays (Belair National Park)
Main soil: sandy loam with ironstone over yellow sandy clay grading to brown clay.

U **Soil landscapes formed on alluvial sands, silts and clays of the Adelaide Plains. ***

(* Landscapes of the Adelaide Plains area have not been differentiated by the GIS Group SA Department of Primary industry as they are not considered significant for agricultural production.)

## APPENDIX F Definition of NATIVE PLANTS

The term Australian Native Plants is widely and loosely used which necessitates clarification for its inclusion in this thesis since the cultivation of such plants in domestic gardens constitutes an essential part of this study.

All plants are originally native to some particular locality so, rather than referring to *native plants,* systematic botanists prefer the term *Australian Plants* for general usage, denoting the identification of species found to be naturally occurring and endemic on the Australian continent.

Species not naturally occurring in Australia but which have been introduced either deliberately, e.g. ornamental and economic plants species, or accidentally e.g. many weeds, are referred to as *exotic plants.*

The term *Australian exotics* is gaining common acceptance to denote species which are native to Australia but are cultivated in areas where they do not naturally occur, e.g. many Western Australian species are commonly cultivated as garden plants in Adelaide.

The term *endemic* is used for a species (or genus) found to be naturally occurring in only one specific area. There are no species currently known to be endemic to any locality within the Mitcham Council district (Enid Robertson, pers.comm).

*Indigenous plants* are those species which occur naturally in a given area, but are not necessarily endemic, i.e. they may occur naturally in other localities such as many species which are widespread over the Mount Lofty Ranges.

It is difficult to produce a species list of plants indigenous to a local area except on a very small scale as local conditions can vary widely within a relatively limited distance due to differences in soil type and depth, slope, aspect, altitude, drainage and general topography. Belair Recreation Park, an area of 835 hectares, with rainfall ranging from below 800mm on the western side to over 1000mm on the east, has four distinct soil types and at least five plant community types.

A species list has been prepared by Enid Robertson for the Watiparinga Reserve in the Mitcham LGA but although there may be a number of species common to adjacent localities this is not necessarily representative of the flora of the whole study area.

Fundamental conservationists have suggested that any revegetation programmes should be restricted to replanting only species *indigenous* to any particular locality, with all other Australian species being regarded as exotic.

Until the 1960s Australian native plants were widely referred to as *wildflowers* with the connotation that such species occurred only outside of cultivation. The work of bodies such as the Society for Growing Australian Plants was instrumental in not only encouraging propagation of native species but also expanding the availability and acceptence of native plant materials for the domestic garden. For the purpose of this discussion the broadly accepted usage of the term *native plants* has been adopted to include any plants of Australian origin.

APPENDIX G

Selected list of current gardening magazines on sale at major suburban newsagents in the study area in 1992

(M) = Monthly (BM) = Bi-monthly (Q) = Quarterly
(S) = Series (O) = Occasional

(M) *Your Garden* Southdown Press, Melbourne. $3.00
(M) *Gardening Australia* Federal Publishing Co., Sydney $2.50
(M) *Australian House and Garden* Australian Consolidated Press, Sydney, $3.80
(M) *Australian Home Beautiful* Southdown Press, Melbourne, $3.30
(M) *Better Homes and Gardens* FCM Publications, Sydney $3.30
(BM) *The Australian Garden Journal* Australian Garden Journal Pty Ltd, Sydney $4.50
(BM) *Australian Country Style* Federal Publishing Co., Sydney $7.95
(BM) *Gardens and Backyards* Martin Fallows, Sydney, $3.95
(Q) *Earth Garden* Alan Thomas, Melbourne, $3.95 (on recycled paper, no colour photos)
(S) *Gardening with Australian Native Plants* Green Leaf Garden Series, Express Publications, Sydney, $3.95
(S) *101 Natural Gardening Ideas* Australian Garden Guide series, Express Publications, Sydney, $4.95
(S) *Landscaping with Australian Native Plants* Australian Garden Guide series, Express Publications, Sydney, $4.50
(S) 'How to plan your Garden'. The Lifestyle Series, Federal Publishing Co., Sydney, $5.50.
(S) *Garden Design* The Lifestyle Series, Federal Publishing Co., Sydney, $5.50
(S) *Growing Australian Natives* The Lifestyle Series, Federal Publishing Co., Sydney, $5.50
(S) *Outdoor Living Ideas* Better Homes and Garden (Series: Living Library), Murdoch Books, Sydney, $6.95
(S) *Gardening Made Easy* Better Homes and Garden (Series: Homemaker Library) Murdoch Books, Sydney, $7.95
(O) *Encyclopaedia of Australian gardening* Bay Books, Sydney, $2.50
(O) *The Complete Gardening Companion* Universal Magazines, Sydney, $6.95

List of current gardening magazines.

