

**The Effectiveness of Public Open Space
Systems within the "Radburn" Suburb.**

CASE STUDY: Rokeby

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in

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ABSTRACT

The Radburn approach to suburban design and open space provision emerged out of the popular movement, originating around the time of the industrial revolution, to limit pedestrian activity upon streets and avoid the conflicts resulting from increased levels of traffic.'

In Radburn layouts, pedestrian footpaths and recreation areas are so distinctively removed from the surrounding street network that often even visual connections between the two are avoided. The internalisation of movement and recreational opportunities, and the orientations of dwellings towards these internal areas rather than those surrounding streets are the predominant features of many Radburn applications.

Despite the meritorious objectives of the approach - those being to produce a safe, socially interactive environment where inhabitants feel comfortable to relax and move freely - its appropriateness is discredited by the quality of the urban environment that has often resulted.

The internalisation of a community can have deleterious consequences. Too much open space can compromise the overall quality of the suburban environment and the conspicuous separation of vehicular and pedestrian activity does not guarantee an improved environment. Community appreciation and acceptance of communal concepts are difficult to sustain and the application of an inappropriate suburban typology can significantly impede and even compromise the development of a positive identity.

The Radburn approach to open space provision is inappropriate, particularly in the Australian context. Existing applications should undergo redevelopment works with an emphasis upon diminishing the internalisation and segregation of public areas.

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1.1 INTRODUCTION

The provision of public open space areas, giving communities the opportunity to engage in recreational pursuits, or relax, or as an aesthetic feature within the urban environment, has been a primary consideration in the twentieth century development of many suburban landscapes.

Public open space areas have traditionally been considered an essential component in establishing an environment to which inhabitants could escape from their daily routines, an environment which afforded benefits and convenience to children, and one which improved the amenity, aesthetics and value of the surrounding community in general.

As well as contributing to the social well being and enjoyment of its residents, public open space areas are considered to play a vital role in developing suburban character and identity. The effectiveness of its design can either encourage or impede personal and social activities and either enforce or deny meaning to places and experiences.

Many of the early public open space advocates, such as Andrew Jackson Downing and Frederick Law Olmsted, believed that such environments were capable of exerting a civilising influence on the working-class. Many present day planners continue to subscribe to such views believing that the physical configuration of public open space can serve as an active culture-bearing medium in peoples lives, both mentally and intellectually.¹

Commentators such as Donald Appleyard, Kevin Lynch and William Whyte, have suggested that the ingredients for providing such an environment involves ensuring that the spaces have “shared meaning, invite access to all,

¹ Granz, G 1982, pg 212

encourage use and participation and are well cared for by their users”.²

The planning of subdivisions however has generally involved only vague and indefinite notions with respect to the function and the purpose an area of open space will serve. The size provided is usually proportional to the population anticipated with seldom any consideration given to the social character or specific needs of the community that will develop.

Public open spaces appear in suburban contexts in a variety of forms. The most prominent being pedestrian accessways, drainage reserves, pocket parks, and parkland areas (local parks).

Pedestrian accessways and drainage reserves can vary in width and extend anywhere from the depth of a residential allotment to the length of a suburb and beyond.

Pocket parks usually result from the dedication of one or two lots of a residential subdivision for public purposes and mostly serve as a site for children’s play equipment.

Parkland areas are generally spacious and enable more active recreational pursuits such as running and ball games to be undertaken within them.

Although society generally considers open space areas to be an intrinsic component of a community with a subsequent belief that the more public open space that can be provided, the better - the use, abuse and neglect of suburban open spaces results in a need for these perceptions to be re-evaluated. In spite of the community’s desire to have public open space areas, they are infrequently used, often foster anti-social activity and incur costs upon the community that are difficult to justify.

The public open spaces being reviewed in this paper are the large internal parkland areas and associated pedestrian accessways located within those Australian suburbs whose

² Francis, M. 1988, p57

layouts have incorporated a typology closely resembling that originally applied in the development of Radburn, New Jersey (USA) in the late 1920's. For the purposes of this paper, such applications in the Australian context shall be referred to as "Radburn" suburbs.

"Radburn" layouts are most distinguishable by the orientations of houses towards internal parklands and internal pedestrian accessways in contrast to the traditional orientation towards the adjoining street. The vast majority of applications in Australia were Government sponsored broadacre housing initiatives developed primarily between the mid 1960's and the mid 1970's. However "Radburn" influences and variations continued to appear in later suburban developments. Furthermore, they continue to appear today - particularly when residential development initiatives advocate the virtues of shared communal space and community oriented strategies. Such an approach was the underlying objective of the "Radburn" layout - to develop a community which incorporated an increased level of social interaction by encouraging pedestrian movement and establishing a sense of neighbourhood identity.

In its attempt to achieve this objective, the "Radburn" approach proposed measures designed to remove, even alienate, pedestrian activities from the street and direct instead into separate areas. Such a focus however resulted in more deleterious consequences than advantages. The internal parkland areas were often barren and uninviting, the accessways claustrophobic and a streetscape emerged characterised by blandness, monotony and diminished vitality.

Streets had traditionally been the areas of recreational activity in urban contexts. The efforts of the Garden City advocates had been designed to provide a more desirable and easily accessible alternative. The "Radburn" approach likewise, and more strenuously, attempted the same. However streets have often remained the preferred choice as a venue for recreational pursuits.

The failure of the “Radburn” applications may also be attributed in part to ill considered layouts and design; inappropriate scale and proportioning with respect to natural and built environments; lack of community input, education and appreciation of the concept; a half-hearted compromising approach to the application of the Radburn principles; or simply poor levels of maintenance, upkeep and general care towards the area.

It is often suggested that the primary cause of the problem with these areas and the poor responses to the application, the distain and the anti-social reactions to these spaces are a result of the regions socio-economic structure.

In most instances, the areas were, and have remained, Public Housing estates. A large proportion of the residents therefore do not own the property within which they reside but instead rent them from the Government. Consequently, it is easy for critics to assert that the quality of the environment and the reactions to that environment are a result of demographics and the inhabitants not having the pecuniary interest in it to care.

Whether or not this is the case, or to what degree such factors exert influence, is not an issue which is discussed within this paper. While most “Radburn” applications in Australia were public housing initiatives, there were a number that weren’t or which comprised of a combination of public and private development, or in which tenants have subsequently acquired their residence. The same problems and characteristics, with respect to the public open spaces, are evident in those areas lending credence to the suggestion that unique social issue play an insignificant role if any at all.

There is however valid cause to question the appropriateness of the physical provision of public open space. The amount, its layout, the opportunities it provides to the community and whether the needs of that community are being addressed by the open space areas provided and

the manner in which they are developed all warrant careful reassessment.

The objective of this paper is to convey an understanding of the evolution of the suburb and the provision of public open spaces (parks and recreational areas) within the suburb leading up to and including the development of Radburn, New Jersey, from which the typology acquired its name.

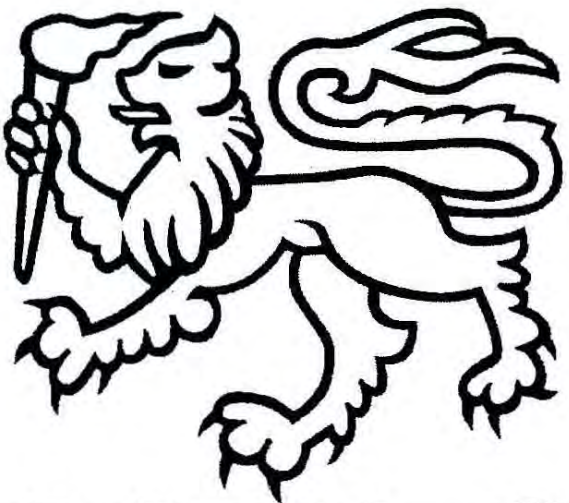
To identify the problems typically encountered within the "Radburn" context, a number of Tasmanian and mainland applications of the typology are evaluated and discussed as well as a detailed analysis of a selected case study area, Rokeby, a southern suburb of Hobart, which incorporated typical "Radburn" principles.

Discussions of the problems associated with the Radburn typology will be limited to only those which relate to the provision of public open space or open space needs generally. Although it is acknowledged that the Radburn approach can also be criticised with respect to its private open space provision, its streetscape impacts and other issues, particular care has been exercised to remain focused upon issues relating to public open space only.

The final part of the paper will identify the main issues which need to be addressed and the general approach that should be adopted, in revitalising problematic open space areas of "Radburn" suburbs. Specific remedial techniques which may be applied are described and detailed and subsequently implemented against those typical problems encountered within the case study area.

PART 2

THE DEVELOPMENT OF SUBURBS



UTAS

2.1 SUBURBAN DEVELOPMENT - GENERALLY

2.1.10 ORIGINS

While the earliest detachment of residential areas from the primary urban and commercial centres can be traced as far back as ancient Egypt where villas and residential compounds were often located some distance from city centres, it has only been in the last two to three hundred years that the suburb has emerged as a distinct urban form.

During the mid 18th century in England, merchants and bankers from London began converting their weekend and summer villas in the agricultural villages outside London into permanent homes, while commuting daily to their former residences - now offices - by private carriage or public coach. As a consequence, clusters of villas amid broad lawns and well-tended gardens developed to form environments of privileged bourgeois residential areas.

As the 18th and 19th centuries progressed, the more affluent parts of society increasingly began to view the cities as undesirable places to live. Suburban living however was seen as providing the virtues of living in the countryside in sharp contrast to the wickedness and vice of the city dwellers.

Such were the virtues that inspired the Evangelicals.

2.1.11 THE EVANGELICALS

Evangelical Christianity sought to raise the moral well being and standards of Englishmen and improve the character of society by concentrating upon traditional and religious values.

Calling for a revival of homely virtues, Evangelicals advocated the notion of having “separate spheres” for men and women and emphasised the value of the suburban

home in which the wife was the custodian of those qualities which were essential for spiritual and physical contentment.

The Evangelicals pressed the need for residential areas to be places of peace and refuge where the “care-worn city man (could) repair his battered spirits through communion with the beauties of nature”¹. The aim therefore was to instil into the suburban environment a measure of the peace and solitude of the countryside.

The private garden was considered to be an important component in achieving these qualities.

The British Architect and Landscape Designer, John Claudius Loudon was the principal publicist of the suburban idea in Britain writing extensively on the subject in the 1820’s and 30’s. Loudon declared that “A residence, with a small portion of land attached, will contain all that is essential to happiness”².

It was under these influences that Clapham, on the eastern fringes of London, developed as the prototype of the modern bourgeois suburb in the early 19th century settled by wealthy and enthusiastic devotees of the Evangelical ideals such as the influential political reformer William Wilberforce.

The popularity of these ideals, the lure of being able to realise the dream of being a towns person residing in the countryside and the impacts of the industrial revolution resulted in the synthesis of the suburbs from either the villa type country house of the bourgeois wealthy or the faubourg³, to primarily an area of middle and upper class distinction.

2.1.12 THE INDUSTRIAL REVOLUTION

The on-mass relocation of populations from rural areas to the city during the industrial revolution where the ever

¹ Davidson, G. 1993, p64

² Davidson, G. 1993, p64

³ faubourg - settlement of the urban poor outside the city gates/walls

increasing number of factories provided an abundance of work and better opportunities for prosperity resulted in the rapid expansion of these cities and their residential areas.

While hurriedly expanding as the 18th and 19th century progressed, cities became increasingly congested and lacking in amenity.

Doctors and sanitary engineers began warning of the dangers of the deadly pollution of the cities with the medical science of the day suggesting that there was a direct relationship between death rates and the density of the urban environment.

At first it was the bourgeois who abandoned the urban centre and established residences in the unspoiled countryside. It was not long however before the rate at which these cities were expanding combined with a growing fear and fastidiousness towards the working class as their numbers grew saw the middle classes seeking to insulate themselves from the uncouth and perceived dangers of these now densely populated areas. So developed the classic social ecology of the industrial city, a central business district devoid of residents, a factory zone of industry and densely built worker housing, and a suburban zone of greenery and opulence.

Ironically, while the 19th century explosion of suburbs was partly driven by a desire to escape from unpleasant urban conditions of the industrial city, it was the very people whose capital funded this industrialisation who were the first to use their dividends to avail themselves of the opportunity of escaping from its malign and polluting effects.

It was only after the arrival of mass transit methods and the subsequent reduction in the cost of travel that the opportunity for suburban living became a reality for those other than the upper and middle income groups.

2.1.13 MECHANICAL TRANSPORTATION

Suburbs had been restrained for a long time by the lack of transport facilities. The only people who could afford this

kind of living were those who could commute by carriage. Developments in communications however, led to a gradual widening of the economic base of the suburb.

The introduction of tramways and railway systems enabled quick, efficient and inexpensive transportation opportunities. The necessity for the working class to reside within compact urban areas and within walking distance of essential services and employment was therefore diminished.

Although many British towns had developed suburbs prior to the full implementation of mass transit facilities, it was none-the-less a significant catalyst for the development of the mass suburb in other countries particularly in Australia and America where cities had remained compact and had not evolved in the same manner as their British counterparts.

2.1.20 PLANNED SUBURBS

The overall appearance of residential areas was for the most part a result of the application of various building by-laws prescribed for the development of individual sites.

Road width standards and private open space requirements provided the criteria from which development densities were established and, in conjunction with other building by-laws, the character and appearance of streetscapes determined.