## APPENDIX H

References to native plant propagators in South Australia 1858-1920 (from Swinbourne 1982)

The earliest reference found for sale of native plants species appeared in 1858. Clifton Nursery (North Adelaide). Chas Ware advertised in the *South Australian Advertiser* 12th July 1858 offering a number of *Australian species including Grevillea robusta, Bunya bunya* and *Moreton Bay fig.*

In 1859 Evandale Nursery (J.F. Wood), established in the mid 1850s, advertising in the *Farm and Garden Journal* April 1859 recommended the use of *Tetratheca* as an appealing garden plant.

1881 records from Giles' Grove Hill Nursery indicate that amongst plants grown at the garden and nursery were *Banksia grandis* and *Hakea victoria.*

In 1860 the Parkside Nursery (W. Chance & Son) stock list included various Australian native species of *Eucalyptus* and *Callitris.*

The Mt Barker Road Nursery, operated by Wm Murray, in 1859 offered *Acacia* trees, shrubs and seedlings.

The Payneham Nursery, founded by Henry Sewell during the late 1860s, offered in their 1871 catalogue the following Australian plants for sale - *Agathis robusta* (Qld Kauri pine), Flowering gum *Eucalyptus ficifolia,* and a range of palms and cycads.

In 1887 Henry Newell developed West Marden Nursery, mainly to supply fruit trees, but stock also included *Callistemon pubescens,* and *Melaleuca leucodendron.*

The Wirrabara Nursery, also known as Hill View, was established by Henry Copas in 1868 to supply hardy trees and shrubs suitable for shade and shelter in the drier mid northern districts. By 1881, the nursery boasted 2000 plants of native forest trees, predominantly *Eucalyptus globulus* and *Eucalyptus cladiocalyx.* Also mentioned is the Kurrajong or Illawarra Flame tree *Brachychiton acerifolius.* Also listed in the catalogue for this period was the South American *Schinus molle,* (peppercorn tree).

1875 was the year that the Forest Board established government nurseries at Bundaleer and Wirrabara. Initial trials were made with Jarrah *(Eucalyptus marginata),* Tasmanian Blue gum *(Eucalyptus globulus),* Red gum *(Eucalyptus camaldulensis), E. leucoxylon* and *E. cladiocalyx.* Plants were grown and distributed free of charge to landowners, which program continued till 1925.

In 1877 Hartley Springs Gardens and Nursery at Clare, (W.G. Lewcock) offered in its catalogue shrub seed including wattles.

F.A. Potter & Co (Hackney) established 1903 a seed business and became one of the largest procurers in Australia, at the time, of seed of the native 'Sugar Gum' *Eucalyptus cladiocalyx (corynocalyx).* In July 1906 the company advertised in 'The Garden and Field', offering for sale *Golden Wattle.*

APPENDIX I

List of nurseries propagating native plants after 1960 (By date established)

| | |
|---|---|
| 1961 | Blows Brothers, Stirling |
| 1964/65 | Wm Thompson, Greentrees Nursery, Tea Tree Gully |
| 1965 | Northern Districts Nursery/Para Hills Nursery<br>Don O'Brien for RDC. Clovercrest |
| 1973 | Wildflowers Australia, Toorak Gardens<br>Catts Nursery, Victor Harbor |
| 1974 | Ted Allender, Blackwood/Macclesfield<br>J.P. and R.G. Gray, Tetratheca, Kanmantoo<br>A.J. Mortimer, Evanston |
| 1975 | Eric Chivers, Black Forest |
| 1976 | G. & J. Biddle, Glenvale Nursery, Yatala Vale<br>P. & P. Kelly, Homelands Nursery, Burnside<br>Harrison, Lovett & Liddle, Onkaparinga Nursery, Hackham<br>O'Brien & Goode, Birdhaven Nurseries, Tea Tree Gully, Modbury |
| 1977 | Green Grub, Hope Valley. Clovelly Park |
| 1977/78 | Creative Landscape Design, Athelstone<br>Pitman, West Lakes Nursery<br>Kevin Eckert, Gawler Nursery<br>Gumbirra Native Nursery, Murray Bridge<br>Mac's Garden Centre, Strathalbyn |
| 1978 | Brian Gould, Southern Native Plants, McLaren Vale |
| 1979/80 | Minda Inc Craigburn Farm<br>Peter Hughes, Eucalypt Farm, Happy Valley<br>Gwen Fern Garden & Native Orchids, Brighton<br>Lawry's Native Nursery, Coromandel Valley |
| 1980 | Neville Bonney, Nangula Native Nursery, Millicent |
| 1980/81 | Ron & Beryl Smith, McLaren Vale<br>L.T. & M.K. Nesbitt. Australian terrestrial orchids |
| 1981 | Brian James, Panorama Native Plants |

APPENDIX J

INTERVIEW SCHEDULE - WOODS AND FORESTS NURSERY, BELAIR

ID no.....
Date
Location
Postcode

1. Suburb

2. Have you bought plants from here before ? Y/N

   If YES: when was the first time?
   1. over 10 yrs ago
   2. 5-10 yrs ago
   3. less than 5 yrs

3. Why did you choose this nursery to buy plants from?

   1. live nearby
   2. good choice of plants
   3. good quality plants
   4. tradition
   5. good service/advice
   6. visiting in the area
   7. recommended
   8. advertisement
   9. native plants
   10. other (state)

4. Are these plants for your home garden? Y/N

   If NO are they for:
   1. a gift
   2. business premises
   3. farm trees
   4. other (state)

5. How many NATIVE PLANTS have you bought today?

6. Have you bought NATIVE PLANTS anywhere before? Y/N
   If YES from where?
   1. here
   2. other nurseries
   3. supermarkets
   4. elsewhere (state)

7. What percentage of your garden is planted with natives?
   1. less than 25%
   2. 25-50%
   3. 50-75%
   4. more than 75%

8. How long have you lived in your present home?

   Is it
   1. your own house
   2. your own unit?
   3. rental house
   4. rental unit

9. Had natives been planted in the garden before you moved in? Y/N

10. What influenced your decision to grow native plants?

1. use less water
2. easier maintenance
3. like their appearance
4. because they are Australian
5. to attract wildlife
6. result of publicity/promotion
7. for windbreak
8. grow quickly
9. climate/soil
10. saw in bush
11. other(state)

11. Have you found any problems associated with growing native plants in your garden? Y/N

If YES, what are they:

1. roots in pipes
2. leaves in gutters
3. falling limbs
4. grow too big
5. competition
6. dull periods
7. die suddenly
8. Other (state)

12. What helped you to choose the particular plants you have bought today?

1. read about them in a book or magazine
2. heard about them on radio or TV
3. had them recommended by a friend
4. recommended by the assistant here
5. just looked interesting/attractive
6. were looking for plants for specific purpose
7. were familiar with them, had grown before
8. information on the display
9. other (state)

13. Did you have any specific plants in mind when you came here today? Y/N

If YES which ones?

14. Who does the planning and plant selection for your garden?

M/F/Both

15. Have you ever used a landscape garden service? Y/N

If YES, did they recommend use of native plants? Y/N

16. Have you heard of the Society for Growing Australian Plants? Y/N
If YES have you ever been a member? Y/N

17. Age group M F

1. under 25
2. 25-40
3. 40-65
4. over 65

NO FURTHER QUESTIONS

APPENDIX K Householder interview schedule

UNIVERSITY OF ADELAIDE GEOGRAPHY DEPARTMENT

ADELAIDE GARDEN SURVEY ELIZABETH CALDICOTT

Date.....

ID No.
CD No.
Postcode

---

WHERE ONLY A SINGLE RESPONSE IS REQUIRED, PLEASE CIRCLE THE APPROPRIATE NUMBER.

WHERE MULTIPLE RESPONSES ARE REQUIRED PLEASE TICK THE APPROPRIATE BOXES.