Although there were a number of early experiments in softening residential areas with tree lined streets, front gardens and semi-detached houses they were mostly undertaken by largely anonymous developers. One such initiative however was Norman Shaw's work for Jonathan Carr at Bedford Park in west London between 1875 and 1880. Consisting of vernacular derived houses laid out on irregular streets surrounded by lawns, flowers and trees, it set a pattern for suburban building that was repeated around the world and has lasted to this day. This dormitory estate provided inspiration to British designers Barry Parker and

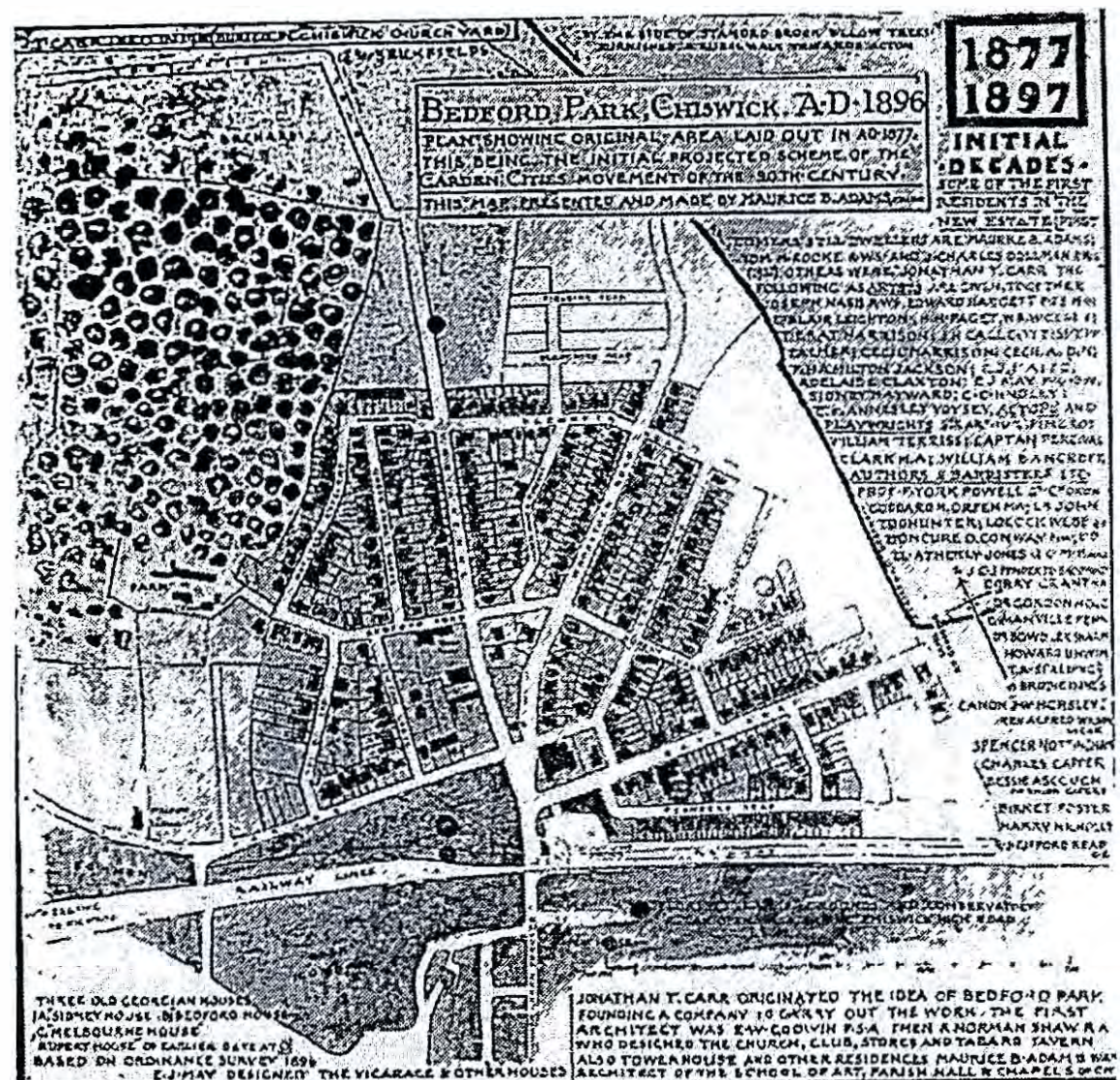


Illustration 1
Bedford Park, Chiswick
(Creese, W, p88)

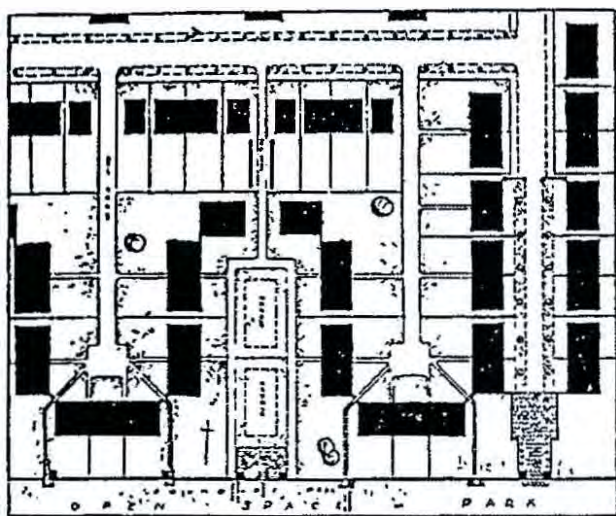


Illustration 2
Note the similarities to the
Radburn cul-de-sac and park
arrangement that was to
emerge a quarter of a century
later.

Raymond Unwin who began to advocate the virtues of improving individual outlooks (views from within houses) and the streetscape aesthetic in general. Unwin suggested that such could be achieved by “beautifying the streets and spaces between the houses”.⁴

The method proposed to achieve this was by providing breaks in the street line, having space between buildings, setting houses adjacent to open space areas and by planning roads so that they lead onto, or at least have a distant view of, open space areas (refer illustration 2). Such objectives were included in the approach to the design of Leitchworth and Hampstead Garden Suburb, and was embraced by the garden cities movement as a preferred approach to suburban layouts. The application of curvilinear streets was also one of the features embraced by the “City Beautiful” movement of North America. The City Beautiful movement considered an improved aesthetic as being critical to upgrading the livability of cities and considered the curved road as being a vital element in the suburban context where it would bring lawns and gardens into the street vista.

⁴ Unwin, R. 1909, p330

2.1.21 THE GARDEN CITY

The rapid growth of cities that had resulted from the Industrial Revolution in the late 19th century had created numerous traffic and general congestion problems as industry and commerce encroached upon once pleasant residential suburbs.

Concerned over the resulting loss of amenity, the long distances being travelled to and from work and the general loss of any resemblance of country life, Ebenezer Howard devised a new concept of urban development designed to control and direct future growth. He called this new urban form the “garden city”.

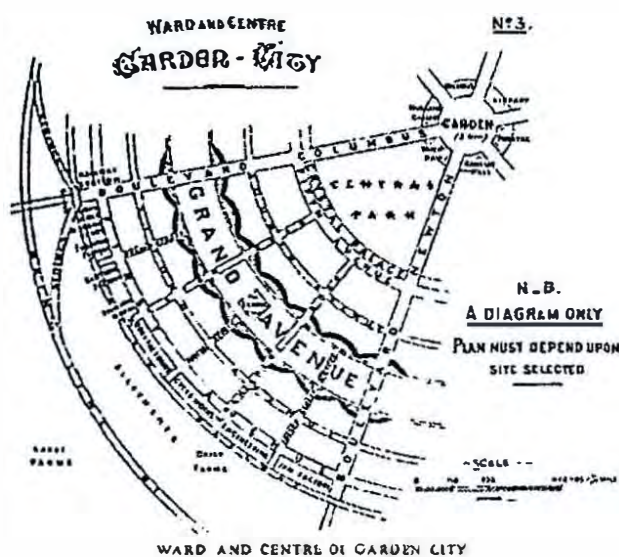
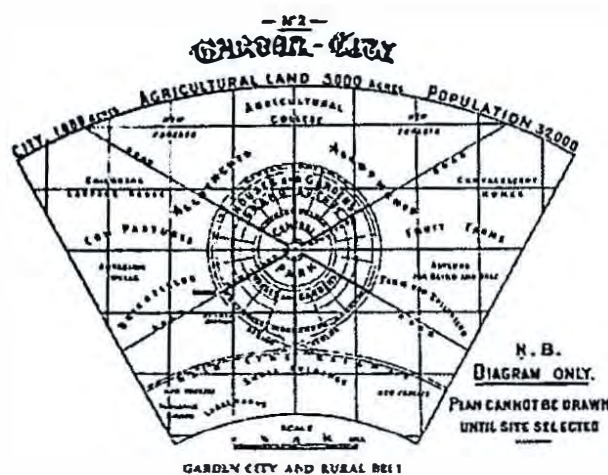


Illustration 3

Howard's diagrammatic representation of the Garden City concept.
(Howard, E 1946, p52)

Howard envisaged the Garden City model as comprising of six equal wards (divided by Boulevards) with a 5.5 acre circular space located centrally and laid out “as beautiful and well-watered”⁵ gardens.

Surrounding the gardens, and in spacious surroundings themselves, were proposed to be located the larger public buildings. Beyond them, a public (central) park measuring 145 acres which was also to include ample recreation grounds and surrounding this area, a wide glass arcade referred to as the “Crystal Palace”. The Crystal Palace was to open towards the park and was intended to provide shelter and a bright winter environment for users of the park as well as an exhibition area and a place for the sale of manufactured goods.

Beyond the Crystal Palace were to be the homes and gardens of the cities residents and beyond them an encircling band of factories.

The Garden City proposed to provide an additional choice to the town or country alternatives when selecting a place to live, and was seen as delivering “all the advantages of the most energetic and active town, all the beauty and delight of the country”⁶.

⁵ Howard, E. 1946, p53

⁶ Girling, C. & Helphand , K. 1994, p55

A predominant feature of the Garden City was the provision of open space. Whereas earlier urban forms had incorporated open space as a separating or delineating mechanism, the Garden city applied open space as an integral component of its urban form.

The parklands were to be located at the Garden Cities centre with community facilities such as theatres, libraries, town hall etc located within or alongside, with residents provided with convenient pedestrian access to these areas.

2.1.22 LEGISLATIVE CONTROLS

As support for Garden City ideals increased and its advocates became more influential, town planning legislation and controls were introduced to regulate suburban growth and form. After WWI local authorities became involved in rehousing initiatives at a large scale. Being better positioned, or more willing, than private developers to apply suburban models proportioning a greater emphasis upon attempts to improve the character, amenity and services provided by residential areas, it was most often through such government or semi-government agencies that the latest planning ideology could be applied. While this has effectively remained the case throughout this century, introduced planning legislation and controls have attempted to provide some direction with regards to residential densities and with respect to the provision of public open space areas.

It has certainly been the case in Australia that most suburban developments incorporating the latest in planning ideology have been government inspired and financed.

2.1.30 THE POST WW2 SUBURB

The escalation in car ownership, particularly since WW2 resulted in a decline in the influence of public transport in determining the rate and shape of growth of suburbs. Suburbs became less dense and of an even greater scale as

transportation limitations were even further reduced by private vehicle ownership.

The growth of private transport has also made longer distance commuting more viable and also introduced a new criterion in the selection of areas for development: the availability of roads rather than public transport.

The row house became increasingly scarce with the vast majority of single dwellings being completely detached and surrounded on all sides by their own plot. Moreover, these new subdivisions allotted a higher proportion of their land area to streets and open spaces. Levittown in Long Island USA, for example was less than half as dense as the street car suburbs of a half century earlier.⁷

⁷ Jackson, K. 1985, p239

2.2 THE AUSTRALIAN SUBURB

2.2.10 EARLY EUROPEAN SETTLEMENT

In 1789 when Governor Arthur Phillip drew up the first town plan for Sydney, he required that the streets be laid out:

“in such a manner as to afford free circulation of air, and when the houses are built the land will be granted with a clause that will prevent more than one house being built on the allotment, which will be sixty feet in front and one hundred and fifty feet in depth”(Arthur Phillip to Lord Sydney, 1788) ⁸

Such an arrangement, he declared would “preserve uniformity in its buildings (and) prevent the many inconveniences which the increase of the inhabitants would otherwise occasion thereafter”. Right from the on-set, sprawl of homes and gardens was encouraged in preference to clumping of terraces and alleys. Phillip’s regulations embodied those aspirations to decency, good order, health and domestic privacy that were the basis of the evangelical movement in England and which laid at the heart of their suburban idea. However while in England the suburbs were predominantly the territory of the wealthy and the bourgeois, in Australia the suburb tended to be a much less exclusive domain.

2.2.20 SPRAWLING SUBURBIA

The rapid economic growth of the mid to late 1800’s and the subsequent influx of immigrants combined with the introduction of mechanical transport resulted in the rapid suburbanisation of Australian cities.

⁸ Davidson, G. 1993, p63

Railway construction played an important role in the timing, pace and direction of urban growth.. This is particularly evident when analysing the growth of Melbourne as opposed to Sydney. By 1891, Melbourne, with its more extensive and developed rail system, had expanded to more distant areas than Sydney. Sydney remained more compact with a significantly higher population density within its inner urban areas despite its overall population being some 20% less than Melbourne's.⁹

While the development of railway systems obviously facilitated suburban sprawl, the fact that Melbourne and Sydney had both consumed more land by the 1890's than any city in Britain or North America (except Chicago)¹⁰ confirms that there were influences other than the availability of mechanical transportation effecting suburban expansion in Australia.

Unlike Europe (England) where the quantity of available land was always considered finite and concerns over the amount of land dedicated to residential development were realised much earlier, Australia was considered a spacious land amply equipped to avoid the congestion and overcrowding of the "Old World".

In the early 20th century, sanitarians and planners, influenced by the Garden City ideals of Howard and Unwin, constructed a working definition of "urban amenity" around the provision of adequate living space. While they were principally concerned with the physical health of the city dweller, they shared the conviction of 19th century slum reformers that it was possible to live a virtuous and happy life only with plenty of room, outside and inside the home.

Entwining such a philosophy with national identity, the Commissioners of the 1909 Royal Commission for the Improvement of Sydney and its Suburbs rejected the

⁹ Neutze, G. 1977, pg21/22

¹⁰ Freestone, R. 1989, p42

European and American models of urban housing and concluded that “. the tenement or flat system of housing would not meet the requirements of the Australian workmen, and (recommended that) on social and hygienic grounds, workmen should be encouraged to live in separate houses in suburbs”. A density not exceeding sixty persons per acre was considered to be the maximum provision appropriate.¹¹

The Royal Commission on the Housing of the People of the Metropolis which sat in Melbourne during WW1 also focused its attention on the problem of overcrowding. The Commissioners considered proposals to legislate a minimum size for suburban allotments, the insanitary and undesirable practise of having two or more families occupying a dwelling house at the same time, the need for adequate yard space, and space around the house and reduce risk from supposed aerial convection of infection¹².