---

Qu 1. Age of dwelling
When was this house built ?
[1] pre 1940 (no major additions, alterations)
[2] pre 1940 (with recent restoration)
[3] 1940-1955
[4] 1956-1969
[5] 1970-1979
[6] 1980-1989

Qu 2. How many bedrooms does your house have ? [ ]

Qu 3. Nature of Occupancy
Is this house
[1] owner occupied (with or without a mortgage)
[2] private rental
[3] Housing Trust rental
[4] other

Qu 4. Length of occupancy
How many completed years have you lived in this house ?
[1] less than 1 year
[2] 1-4 years
[3] 5-9 years
[4] 10-19 years
[5] 20 years or more

Qu 5. Where was your (last) previous home ?
[1] in the same suburb
[2] in another suburb of Adelaide
(please state which one .....
[3] in the country (on a farm)
[4] in the country (in a town)
[5] in another Australian city
[6] overseas

Qu 6. Did any of the following influence your decision to buy/rent this particular house?

| | | Yes | No |
|---|---|---|---|
| a. | [1] wanted to live in this area | | |
| | [2] liked the garden | | |
| | [3] is convenient to work/school | | |
| | [4] near friends and/or relatives | | |
| | [5] close to transport & other services | | |
| | [6] suitable cost at the time | | |
| | [7] required size at the time | | |

b. If there were important reasons not stated above, what were they?

Qu 7. Please indicate if you have visited any of the following in the past 5 years?

| | Yes | No |
|---|---|---|
| [1] Adelaide Botanic Gardens | | |
| [2] the new Bicentennial Conservatory | | |
| [3] Wittunga Gardens at Blackwood | | |
| [4] Black Hill Wildflower Garden | | |
| [5] Belair Recreation Park | | |
| [6] any other SA National Pk/Conservation Pk | | |
| [7] Watiparinga Reserve | | |

Qu 8. Do you agree with the general principle of charging entry fees to National Parks?

[1] yes
[2] no
[3] unsure
(please comment) .....
.....

Qu 9. Has the use of entry charges to Belair Recreation Park influenced your use of the park?

[1] no, didn't ever go there anyway
[2] no, still go as often
[3] yes, use it less
[4] yes, won't go there now
[5] yes, walk in now, don't take the car
[6] yes, only to buy plants at the W&F nursery

Qu 10. Have you, or any member of the household, ever belonged to any of the following groups

| | Yes | No |
|---|---|---|
| [1] Field Naturalists | | |
| [2] Soc. for Growing Australian Plants | | |
| [3] Trees for Life (Men of the Trees) | | |
| [4] Greening Australia | | |
| [5] A bushwalking club | | |
| [6] Conservational Council | | |
| [7] Any other group interested in nature conservation (please state which) | | |

Qu 11. Who do you think should care for parks and reserves in the local area?
[1] the Council
[2] the public
[3] both of the above
[4] other

Qu 12. Do you think that the government should increase funding for
[1] creation of more National Parks
[2] maintenance of existing National Parks
[3] both of the above
[4] neither of the above

Qu 13. How often would you use your back-garden for outdoor living (family, entertaining etc)

a. [1] never
[2] occasionally
[3] often

b. [4] only in summer
[5] all year round (weather permitting)

Qu 14. Do you ever use the front garden for entertaining or outdoor living?
[1] yes
[2] no

Qu 15. Who does most of the work in the garden ?
[1] male
[2] female
[3] both
[4] employed gardener, garden service
[5] no-one

Qu 16. How much time is spent by the above person(s) working in your garden?
[1] none by household members
[2] as little as possible
[3] as much as necessary
[4] as much as possible

Qu 17. Approximately how much a year would you spend on the garden? (include plants, fertilizers & sprays, tools & other equipment, garden services, excess water)
[1] <$100 (about $2 per week)
[2] $100 - $500 (up to $10 per week)
[3] >$500 (over $10 per week)
[4] no idea

Qu 18. Approximately how much excess water charges did you have to pay this summer?
[0] none
[1] less than $50
[2] $50-$100
[3] $100-$200
[4] more than $200
{5} no idea

Qu 19. Have you ever used any of the following:
[1] a professional landscape/garden designer
[2] regular lawn mowing service
[3] regular general gardening service
[0] none of the above

Qu 20. How often would your read the gardening section in these newspapers or magazines?

| | Never | Occasionally | Regularly |
|---|---|---|---|
| [1] the Advertiser | | | |
| [2] The News | | | |
| [3] Sunday Mail | | | |
| [4] Womens Weekly | | | |
| [5] Others | | | |

(please state) .....

Qu 21. Do you listen to these gardening programmes on the radio ?

| | Never | Occasionally | Regularly |
|---|---|---|---|
| [1] ABC (Jon Lamb) | | | |
| [2] 5DN | | | |

Qu 22. Do you watch these gardening programmes on the TV?

| | Never | Occasionally | Regularly |
|---|---|---|---|
| [1] Burke's Backyard | | | |
| [2] Gardening Australia | | | |

Qu 23. Do you have any Australian native plants growing in your garden at present?

| | Yes | No | Unsure |
|---|---|---|---|
| [1] Trees | | | |
| [2] Shrubs | | | |
| [3] Groundcovers | | | |

Qu 24. Have any Australian natives been planted by members of your household

| | Yes | No | Unsure |
|---|---|---|---|
| [1] Trees | | | |
| [2] Shrubs | | | |
| [3] Groundcovers | | | |

Qu 25. Do you plan to plant any (more) Australian native plants in your garden in the future?
[1] yes
[2] no
[3] unsure

<u>If responses to Qu 23, 24, 25 are NO, go to Question 31</u>

Qu 26.a. Have you removed any <u>Australian</u> trees or shrubs from the garden since you came to live here?
[1] yes
[2] no
[3] don't know

b. If <u>yes</u>,could you please indicate if it was for any of the following reason(s)

| | Yes | No |
|---|---|---|
| [1] they died | | |
| [2] grew too big, untidy | | |
| [3] they looked dull, uninteresting | | |
| [4] falling limbs, bark, leaves, fruit | | |
| [5] allergies | | |
| [6] prefer other plants, lawn, flowers | | |
| [7] household security | | |
| [8] problems with drains, gutters | | |
| [9] other (please state)..... | | |

Qu 27. When did you first plant Australian natives here?
[0] not applicable
[1] during the last 12 months
[2] in the 1980s
[3] in the 1970s
[4] in the 1960s
[5] before 1960

Qu 28.a. Can you tell me where you bought your Australian plants ?
[1] yes
[2] no

b. If <u>yes</u>, where

| | Yes | No |
|---|---|---|
| [1] Woods & Forests Nursery Belair | | |
| [2] Other nurseries/garden centres (please state which) ..... | | |
| [3] SGAP Plant Sales | | |
| [4] Supermarkets/street stalls | | |
| [5] did not buy, they were gifts/prizes | | |
| [6] did not buy, exchanged with friends | | |
| [7] did not buy, propagated own plants | | |

Qu 29. Can you say if you have planted Australian native plants in your garden for the following reasons?

| | Yes | No |
|---|---|---|
| [1] believe native plants use less water | | |
| [2] native plants require less maintenance | | |
| [3] they attract birds | | |
| [4] they survive better than other plants | | |
| [5] just like the look of them | | |
| [6] feel we should be growing Aust. plants | | |
| [7] they are fast growing | | |
| [8] create the feeling of living in the bush | | |
| [9] other (please state)..... | | |

Qu 30. Please indicate how you chose the particular native plants that you have bought for your garden?

| | Yes | No |
|---|---|---|
| [1] selected from books/magazines prior to purchase, for appearance and/or suitability for the site(soil/climate) | | |
| [2] they were in flower at the time of purchase and looked attractive | | |
| [3] heard about them on the radio/TV | | |
| [4] saw them in other gardens | | |
| [5] advice of nursery/garden centre staff | | |
| [6] recommended/chosen by landscaper | | |
| [7] they were cheap/at a sale | | |
| [8] already growing well in garden | | |
| [9] other (please state ..... | | |

Qu 31. Have you reduced the household water consumption this summer?

[1] yes
[2] no
[3] don't know

If YES was it due to any of the following:

[1] increased price of additional water
[2] advertising campaigns promoting water conservation
[3] change in garden style
[4] reduced number of persons in the house
[5] different method of watering the garden

Qu 32. What method(s) do you use to water your garden?

| | Yes | No |
|---|---|---|
| [1] pop-up sprinklers | | |
| [2] drippers | | |
| [3] mini sprinklers | | |
| [4] timer(s) | | |
| [5] ordinary hose with sprinkler | | |
| [6] soaker hose | | |
| [7] hand watering | | |
| [8] do not water | | |

Qu 33. If you use any of the following, please indicate when they were installed?