2.2.30 THE SATELLITE TOWN

In England, attempts had been made during the late 1800's to contain urban sprawl and provide breathing space or “lungs” for health and recreation by the application of encircling green belts.

Around the time of WW1, advocates such as Sulman, Fitzgerald, Bold and Reade inspired by the new suburban approaches derived from the Garden Cities movement began promoting the virtues of providing such spaces beyond which urban development would continue. These satellite communities were essentially dormitory garden suburbs and were considered desirable for interrelated reasons, including the economies of compact urban development, breaking up of monotonous suburban spread, the reconciliation of town and country. The satellite town was considered the most effective way of controlling or directing the growth of the city.

¹¹ Ferber, S. et. al. 1977, p4

¹² Davidson, G. 1993, p68

Some large employers embraced the worker welfare opportunities that planned suburbs could afford and embarked upon developing residential estates for its workforce based on these ideals. While complete and comprehensive plans were usually established, they were more often only partially implemented.

By the 1920's, the commitment of planners to the Garden City ideals had begun to waiver and a Government investigation into the War Service Homes Commission (established after WW1 in anticipation of the demand for housing) criticised planners and the planning techniques they were applying. Thereafter, subdivision patterns became less adventurous with some areas reverting back to the gridiron patterns¹³ of uniformly rigid and parallel streets intersected perpendicularly by streets of the same nature. The garden suburb ideal was not revived until after WW2.

2.2.40 POST WW2 APPROACH

Concerns over the areas being occupied by the sprawling suburbs saw measures being adopted in England after WW2 to prevent this outward growth of suburbia in favour of increased densities. The result was that while Britain entered into an age of mass automobile ownership, housing densities increased and suburban settlement patterns grew more concentrated.

This trend did not carry over to America or Australia where no such concerns were held and where broadacre housing and industry grew at increasing rates. The post war English suburb was a dense unbroken settlement - 10-13 houses per acre compared with 4 or even 2 in post war America.¹⁴

There was in Australia however, renewed interest in economic, aesthetic and community - oriented estate planning. Such considerations, once under the banner of

¹³ Freestone, R. 1989, p178

¹⁴ Brownell, B. 1987, p248

the garden city movement re-emerged in the 1940's with progressively curvilinear subdivision proposals opposing the conventional gridiron form beginning to appear in the professional journals and other publications of the time.

Illustration 4
(Barnett F. O. et. al. 1944)

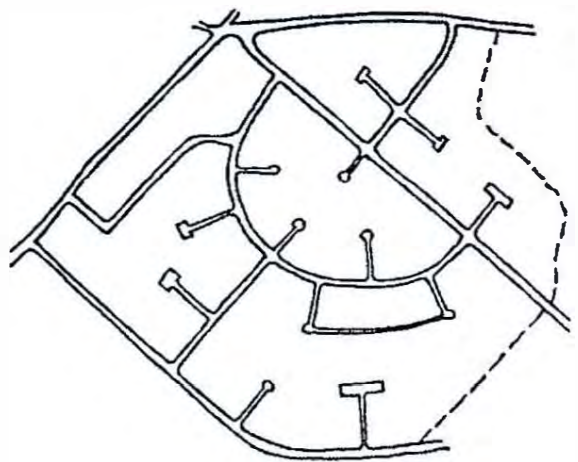
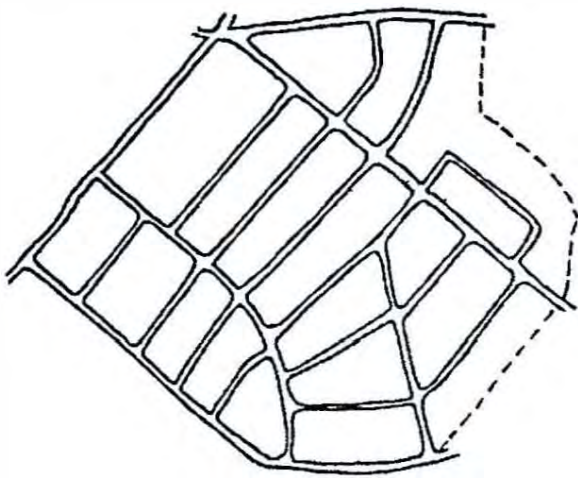
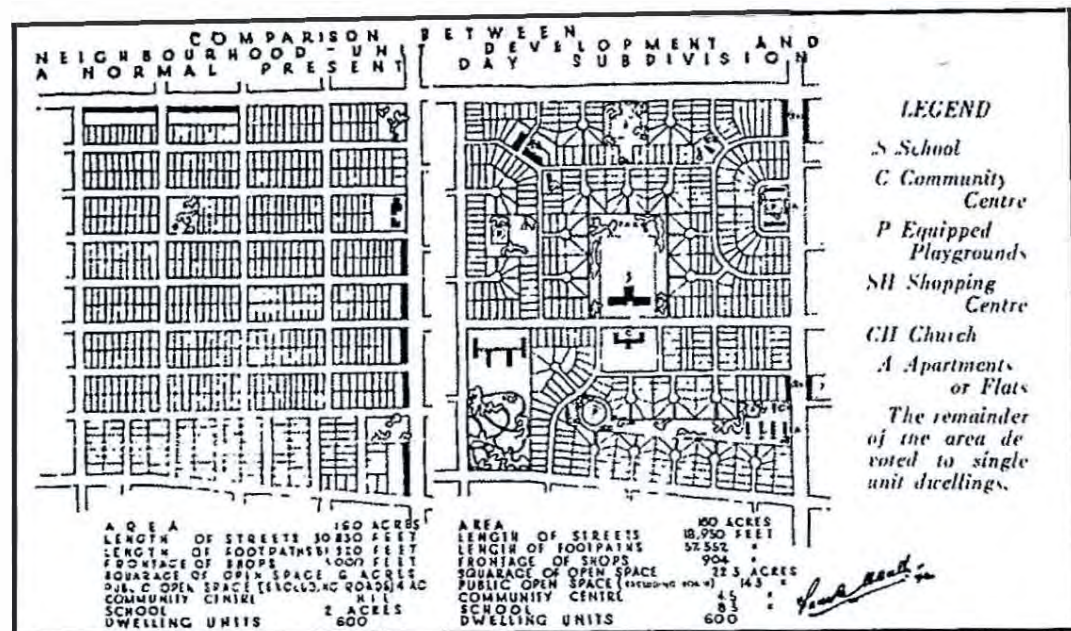


Illustration 5

The upper diagram shows the conventional layout - considered wasteful.

The lower diagram shows the preferred approach - using cul-de-sacs.

The use of curved roads and cul-de-sacs became increasingly popular due to the road engineering benefits derived. Less road was needed to service the same number of houses/lots/area therefore reducing construction costs. Also traffic dangers were reduced by reduction in through traffic roads and gun barrel like avenues.

In redefining what was once termed planning on garden city lines, planners have retained distinctively Australian norms, such as detached housing, and generous suburban space standards have been applied.

New ideas were also injected of lasting theoretical significance.

- providing sites for community centres as the focal point of local social life
- the segregation of cars and people by means of superblocs, cul-de-sacs and pedestrian parkways (Radburn influence)
- the neighbourhood unit as the basic building block of urban development¹⁵

¹⁵ Freestone, R. 1989, p221

PART 3

OPEN SPACE IN SUBURBS



UTAS

3.1 OPEN SPACE PROVISION - GENERALLY

3.1.10 ORIGINS OF PUBLIC OPEN SPACE

While the provision of open space in cities dates back to before Christ, the birth of modern open space provision can be traced back to concerns over the health and general living conditions of workers in 19th century Great Britain as cities rapidly expanded to keep pace with the Industrial Revolution.

Birkenhead Park, developed in the Liverpool dockland district of Birkenhead in 1843, was one of the first public parks to be developed in Great Britain specifically to provide workers with the opportunity to escape the congestion and drudgery of their working environment.

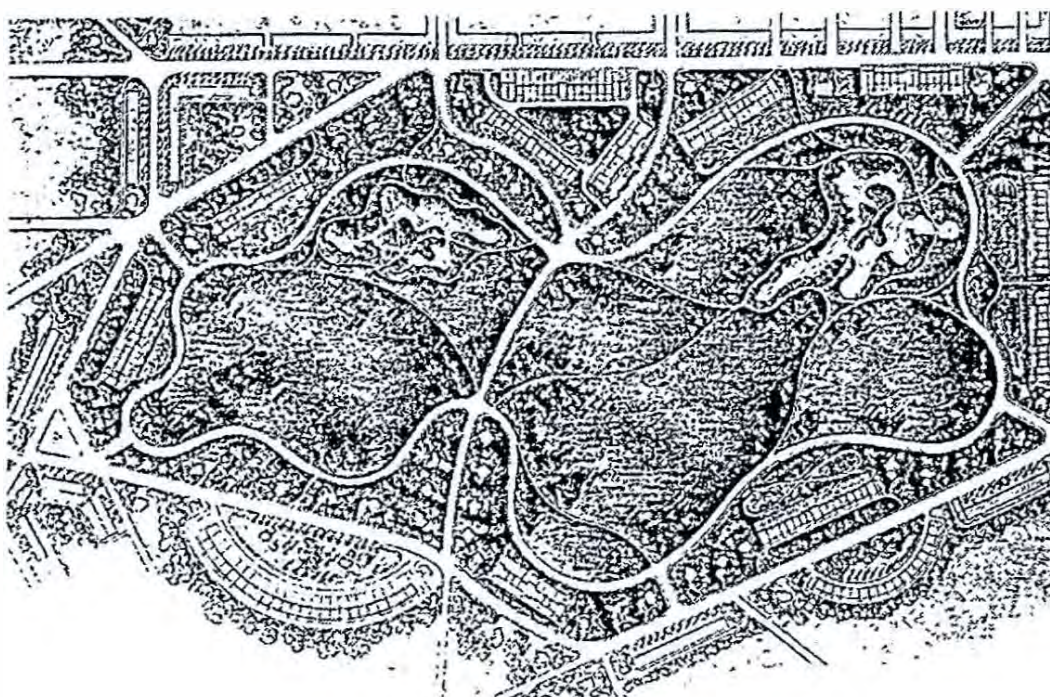


Illustration 6
Birkenhead Park
(Newton, N. T. 1971, p230)

Dedicating the surrounding land to residential development, the parks objective was to convey a country-type scenery, considered important by virtue of the country origins of many workers, and integrate those qualities with the surrounding environment.¹

The majority of industrial centres however were slow to follow Birkenhead's lead.

¹ Newton, N 1971, p226-227

By the end of the 1800's, social commentators of the time such as John Ruskin and William Morris were becoming increasingly vocal with respect to the "dull squalor of civilisation" and the questionable motives and operations of laissez faire growth and development. Considering man made environments to be another expression of art, they advocated an abandonment of those influences which resulted in the prevailing industrial ugliness in favour of romantic and aesthetic qualities. Foremost in attaining a beautiful and wholesome environment was the provision of natural landscapes. It was subsequently declared that the desired future city should be "surrounded with woods, parks and recreational grounds"² and the concept of circumferential green belts began to emerge.

Further to these aesthetic concerns was an increasing awareness and appreciation of the virtues of open space with respect to recreational opportunities and the general improvement that could be made to the overall amenity of an area.

Beyond such aesthetic ideals, governments and industrialists developed increasing concerns over the troubling implications that worker ill health would have with respect to economic productivity, national defence, and imperial well being. It was more likely these concerns which contributed most to a reappraisal of attitudes towards suburban expansion and form.

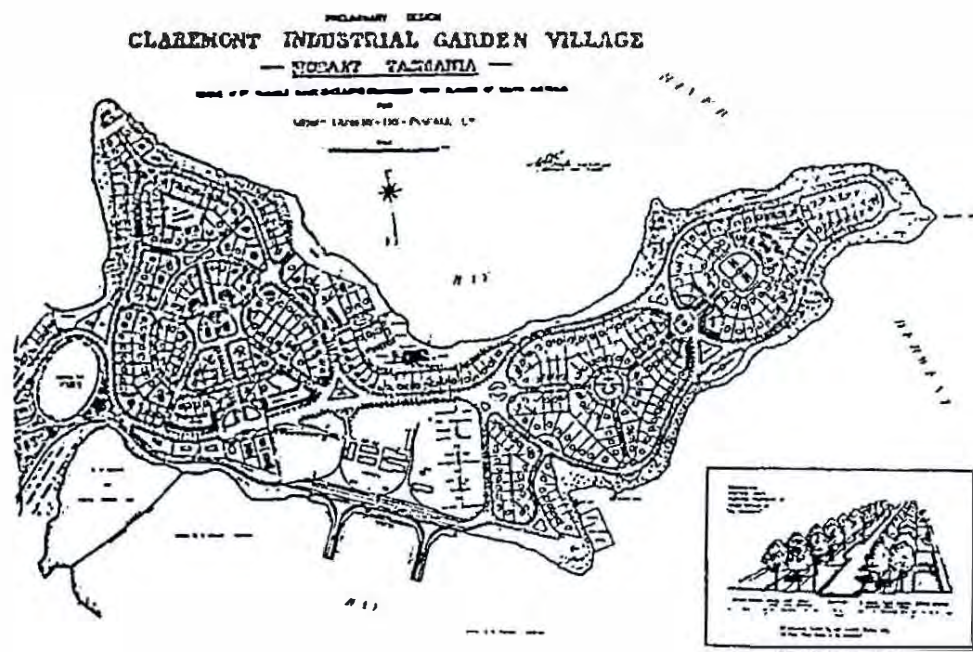
The development of the Garden City approach, complete with the open space and healthy lifestyle afforded appealed to industrialists as a means of preserving the well-being of their labour force. As a consequence, many of the earliest suburban layouts to provide substantial areas of public open space resulted from industrialists initiatives (refer Illustration 9).

Variations on Howard's Garden City concept developed. One such variation was Barry Parkers design for a garden

² Freestone, R. 1989, p57

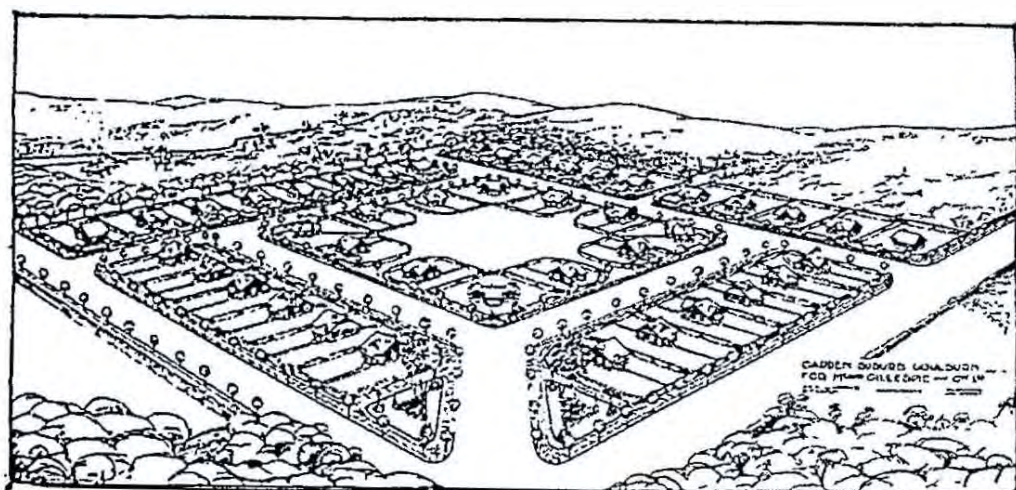
satellite city at Wythenshawe. Incorporating a surrounding agricultural green belt, and open green spaces within the community, the design also included the linear parkway. While the parkway is generally accepted as an American invention primarily applied as a buffer against traffic impacts, Parker in his application for Wythenshawe derived other benefits such as improved pedestrian amenity, green outlooks.

Illustration 7
W. J. Earle's plan for Cadbury's
Claremont estate (1921)
(Freestone, R. 1989, p152)



Another variation which evolved from the Garden City concept was the internal reserve, situated at the rear of houses, with no vehicular access.

Illustration 8
The internal reserve.
(Sulman, J. 1921, p109)



These reserves were considered havens where children could congregate safe from motor traffic in the streets and within sight of their mothers. They were considered to improve both the health and property values of nearby residents.

3.1.20

OPEN SPACE STANDARDS APPLIED

After WW1 and particularly during the 1920's, the provision of public open space - whether actively used for sport and games or passively reserved for walking and viewing - was considered increasingly important.

The model Garden City, as described by Ebenezer Howard, had included amongst its principles the generous provision of centrally located public open spaces - 5.5 acres of manicured gardens and 145 acres of other open space/recreational areas. While a number of the towns and suburban estates which subsequently emerged were influenced by these principles, urban development mostly continued along traditional lines. The maldistribution and under supply of open space within urban areas therefore continued to be of particular concern to the planning authorities. To address these concerns, a standard open space provision equating to one-tenth of the subdivided area was often applied.

Further refinement of these standards was achieved by undertaking an assessment (and often assumption) of the proportions of the "active" age groups (ie those likely to make use of open space areas) within any population.

The National Playing Fields Association of Great Britain estimated in 1927 that 35% of those persons between 10-40 years need provision for games playing and in 1937, the Juvenile Organisation Committee of the Board of Education in Great Britain made the assumption that 1 boy in 3 and 1 girl in 5 between the ages of 14 and 25 would wish to make use of play space.³

As a result of such calculations, it was determined that an appropriate open space standard to be applied was in the vicinity of 5-7 acres per 1000 persons, over half of which was to be reserved for games and playing fields with the remainder set aside for parks.

³ Keeble, L. 1952, p325

3.2 OPEN SPACE PROVISION - IN AUSTRALIA

3.2.10 OPEN SPACE APPLICATIONS

The application of open space as a means of breaking up urban space had been recommended and implemented in Australia nearly half a century earlier than the circumferential green belt approach popularly advocated in England towards the end of the eighteenth century.

In the late 1830's, William Bland suggested that broad swathes of parkland could provide an unbroken "chain of open spaces" ventilating Sydney with the "purest attainable air".⁴

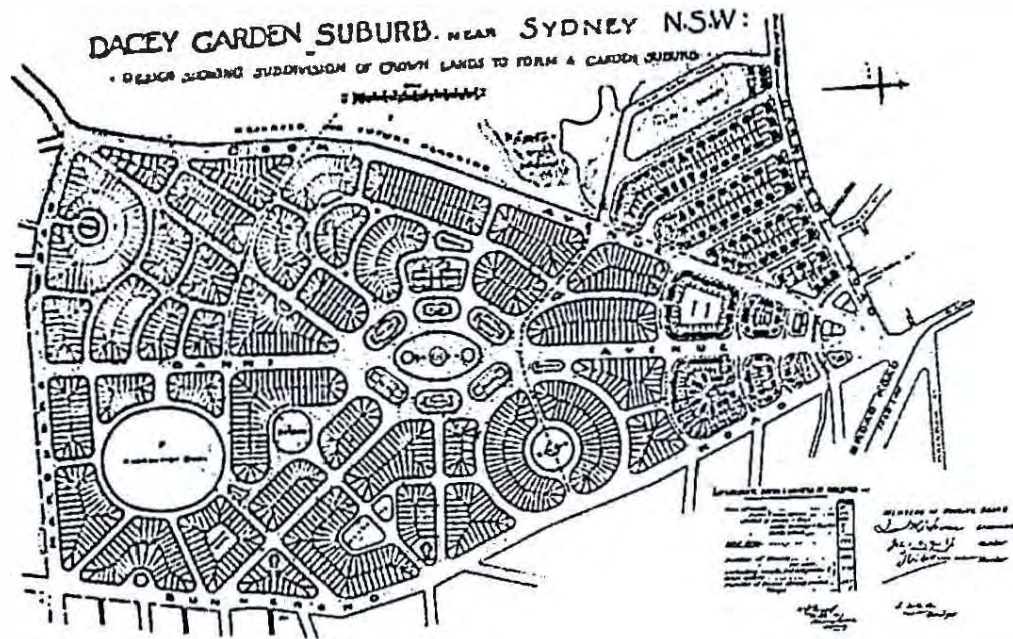
Furthermore, the city of Adelaide, designed by Colonel Light in 1837 was a city designed using recreational open space as a primary feature. It incorporated an encircling green belt separating the city from its suburbs and also separating it from its outlying industrial and port areas. Some of these features were in fact referred to by Ebenezer Howard in illustrating his "Garden City" concept later in the century.

The Garden City approach involved an increased emphasis upon the provision of public open space for recreational purposes. One of the earliest applications of the Garden City approach was the Government initiated housing project of Darcyville, a suburb of Sydney developed between 1910 and 1920.

Following from Darcyville, a number of further residential estates were developed incorporating Garden City principles. Sometimes, these suburbs were, as in Great Britain, the result of industrialists initiatives to provide residential opportunities to their workforce.

⁴ Freestone, R. 1989, p57

Illustration 9
(Sulman, J. 1921, p112)



The internal reserve, a derivation of the Garden City layout, was an approach popularly applied in Australia from the 1920's.

This type of open space provision was fervently advocated by the influential Planner John Sulman even though he realised that ongoing maintenance may be a problem since not all surrounding residents would use those areas and therefore be willing to contribute to their upkeep. Sulman considered however that such a problem would not be posed with respect to government housing schemes since responsibility for maintenance could be accepted by that authority.

He further suggested, with respect to private housing estates, that if internal spaces were made sufficiently open and easily accessible to the general public the local Authority would be willing to take over maintenance responsibilities.

In more recent times, the application of dual purpose open space/drainage reserves has been a popular approach to satisfy public open space requirements. There are engineering and economic benefits in adopting such an approach, particularly in the short term, and therefore appeal as a preferred option to private developers.

3.2.20

OPEN SPACE STANDARDS APPLIED

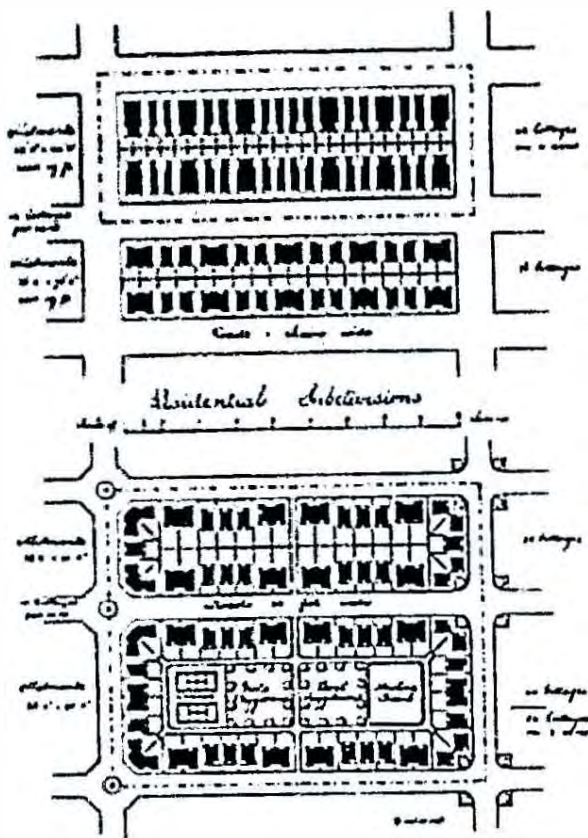


Illustration 10

*John Sulman's alternative
planning to residential
subdivisions.*

(Sulman, J. 1921, p108)

The standards approach applied in Great Britain as previously discussed, was similarly implemented in Australia with John Sulman advocating in his publication "Town Planning In Australia" (1921) that not less than 1 acre to every 200 persons or 1/10 of total area being subdivided (which ever is greater), should be given over to open space for parks, playgrounds or public gardens. Sulman suggested that if when subdividing, the owner was unable to physically provide the full or appropriate amount of open space required, a cash payment should be made equal to the value of the land not provided.⁵ Sulman believed that the implementation of such a measure would go a long way towards achieving a garden suburb. Sulman further suggested that there should be park within 1 mile of every portion of populated area. Therefore, parks would be 2 miles apart on average and size would be proportionate to density of population.⁶

Within the planning manuals and legislative controls that evolved after WW2 were standards essentially the same as those recommended by Sulman and those applied in Great Britain. The County of Cumberland Planning Authority in New South Wales, simply adopted the British standard depicted in Brown & Sherrard, Town and Country Planning (circa 1950) of 7 acres for each 1000 persons.⁷ while in Perth, Western Australia, a standard was adopted in 1955 equating to 3.4 hectares (8.5 acres) of local and district open space per 1000 persons. In 1956 a new policy further required that 10% of the gross area of new subdivisions be provided as open space.⁸

In 1973 a set of guidelines were adopted by the National Capital Development Commission (NCDC), the authority

⁵ Sulman, J. 1921, p105

⁶ Sulman, J. 1921, p123/4

⁷ Shiels, G. 1989, p12

responsible for the planning, development and construction of Canberra, establishing a criteria for determining appropriate open space provision to be applied in that city. The guidelines developed by the Commission specified three things:

- 1 The total amount of open space to be set aside per 1000 persons
- 2 The amounts of five different types of open space which make up the total per 1000 persons
- 3 The standards of development and maintenance to be achieved in each different type of open space

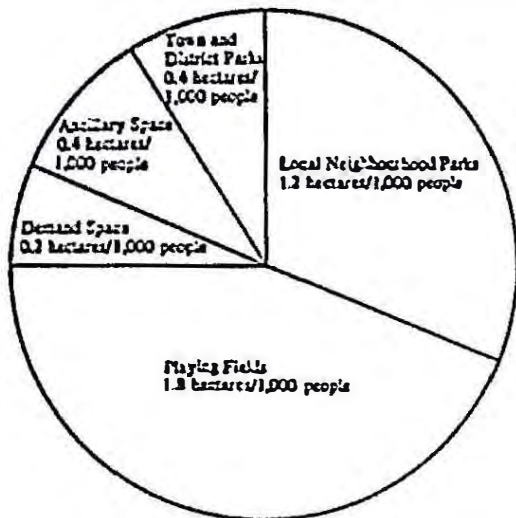


Illustration 11
Formulae for Provision of
Parkland and Public Open Space.
(National Capital Development
Commission 1981, p3)

These new guidelines effectively reaffirmed the practise that had always been applied in Canberra by prescribing 4 hectares (10 acres) per 1000 persons as the desired provision of open space.⁹ Of this total, 1.2 hectares per 1000 persons was to be allocated to local and neighbourhood parks for which a minimum size of one hectare was recommended. It was further suggested that areas measuring less than one hectare would be incapable of providing a park environment free from the dominance of adjacent land uses.

The NCDC standards provided a useful guide for government and developers alike in the determination of open space provision within new communities. They were the culmination of a generous open space provision which had been gradually increasing as the century progressed - 5 acres per 1000 persons in the early 1920's; 7 acres per 1000 persons in the late 1940's; 8.5 acres per 1000 persons in the late 1950's; and 10 acres per 1000 persons in the early 1970's.

The early 1970's however also signalled the beginning of concerns over the rate at which Australia's main urban

⁸ Urban Futures 1994, p49

⁹ National Capital Development Commission 1981, p3

centres were expanding. Realisation of the aesthetic, servicing and resource management implications of an unimpeded residential expansion at the fringe of major urban centres resulted in measures being undertaken to curb centralised urban development in favour of existing, or even establishing new, regional centres. These however were generally unsuccessful and thus attention was shifted towards making a more economical use of those spaces within, and surrounding, the existing favoured urban areas. Open space provision therefore (and certainly in the Tasmanian context), tended to be in the form of pocket parks or as a consolidation of parkland and natural drainage opportunities resulting in dual purpose public reserves meandering through suburban areas.