| | pre 1980 | 1980-85 | 1986-90 |
|---|---|---|---|
| [1] pop-up sprinklers | | | |
| [2] drippers | | | |
| [3] mini sprinklers | | | |
| [4] timer(s) | | | |

Qu 34. During the last five years has your lawn

| | Yes | No |
|---|---|---|
| [1] increased in area | | |
| [2] decreased in area | | |
| [3] remained the same size | | |
| [4] been completely removed | | |
| [5] been allowed to die off in summer | | |
| [6] been replaced by new type of grass | | |
| please state new species ..... | | |

Qu 35. If there has been a change to the lawn please indicate the reason(s)

| | Yes | No |
|---|---|---|
| [1] to reduce water consumption | | |
| [2] easier garden maintenance | | |
| [3] wanted to change the garden style | | |
| [4] other | | |
| please state)..... | | |

Qu 36. If you have changed the style of your garden in any other way since you came to live here, please indicate if it was for any of these reasons?

| | Yes | No |
|---|---|---|
| [01] different garden layout | | |
| [02] more Australian native plants | | |
| [03] more exotic plants | | |
| [04] more trees | | |
| [05] less trees | | |
| [06] more shrubs | | |
| [07] less shrubs | | |
| [08] more flowering annuals | | |
| [09] less flowering annuals | | |
| [10] more vegetables | | |
| [11] less vegetables | | |
| [12] other (please state) | | |

Qu 37. How would you describe the general characteristics of your soil?

a. <u>fertility</u>
[1] good
[2] average
[3] poor
[0] don't know

Qu 38. b. <u>chemistry</u>
[1] acid
[2] alkaline
[3] neutral
[4] varies
[5] don't know

Qu 39. c. <u>texture</u>
[1] sandy
[2] clayey
[3] mixture/varies
[4] don't know

Qu 40. d. <u>depth (above rock)</u>
[1] deep (more than 1 metre)
[2] shallow (less than one metre)
[0] don't know

Qu 41. Has any new soil (top dressing) been added to the garden and/or lawn since you moved here?
[1] yes
[2] no
[3] don't know

Qu 42. Do you use any of the following as soil improvers

| | Yes | No |
|---|---|---|
| [1] organic fertiliser(manure,blood & bone) | | |
| [2] artificial fertiliser (Complete D, Super, Osmocote, other chemicals) | | |
| [3] lime | | |
| [4] gypsum | | |
| [5] dolomite | | |
| [6] home made compost | | |
| [7] other | | |

THE FOLLOWING INFORMATION IS IMPORTANT FOR THIS RESEARCH. IF YOU DO NOT WISH TO RESPOND YOUR PRIVACY WILL BE RESPECTED, HOWEVER YOUR CO-OPERATION WILL BE MUCH APPRECIATED.

ALL RESPONSES WILL BE TREATED WITH COMPLETE CONFIDENTIALITY.

Qu 43. Could you tell me the number of people in each age/sex group resident in this household?

| Age group | No. Males | No. Females |
|---|---|---|
| [1] Under 18 yrs | | |
| [2] 18-24 yrs | | |
| [3] 25-39 yrs | | |
| [4] 40-54 yrs | | |
| [5] 55-64 yrs | | |
| [6] 65-74 yrs | | |
| [7] 75 yrs or more | | |
| [8] Total in household [ ] | | |

Qu 44. How many generations live in this household?
[1] one
[2] two
[3] three
[4] four

Qu 45a. Were all adult members of the household born in Australia?
[1] yes
[2] no

b. If any were not born in Australia, please indicate the country (or countries)of birth:
[01] Britain
[02] Greece
[03] Italy
[04] Lebanon
[05] Germany
[06] Netherlands
[07] Other European country (state)
.....
[08] Asia (state which country)
.....
[09] North America (USA, Canada)
[10] New Zealand
[11] South America (state which country)
[12] Other (state)
.....

Qu 46a. Were any parents of any of the adult members of this household born overseas?
[1] yes
[2] no

b. If YES please indicate country or countries of birth.
[01] Britain
[02] Greece
[03] Italy
[04] Lebanon
[05] Germany
[06] Netherlands
[07] Other European country (state)
.....
[08] Asia (state which country)
.....
[09] North America (USA, Canada)
[10] New Zealand
[11] South America (state which country)
.....
[12] Other (state)
.....