3.2.30 ASPECTS OF CURRENT RESIDENTIAL DEVELOPMENT INITIATIVES

In recent years a number of initiatives have been promoted by the Federal Government to help industry and Government establish a greater choice of housing while striving to ensure the most effective use of new and existing infrastructure, satisfy community needs and secure a safe and desirable environment within which to live. These initiatives have been presented in the form of a model code providing guidance for the consideration of residential development. The guidelines are referred to as the Australian Model Code for Residential Development (AMCORD).

Thus far, three sets of guidelines have been produced: AMCORD - dealing with residential expansion on the urban fringe; AMCORD URBAN - guidelines with respect to residential development within established urban areas; and AMCORD 95 - effectively a combination of the previous two.

The primary objective, as detailed within AMCORD 95, has been to facilitate the supply of improved housing and residential environments by:

- achieving national objectives of sustainable development, social justice, micro-economic reform and efficiency in land use;
- encouraging more sustainable development practises and quality urban design;
- proposing innovative approaches to design and regulation and encouraging more integration of planning and control processes; and
- disseminating nationally the results of current housing research as well as information on good practice throughout Australia.

In established residential areas, as considered by AMCORD URBAN, the approach being promoted is one towards urban consolidation. It involves increasing the density of residential development by enabling small lot subdivisions or the development of multiple dwellings upon single allotments. Developing medium density residential estates in established areas requires a relinquishing of private outdoor space. Furthermore, as these suburbs are already established, the opportunity to increase public open space reserves is seldom available. Particular care therefore is required to ensure that the public facilities which are provided can deliver maximum benefit and are the most appropriate for that urban environment.

With respect to the expansion and development of new residential estates, a public awareness campaign was

initiated to promote those objectives and guidelines prescribed within AMCORD. This campaign is referred to as the "Green Street" program.

The Green Street program details a number of measures which may be applied in the design of new residential estates ranging from road layouts and traffic calming measures to the design and positioning of buildings upon individual allotments.

With respect to open space provision, AMCORD does not presume that public reserves will always be required within housing estates. It suggests that when open space provision is considered necessary, the response should be appropriate to the needs of the individual community and provide a variety of recreational opportunities and settings. Furthermore that open space should be planned and designed to enable adaptation to different future needs in line with changing community expectations and requirements.

Many of the functions of public open space are incorporated into the basic layout and design of the residential estate. It is considered for example, that if the concepts of safe play areas for children, and community interaction in shared spaces are catered for within housing developments, there is a reduced need for the developer to make a financial contribution towards off-site provision of conventional public parks and facilities. A method of achieving this proposed by the Green Street program is by employing measures to restrain traffic volumes in residential areas and enabling roads to become more pedestrian oriented and areas capable of accommodating a variety of activities. Another Green Street initiative with respect to open space provision and which also assists with the objective of improving infrastructure efficiency is the proposal that stormwater should be retained where it falls thereby utilising existing drainage channels, creating an attractive natural environment, increasing soil quality, reducing

drainage costs and providing a local resource for watering lawns and gardens.

Supporting the approach recommended by AMCORD, the Tasmanian Governments Department of Environment and Land Management has prepared its own code for residential development - the Draft Tasmanian Code for Residential Development (TASCODE).

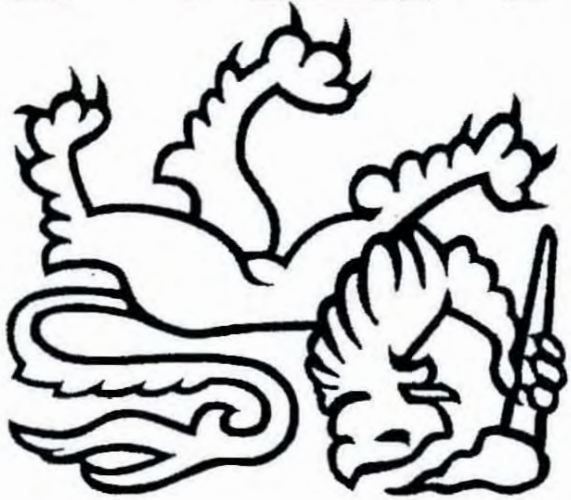
Its objectives with respect to public open space essentially reflects those prescribed in AMCORD and includes incorporating natural and cultural features, where appropriate, into areas of public open space as well as the utilisation of stormwater drainage areas as recreational reserves.

The Greenstreet program, representing AMCORD, and TASCODE are all initiatives which have been developed to assist government authorities, industry and other developers who wish to pursue a alternative way to develop residential communities. They are at this stage merely a set of guidelines, with no statutory or legal status, and can only be applied when not in conflict with a Local Authorities Planning Ordinance. While community acceptance of the approaches prescribed in the initiatives is at times restrained, a number of local authorities are beginning to incorporate elements of the initiatives into their Planning Instruments.

PART 4

THE "RADBURN" APPROACH

UTAS



4.1 THE RADBURN TYPOLOGY

4.1.10 EARLY ORIGINS

During the early years of the twentieth century, America, like Great Britain, was searching for new means by which to house its expanding residential population. The urban development philosophies promoted in America through visits and seminars held by visiting advocates such as Raymond Unwin and the Garden City experiments and ideas of Ebenezer Howard and Patrick Geddes were beginning to have an impression upon designers, local commentators and their attitudes towards City development.¹

The transport revolution, attributed to the automobile; the communications revolution, occasioned by the invention of the telephone; and access to electricity were changing the historical basis for settlement. The design of new communities and suburbs was one arena in which progressive reformers were seeking a response to these changes.

In 1923 a group of like-minded intellectuals formed an association with the aim of considering and formulating new approaches to regional development, geotechnics and new communities. Calling themselves the Regional Planning Association of America, its members included Clarence Stein, Lewis Mumford, Benton MacKaye, Henry Wright, Stuart Chase, Frederick Ackerman and Charles Ascher.

Clarence Stein, an architect educated at the Ecole des Beaux in Paris, provided the groups main organisational force while its intellectual impetus was principally nurtured by

¹ Girling, C. & Helphand, K. 1994, p55

Lewis Mumford, a writer and social critic.² Benton MacKaye, who was to later gain notoriety as the creator of the Appalachian Trail, was trained as a forester at Harvard University, Henry Wright was an architect, Stuart Chase was an economist and writer, Frederick Ackerman was an economic analyst and Charles Ascher was a lawyer specialising in real estate.

In receipt of financial support from Alexander Bing, a property developer seeking investment opportunities in socially responsible enterprises, the Association's original intention was to create a Garden City in America. The slum clearance initiatives undertaken by the Governor of New York however, provided the first opportunity for the group to try a new approach to residential development. This opportunity was in the form of the redevelopment of an established urban area of inner New York known as Sunnyside Gardens.

Sunnyside was a very urbane approach to residential development designed within the rigid framework of New York's gridiron. Consisting of multi-level residential blocks surrounding central courts which comprised of private gardens and shared common space, there was little resemblance to a Garden City.

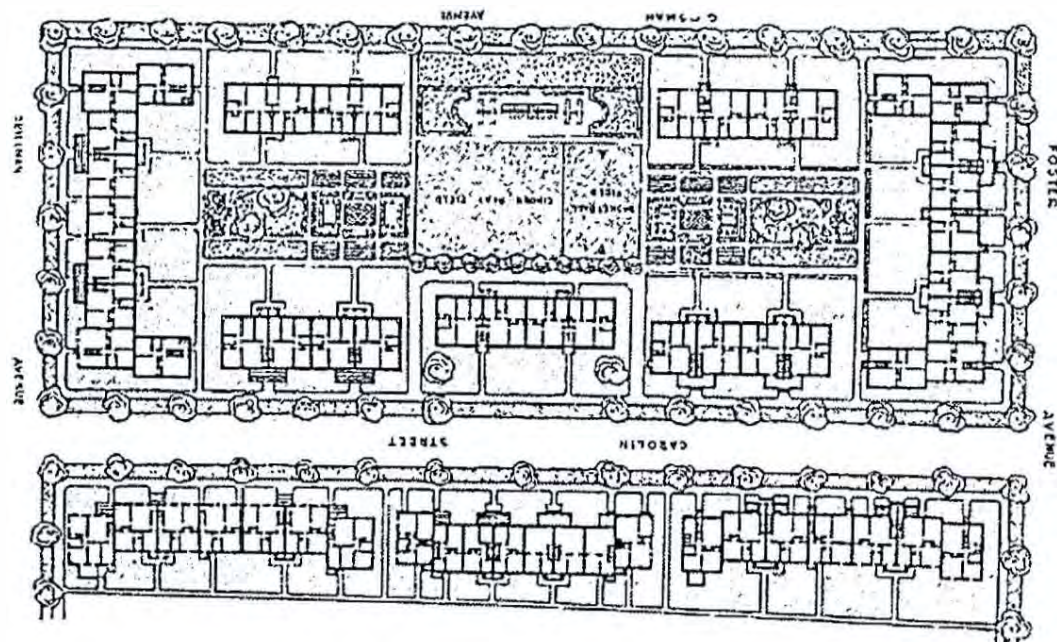


Illustration 12
Sunnyside, New York.
(Stein, C. 1958, p25)

Sunnyside proved to be a social and economic success and encouraged the Association to embark upon a second venture.

² Ward, S. 1992, p128

4.1.20

DEVELOPMENT OF RADBURN NEW JERSEY

The intention with the second project was to establish a city based on Howard's model as described in "Garden Cities of Tomorrow".

In addition, the group sought to apply the concept of the Neighbourhood Unit developed by Clarence Perry, as an essential component in the scheme. The ideal neighbourhood was considered by Perry as having 4000 to 7000 people, the population needed to support an elementary school - the institution which he considered to be the core feature of neighbourhoods. The elementary school was to be located at the centre of the neighbourhood with a shopping centre similarly situated to service that neighbourhood.

After examining 50 sites, a large tract of farm land in Radburn New Jersey, only 16 miles from New York, was selected. While it was large enough for three neighbourhoods with a total population of 25000, there was not however, sufficient areas to surround the proposed town with a green belt. This essential element of the Garden City was therefore sacrificed because of the greater emphasis placed on other objectives. A further departure from the Garden City model was effected by the absence of infrastructure to lure industry to the area. The nearest railway line was a secondary route and there were no significant arterial roads. Radburn therefore could be nothing more than a suburb.

Although Radburn had originally aspired to be an American Garden City following Howard's dictum that "town and country must be married" the inability to incorporate several key features and the irrepressible influence of the motor vehicle saw Radburn's ultimate role became quite different from the Association's original aim. Radburn did not attempt to be a Garden City or balanced New Town. Its focus instead was to promote a suburban form which

accounted for and protected against, the perils and inevitable dominance of the automobile.

Radburn was "...realistically planned for the Motor Age..."³ and while not a Garden City of the Howard genre as had been the groups original aim, its spatial patterns were intended to foster a rich family life, focused on children, with a community design that fostered social interaction.

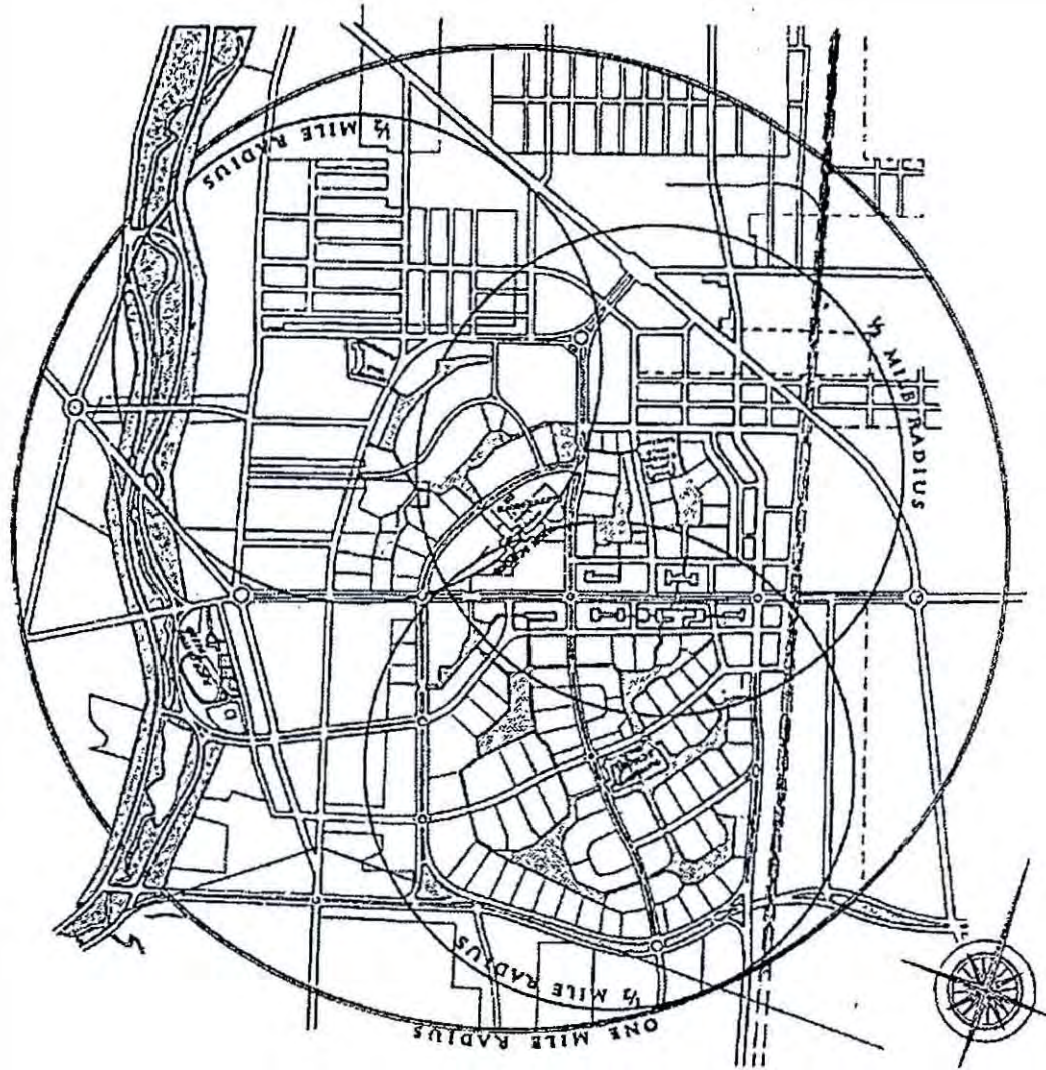


Illustration 13
The Radburn neighbourhood
concept.
(Stein, C. 1958, p50)

The design of Radburn involved three neighbourhoods of a half mile radius with an elementary school at the centre of the circle. Each neighbourhood was to have 7500-10000 inhabitants and was also to be serviced by a local shopping centre. The overlapping circles converged at the sites highest point, where the high school was to be located.

4.1.21 DESIGN FEATURES

Comprising primarily of detached or semi-detached dwellings in uniform arrangements, the design and general layout of Radburn was distinctive by way of its application of the following features:

³ Stein, C. 1958, p19

The Superblock

Rather than the narrow rectangular block, the gridiron layout or the interconnecting curvilinear network of streets, Radburn through its use of cul-de-sacs established large irregular shaped blocks.

Specialised roads planned and built for one purpose

Radburn incorporated a network and hierarchy of roads. These roads provided for differing degrees of movement, and parking. Also limited opportunities for traffic collection, servicing and visiting.

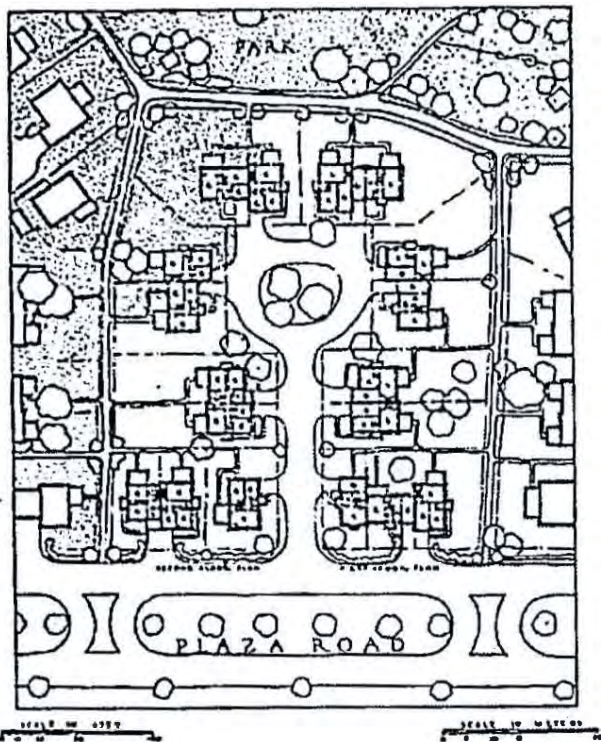


Illustration 14

Burnham Place, the most spacious of the cul-de-sacs in Radburn, New Jersey.

(Stein, C. 1958, p56)

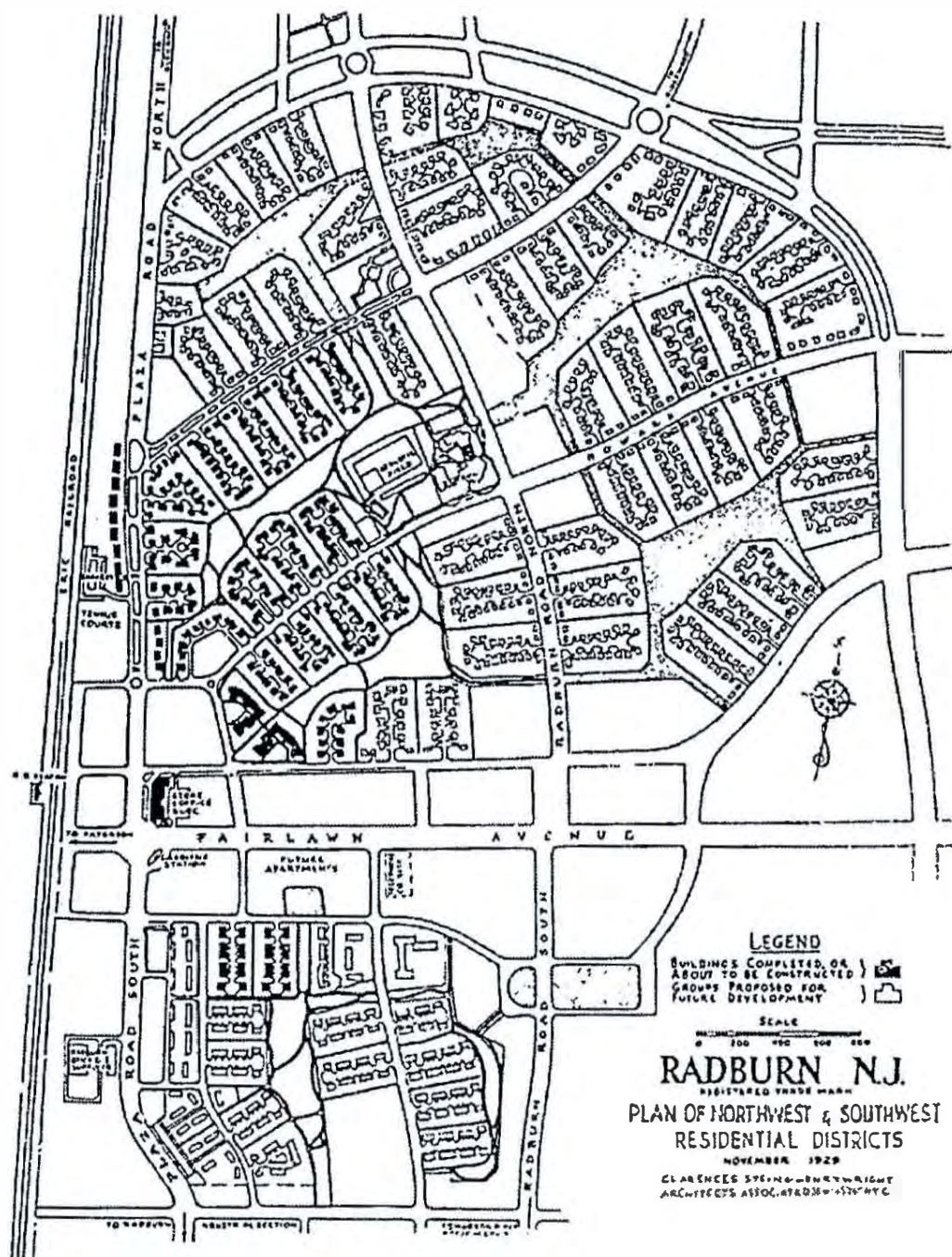


Illustration 15

Plan of Radburn, New Jersey.

Complete separation of pedestrian and automobile

A concerted effort was made to ensure conflicts between pedestrians and vehicles were avoided. Footpaths were clearly separated from roadways and where intersection of the two was unavoidable, it occurred at different levels (ie overpass/underpass).

Park as a backbone

At the centre of the superblocks were large open areas. These open areas were to be connected to adjoining superblock open spaces to form a continuous park network.

Houses turned around

The living and sleeping areas of houses were oriented towards the park while service rooms were toward the street and entry was gained by means of paths to the side of the house enabling access from both the street and the park.

Illustration 16
Aerial view of Radburn, New
Jersey taken in 1929.
(Stein, C. 1958, p46)

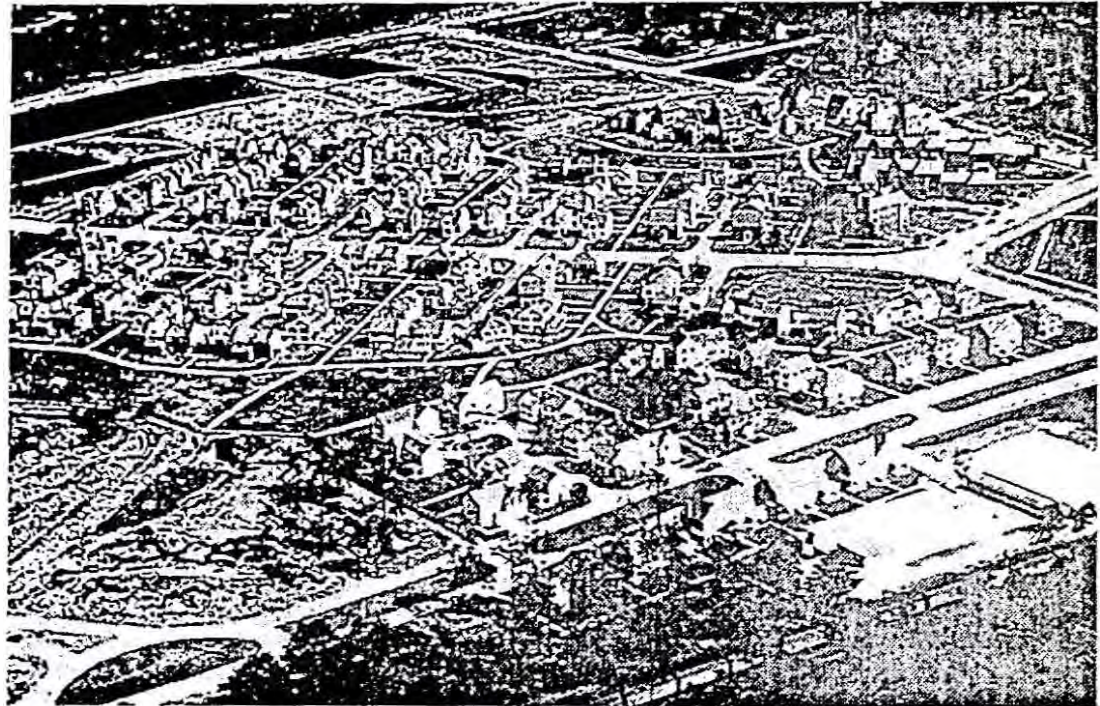
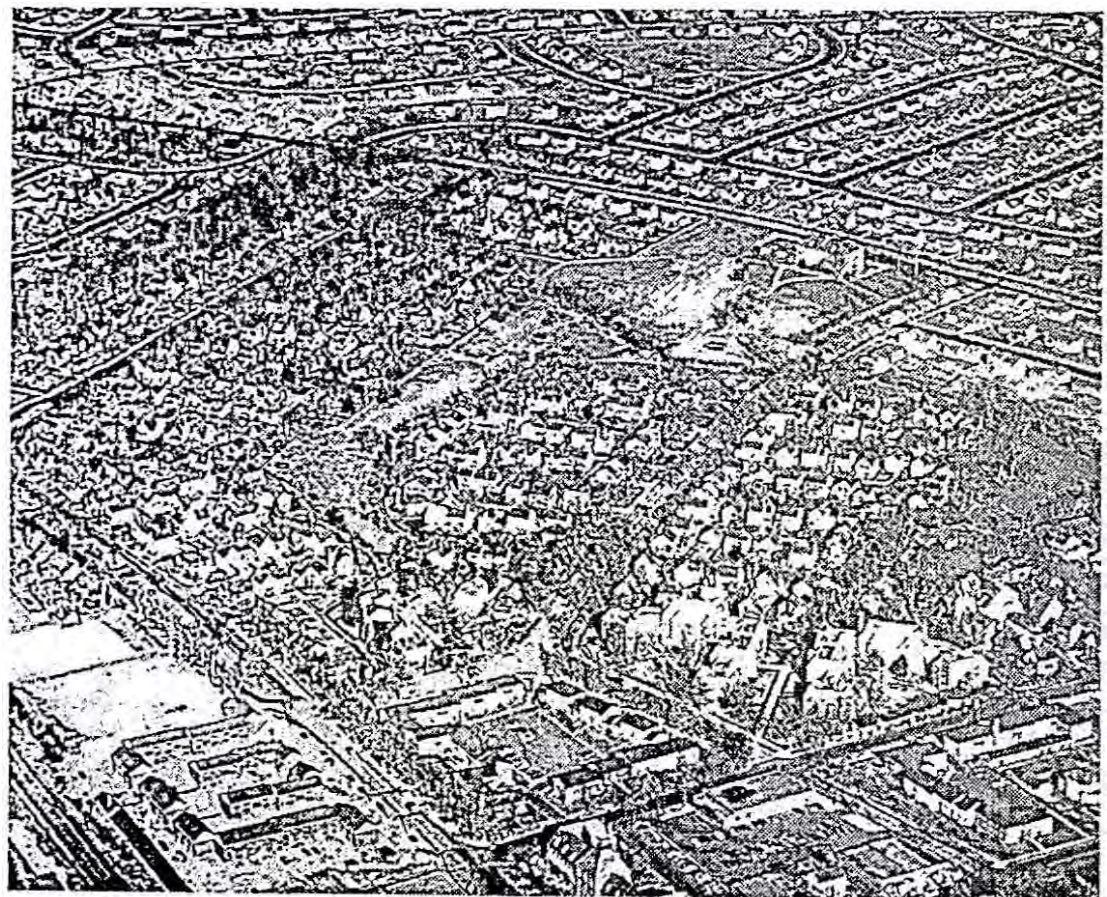


Illustration 17
Aerial view of Radburn, New
Jersey taken in 1955.
(Stein, C. 1958, p70)



While the combination of these elements was quite unique, none of the elements were without precedence.

The use of cul-de-sacs had been previously applied in residential estates in England and in America. The

internalisation of house orientations was the application of an approach previously conceived by Architect Henry Wright who had frequently designed his houses facing their private garden areas. The provision of large, centrally located, public open spaces with recreational, community and commercial buildings located adjacent to or within those areas, was a derivation of the Garden City model and also of the greenbelts of British New Towns.