Qu 47. How many members of the household, 18 years and over, are at present:

A. IN THE LABOUR FORCE

Employed as
[1] wage/salary earner (full time)
[2] wage/salary earner (part time)
[3] self employed (full time)
[4] self employed (part time)
[5] employer
[6] unpaid helper

Unemployed and
[7] looking for full time work
[8] not looking for full time work

B .NOT IN THE LABOUR FORCE

[1] full time student
[2] home duties
[3] pensioner (age/service/invalid/supporting parent)
[4] retired, not pensioner
[5] not stated

Qu 48. What are the usual occupations of the adult members of the household? (give former occupation if retired or not currently employed)

[1].....
[2].....
[3].....
[4].....
[5].....

Qu 49. Would you be able to indicate the approximate <u>combined</u> income of <u>all</u> members contributing to the household budget? (Gross, before tax).

[1] less than $ 9,000
[2] $ 9,001 - $15,000
[3] $15,001 - $22,000
[4] $22,001 - $32,000
[5] $32,001 - $40,000
[6] $40,001 and over
[7] not stated

Qu 50. If you have children did they attend, are they currently attending or likely in the future to attend:
[1] a state secondary school
[2] an independent secondary school/college
[3] a Catholic secondary school
[4] other church or special school
[5] did not attend secondary school
[0] no children/not applicable

Qu 51. Please indicate the <u>highest</u> level of qualification achieved by members of the household/family:

Parent(s) Child(ren)

[1] degree or higher
[2] diploma
[3] matriculation certificate
[4] trade certificate (apprenticeship completed)
[5] other certificate course
[6] no qualifications
[7] not stated

<u>GARDEN CHARACTERISTICS (OBSERVATION/INTERVIEW)</u>

Qu 52. What level of maintenance would you consider is required for your garden?
[1] high
[2] moderate
[3] low

Qu 53. What area of the front garden is occupied by lawn? (exclude area occupied by driveway)

[1] none
[2] less than one quarter
[3] about one quarter
[4] about one third
[5] about a half
[6] about three quarters
[7] more than three quarters
[8] total area

Qu 54. If you use any mulch, please state which kind:

| | Yes | No |
|---|---|---|
| [1] pine bark | | |
| [2] other wood chips | | |
| [3] scoria or other rock | | |
| [4] homemade compost | | |
| [5] other (state.....) | | |

Qu 55. What proportion of the trees and shrubs in your garden are Australian native

[1] none
[2] less than one quarter
[3] about one quarter
[4] about one third
[5] about a half
[6] about three quarters
[7] more than three quarters
[8] total

Qu 56. Are the trees, over 2 m tall, present in your garden

[1] All Australian
[2] All exotic
[3] both
[4] no trees over 2 metres tall present

Qu 57. What is the approximate height of your front fence?

[1] none present
[2] under 20 cms (8 inches)
[3] 20 cms to 1 metre (8 inches-3 feet)
[4] 1-1.5 metres (3-5 feet)
[5] higher than 1.5 metres (over 5 feet)

Qu 58. Of what material is the front fence built?
[1] none used
[2] brick, stone or cement
[3] wood (solid screen)
[4] wood (open)
[5] metal (solid screen)
[6] metal (open, includes wire)
[7] brush
[8] hedge
[9] composite (stone/wood/metal)

Qu 59. Was there a front fence here when you moved into the house
[1] yes
[2] no

Qu 60. If the front fence has been removed since you came here, was it for any of the following reasons

| | Yes | No |
|---|---|---|
| [1] fashionable at the time not to have one | | |
| [2] needed repairs, too expensive to replace | | |
| [3] extended the garden | | |
| [4] added security | | |
| [5] other (please state .....) | | |

Qu 61. If a new fence has been erected by you, was it for any of the following reasons?

| | Yes | No |
|---|---|---|
| [1] reduces traffic noise | | |
| [2] liked its appearance | | |
| [3] suited the style of house | | |
| [4] improved security | | |
| [5] gives privacy from the street | | |
| [6] shelters the garden from wind/sun | | |
| [7] provides safety for children/dog | | |
| [8] defines the edge of property | | |
| [9] other Please state ..... | | |

Qu 62. Have you ever had burglars attempt to break into this property?
[1] yes, successfully
[2] yes, unsuccessfully
[3] no attempts made

Qu 63. Should you move to another house, what size <u>garden</u> would you prefer?
[1] the same
[2] larger
[3] smaller

Qu 64. Please indicate which of the following you have in your backyard :

Yes No

[01] rotary or foldaway clothesline
[02] incinerator
[03] swimming pool/spa/sauna
[04] children's playhouse/gym/sandpit
[05] BBQ (portable or permanent)
[06] dog run/kennel (with dog)
[07] garden shed
[08] multi-purpose shed
[09] fowlshed with poultry/aviary
[10] detached rumpus room/work room/office
[11] raingauge
[12] patio and/or pergola
[13] rainwater tank
[14] shade/fernhouse
[15] fruit trees (mark those present)
lemon, orange, mandarin, peach. plum, apricot, nectarin, fig, olive, passionfruit, grape vines, apple, pear, quince
[16] vegetable patch
[17] herb garden
[18] compost heap/bin
[19] lawn
[20] ornamental trees/shrubs

Qu 65a. Front garden style
[0] no garden
[1] conventional, without Australian natives
[2] conventional, with Australian natives
[3] bush/natural/all Australian native plants
[4] cottage, all exotic
[5] cottage, with some natives
[6] Mediterranean/Italianate
[7] dry garden (cactus, desert plants only)

b. [8] formal layout
[9] informal layout

Qu 66. Paths and driveway materials
[1] brick
[2] cement
[3] gravel
[4] earth
[5] grass
[6] slate or other stone

Qu 67. Do you have any of these garden ornaments?

| | Yes | No |
|---|---|---|
| [1] birdbath, fountain, pond | | |
| [2] moss rocks, ornamental stones | | |
| [3] statues (birds,gnomes,figures) | | |
| [4] arbour, arch, pergola, trellis | | |
| [5] garden furniture | | |
| [6] other (please state.....) | | |

Qu 68. Are the footpaths in front of this property
[1] paved
[2] unpaved clearly defined
[3] not clearly defined

Qu 69. Is the nature strip in front of the property developed with:
[1] lawn only
[2] native plants only
[3] exotic plants only
[4] mixture of native and exotic plants
[5] undeveloped

Qu 70a. Have you (or any members of the household) planted the following on the nature strip?

| | Yes | No |
|---|---|---|
| [1] lawn | | |
| [2] groundcovers | | |
| [3] shrubs | | |
| [4] trees | | |

b. If response is YES to any of the above, did you contact the local Council before planting?
[1] yes
[2] no
[3] unsure/don't know

Qu 71. Who maintains the nature strip in front of your property?
[1] the Council
[2] member(s) of the household
[3] both of the above
[4] no-one

Qu 72. What type of street tree(s) are growing in this street?
[0] none present
[1] Eucalyptus sp
[2] other Australian native
[3] exotic
[4] don't know

Qu 73. How important (to you) is the appearance of your front garden?
[1] very important to look attractive
[2] not very important as long as it looks neat
[3] unimportant, don't worry what other people think

Qu 74. Does it bother you if another garden in your street

| | Yes | No |
|---|---|---|
| [1] is less tidy than yours | | |
| [2] has much more time and money spent on it | | |
| [3] is different from the rest | | |

Qu 75. Would you describe the state of this garden as:
[1] undeveloped
[2] young, recent planting
[3] mature, established
[4] senescent (old), (needs major redevelopment)
[5] untended, neglected

NO FURTHER QUESTIONS

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## PERSONAL COMMUNICATION

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David DEARE - Mitcham City Council, Works Department

Brian GOULD - McLaren Vale Nursery

Laurie HAEGI - Adelaide Botanic Gardens

Ivan HOLLIDAY - Society for Growing Australian Plants

Peter JONES - Port Noarlunga Council, Works Department

Jon LAMB - Advertiser and ABC Radio

Margaret LEE - Society for Growing Australian Plants

Richard MERRY - CSIRO Soils Division

Enid ROBERTSON - Mitcham Open Space Action Committee

John SCARVELLIS - Woods and Forests Department (State Flora)

Rudi SCHUETZE - Society for Growing Australian Plants

Robert SWINBOURNE - formerly Adelaide Botanic Gardens

Ted THOMPSON - Society for Growing Australian Plants

Gavin WALKLEY - Australian Institute of Landscape Architects

Elise WOLLASTON - SA Field Naturalists