4.1.22 EVALUATION OF RADBURN

Geddes Smith described Radburn as:

"A town built to live in - today and tomorrow. A town 'for the Motor Age'. A town where roads and parks fit together like the fingers of your right and left hands. A town in which children will need never dodge motor trucks on their way to school. A new town - newer than the garden cities, and the first major innovation in town planning since they were built"⁴

Lewis Mumford also acknowledged the innovation of the Radburn layout by describing it as "the first major departure in city planning since Venice"⁵.

Despite these kudos, Radburn never grew to its envisaged size. Originally planned for a population of 25-30000 on a square mile, only two of its superblocks were constructed. The core area was only 100 acres with about 500 dwelling units.

As typified by the pedestrian vehicular separation and the subsequent safety afforded, Radburn was considered to be a town for children. Statistics would seem to suggest that this objective was satisfied with pedestrian/vehicular accidents rare and much lower than in other towns.⁶

A dominant feature of Radburn was the provision of recreation facilities. There were two swimming pools plus tennis courts which were available to residents free of

⁴ Stein, C. 1958, p44

⁵ Arch Review July 1992, pg22

⁶ Stein, C. 1958, pg51/52

charge and a 6.75 acre athletic field which was popularly used. A survey among new residents in 1937 made by Radburn Citizens Association indicated that 85% of them moved to Radburn because of the recreation facilities provided.⁷

Although intended to be a town that would have housing for diverse social classes, Radburn became thoroughly middle class. The initial house prices of \$7900 to \$18200 were about double the American average at the time and its character was described as distinctively campus like. In fact 87% of Radburn men and 74% of the women had gone to college. This compared with approximately 6% of the nations adult population having college degrees.⁸

Furthermore, Radburn was not the economic success its promoters had hoped for following on from the success enjoyed by the development of Sunnyside. The first homes were occupied only months before the 1929 crash that marked the onset of the Great Depression and it is generally agreed that the planning of Radburn failed to incorporate appropriate economic and industrial studies. Those studies which were undertaken were considered not sufficiently specific nor realistic.

Although Radburn's original intention was to be an autonomous New Town, it was destined to be commuter suburb, not a garden city, as it developed without the desired green belt or economic base.

Nonetheless, Radburn presented a new approach to suburban development which, like the Garden Cities preceding it, focused upon improving the residential amenity and the effectiveness of such areas generally.

⁷ Stein, C. 1958, p65

⁸ Girling, C. & Helphand, K. 1994, p66

4.2

THE AUSTRALIAN RESPONSE

4.2.10

THE SOCIAL CONTEXT

From the early days of settlement, Australia's cities expanded in a generally unordered and unrestrained manner. By the 1890's in fact, both Melbourne and Sydney had consumed more land than any city in Britain or North America (except Chicago).⁹

The general consensus was, as expressed in the Sydney Daily Telegraph at the turn of the century, that "the wider the area upon which a city's inhabitants dwell, the better it is for their health and bone comfort"¹⁰.

There was a general complacency towards, and lack of relevance associated with, the Garden City reforms that were occurring overseas.

Factors associated with recent settlement, small population, limited rural-urban migration and relatively high standards of living diminished the urgency for new suburban typology's. It was generally accepted that the scale and extent of the urban problems were less dramatic than in the "old world".

A significant factor in the application of the Radburn typology for suburban layouts was the decision by the Commonwealth to embark upon housing projects. This decision was a result of the depletion of the private sector that had occurred during the war and in anticipation of the demands that would be created by returned servicemen and migrants.

It was further considered that private enterprise did not adequately provide for low income groups and that government should therefore assume responsibility for ensuring adequate housing.

⁹ Freestone, R. 1989, p42

¹⁰ Freestone, R. 1989, p49

Substantial housing initiatives were subsequently undertaken with large tracts of land acquired by the Government on the fringe of existing urban areas upon which detached dwellings upon large allotments were produced on-mass.

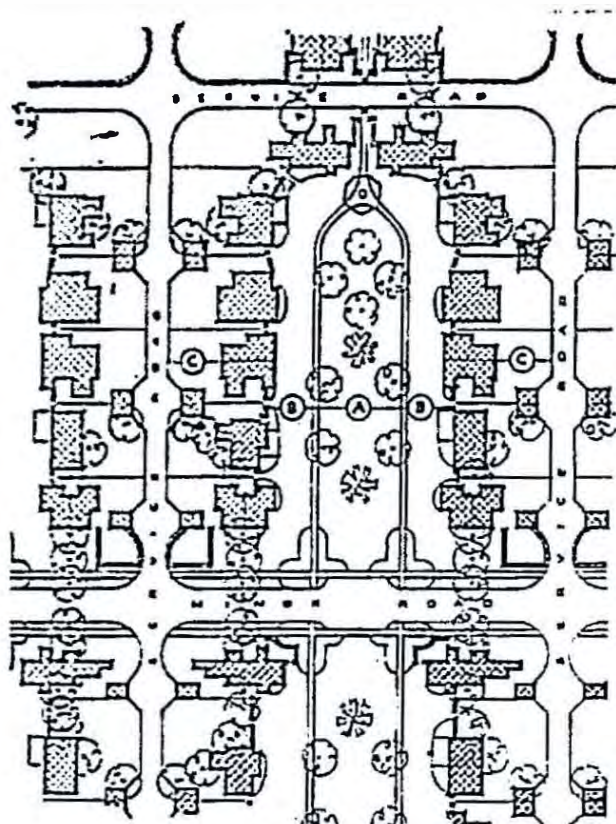


Illustration 18
Building orientations towards
internalised public open space.
(Commonwealth Housing
Commission 1943, p117)

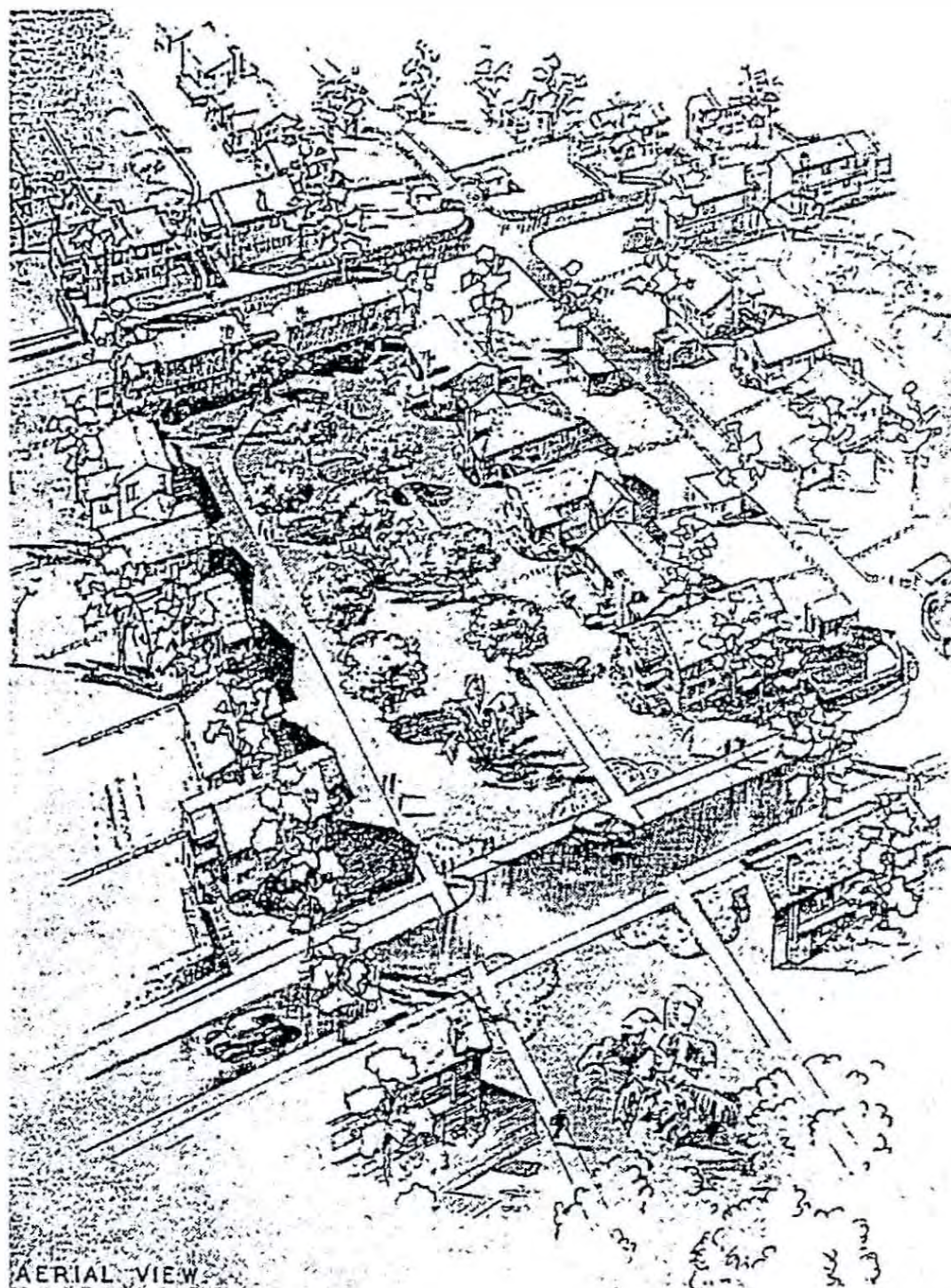


Illustration 19
Aerial view of the previous
illustration.
(Commonwealth Housing
Commission 1943, p118)

The Commonwealth Housing Commission report of 1943 which had enticed the public housing initiative eventually undertaken, emphasised the importance of the landscape layout and in particular the planting of trees.

The report detailed as guiding principles that consideration should be given to the use of trees and that landscapes should be laid out such that they act as "pattern makers, both planographic and cubical, to their texture, colour and

intrinsic and massed beauty"¹¹. Furthermore, the implementation of garden beds and the use of trees in enclosed areas "to break up the level mass into areas too small for vigorous games"¹² demonstrated the preoccupation with developing areas of aesthetic value at the possible expense of their functional value.

The Commission recommended that fences should be "low and inconspicuous, with no fences in front of the dwellings". It was also considered that Council should be responsible for the maintenance of such areas but acknowledged that the co-operation of householders was essential and that education in community appreciation and responsibility was necessary.

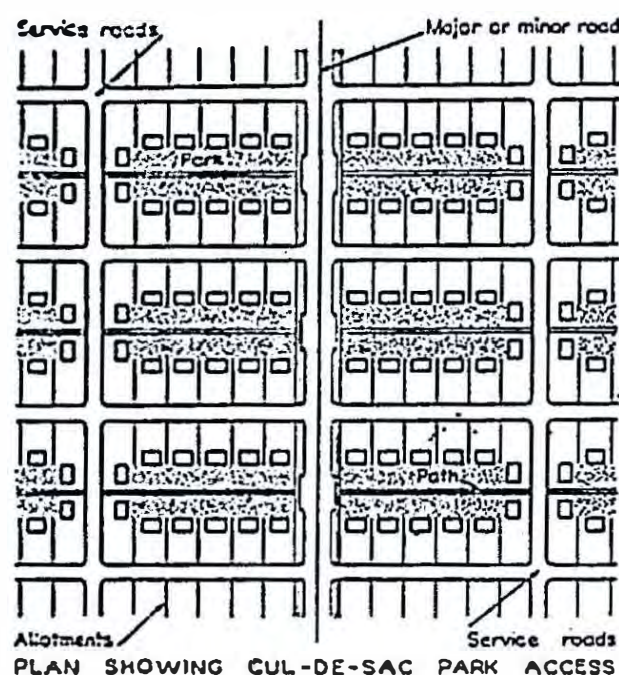


Illustration 20
The "Cul-de-sac Park Subdivision".
(Commonwealth Housing Commission 1943, p313)

Among the various subdivision layouts identified in the Housing Commission report was the "Cul-de-sac Park Subdivision".

While not incorporating the large central park feature or the superblock layout of streets, the houses did orient towards and enable easy access to, park areas. There was a clear focus on those Radburn principles emphasising the importance of parks and trees and front gardens.

The allotments were to be of a similar shape and size with a part of each allotment forming the park for general use. It would be reasonable to assume therefore that the thinking was along communal space lines - private space given over to general use.

This method was seen as improving amenity by virtue of pleasant outlooks, parks for general use and good service access to houses. The establishment of roads and services were anticipated as being more economical and the system would enable an increased number of allotments to the acre.

The broadacre housing approach was considered the most attractive option. It produced good quality yet inexpensive

¹¹ Commonwealth Housing Commission 1943, p119

¹² Commonwealth Housing Commission 1943, p119

housing and there was ample land owned by the government on which to build new estates.

Also becoming increasingly popular was the Satellite Town concept. Leading planning commentators such as Robin Boyd and Harry Seidler espoused the virtues of this suburban model. The Satellite Town was seen as providing a compact community composed of discrete neighbourhoods, distinct land use zones, hierarchies of open space and roads, framed by open country.¹³

While in many instances they were more "Satellite suburbs" than "Satellite towns", they were considered a convenient approach since they involved land more distant from the city centre and therefore less expensive. Furthermore, it was easily justified to those concerned about the isolation of such centres by the assertion that the rising population of the 1950's and 1960's and the subsequent suburban sprawl would continue and inevitably engulf these detached areas.

4.2.20

AUSTRALIAN APPLICATIONS

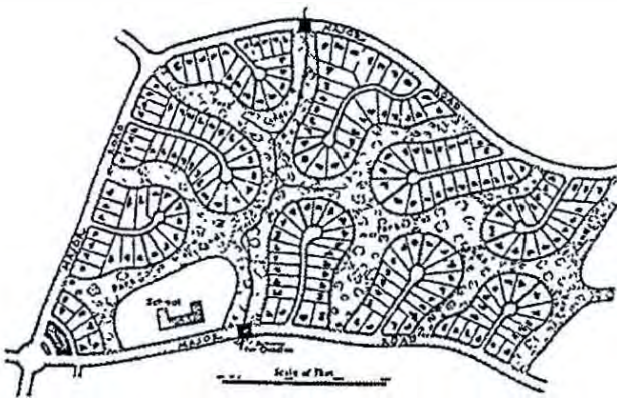


Illustration 21
1945 proposal by Fred Cook
(Freestone R 1080 p220)

The first applications of the Radburn approach to suburban layouts began to appear in the mid 1940's following the release of the Commonwealth Housing Commission report referred to in the previous section.

The Radburn model applied in Australia was generally similar to the American model although in keeping with the inherent Australian preference towards low densities, tended to be even more spread out with single storey dwellings on spacious sites with a generous provision of open space areas adjoining.

One of the first proponents of a Radburn type approach was Fred Cook who in 1945 suggested that style of subdivision as being appropriate for preserving "some of the natural beauty of the steep hillsides" of Hobart.

¹³ Freestone, R. 1989, p227

The impact of the Radburn principle in practice however was patchy, due to resistance from land developers, government, and the general public. Nonetheless, a number of estates, mostly government sponsored housing projects, were developed in most states - Macquarie Fields and Villawood on the outskirts of Sydney, Crestwood in Perth; Para Hills West and large areas of the Noarlunga region of Adelaide; and Charnwood, on the outskirts of Canberra to name a few.

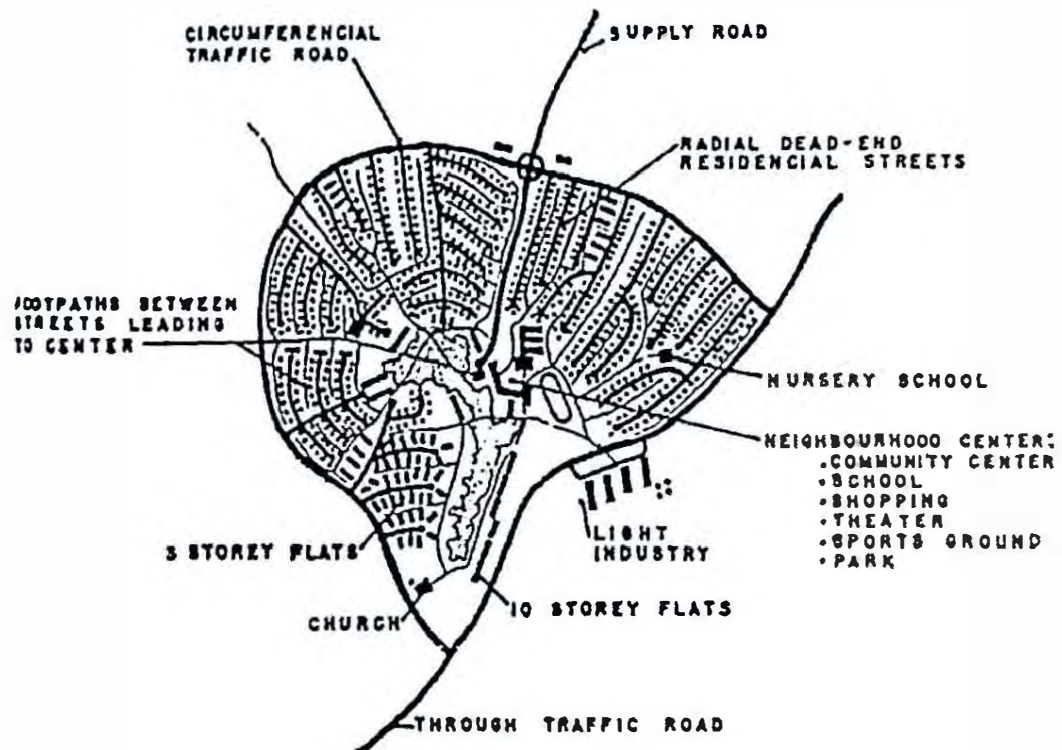


Illustration 22

*A synthesis of the neighbourhood unit, community centre and Radburn principles - by Harry Seidler 1953.
(Freestone, R. 1989, p221)*

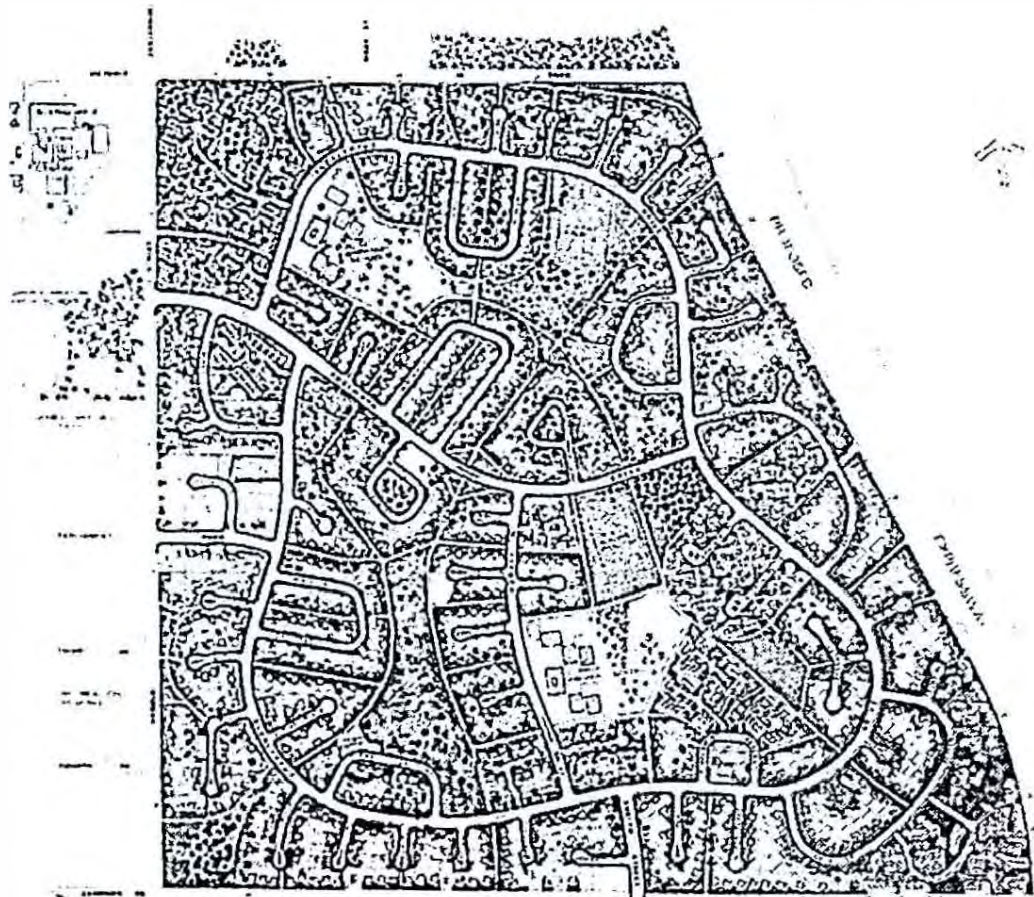


Illustration 23

*Macquarie Fields, Sydney,
N.S.W.*

A variation of the Radburn principle was even applied for the canal estates of the Gold Coast in the early 1960's

where the Town Planner, Karl Langer substituted waterways for open space and Harry Seidler applied a combination of Neighbourhood unit, Community Centre and Radburn principles to his layout proposal for Campbelltown near Sydney in 1969.

Despite the good intentions of the Radburn layout, the approach has only enjoyed limited success and has increasingly been criticised as failing to provide the community oriented and socially interactive suburb that was intended. It has also been criticised as failing to improve the amenity and general aesthetic of the residential surroundings and as contributing to anti-social behaviour within its confines.

*"The layout of dwellings in the superblocks creates a network of intensely developed spaces which abruptly evaporate into a shapeless common, too vaguely defined to suggest an extension or expansion of private yards, too wide to command a directional tendency towards a focal point, too sparsely vegetated to invite a refuge from the tight complex of houses"*¹⁴

This observation was made by an Architecture student, Alden Christie, in his assessment of Radburn, New Jersey where he lived in 1964 and succinctly describes those deleterious qualities manifest within most residential estates which have adopted such an approach.

Reinforcing this view and demonstrating subsequent measures which have been implemented to address these problems are described within the following outline and evaluation of three residential estates from different areas of Australia but which have all engaged Radburn principles in their suburban layout.

¹⁴ Girling, C. & Helphand, K. 1994, p66

4.2.21 CRESTWOOD

Crestwood was a residential estate developed within the Perth suburb of Thornleigh in 1970.

It was primarily a private initiative (with some financial assistance provided by the Government) which had been inspired by the Radburn subdivisions of the United States. It adopted the serpentine approach to open space provision and incorporated the typical Radburn features of dwellings oriented towards the open spaces; the separation of pedestrian and vehicular movement; pedestrian linkages and superblocks.



Illustration 24
Location Plan - Crestwood, W.A.



Illustration 25
Layout Plan - Crestwood.

Originally proposed on a grandiose scale, the estate was to include bowling greens, schools, basketball, squash and tennis courts, numerous swimming pools and child minding facilities. Access to all these facilities was to be available to residents by virtue of a \$2.90 (1970) weekly levy which would also include the cost of maintaining all park areas.

The estate encountered problems from the onset in attaining public acceptance and only a portions of the envisaged development (and none of the recreational facilities) were ultimately realised.

Marketing of the lots (dwellings) within the estate had proved difficult due to general reservations over the "unusual" approach and because of the reduced size (floor area) of the dwellings available as a result of allocating space for the large internal recreation areas (approximately 25% of the estate was consumed by public open space).

A further problem with the Radburn application in Crestwood was with respect to the on-going maintenance of the internal open space. Maintenance proved costly and difficult and the allocation of responsibility for such areas the subject of contention. In an attempt to manage such issues, a Home Owners Association had been formed. It comprised of representatives of the community, and required that each resident pay a levy (in addition to their normal local authority rates) into a fund controlled by the Association. These funds were to provide for the on-going maintenance of the open space area. Such an approach however was not well received with residents reluctant to be imposed with additional financial burdens.

The internal open space and the easy yet secluded access to private spaces of adjoining dwellings that it provided, facilitated enormous crime problems with respect to unlawful entry and theft.

Measures that were subsequently taken to address this problem included limiting access to the internal open space to only those persons whose residences surrounded the space. The area as a result being made communal, rather than public, open space.¹⁵

4.2.22 VILLAWOOD - NEW SOUTH WALES

Villawood is in the western suburbs of Sydney and was developed as a typical low density suburban cottage estate in the 1950's.

In the early 1980's a revitalisation project was undertaken combining medium density two storey townhousing and



¹⁵ Hedgecock, David 1995, 4 October
Reynolds, Hugh 1995, 16 November

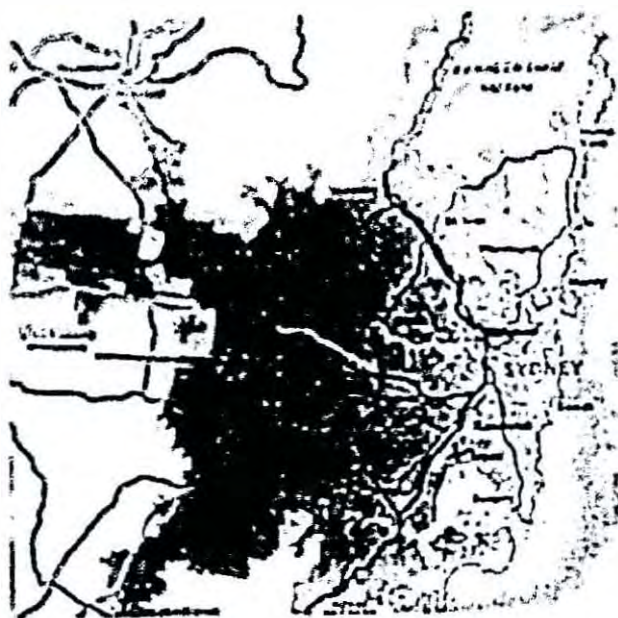


Illustration 27
*Location Plan - Villawood,
Sydney, N.S.W.*

three and four storey maisonettes with site planning based on classic Radburn principles - houses around cul-de-sacs with their living and bedroom areas oriented towards common internalised open space areas and their service rooms facing the roads. By 1990 however, the site was generally accepted as being problematic and undesirable. It was generally considered that the majority of the problems centred on the open space areas. Large amounts of these areas were seemly unallocated and functionless, privacy and personal spaces were infringed, anti-social behaviour was frequent within the park and there was a general lack of clarity in the site planning with access to houses difficult to decipher.

A survey undertaken attempting to identify community perceptions by the Landscape Architect Sue Richards in mid 1990 resulted in the following results typically reflective of the perceived failings of the area. Tenants were asked to designate the three worst features about living on the estate, and the three best. The results are detailed in table 1.

Table 1
Richards 1990

WORST ASPECTS		GOOD ASPECTS	
20	crime/break-in	7	neighbours
9	pedestrian alleys	6	same language neighbours
4	dogs	6	park
3	vandals	6	nothing's good
3	noise (kids outside)	5	my home is beautiful
3	need transfer	3	school
3	low fence, main street, kids	3	lighting
3	low fences	3	good weather
3	grass in concrete ways	2	garden
3	garage should be in front of house	2	garages
3	better fencing	2	area familiar
2	the whole thing	1	mixture of nationalities
2	street noise at night	1	I get used to the place
2	not enough for kids to do		
2	neighbourhood		
2	low fence onto park		
2	lighting on outskirts		
2	garage too far from house		
1	thieves in park		
1	letter box too far from house		
1	house too small for teenagers		
1	front to main street		

A number of measures were proposed in response to these problems.

Techniques were to be investigated which would encourage resident participation in management and maintenance of park areas.

A park management committee was proposed to co-ordinate development and improvement of park areas.

The privatisation of public open spaces was suggested by incorporating those areas into adjoining private yards and improved lighting was advocated for particularly troublesome areas.

Illustration 28
Villawood's Radburn Layout.

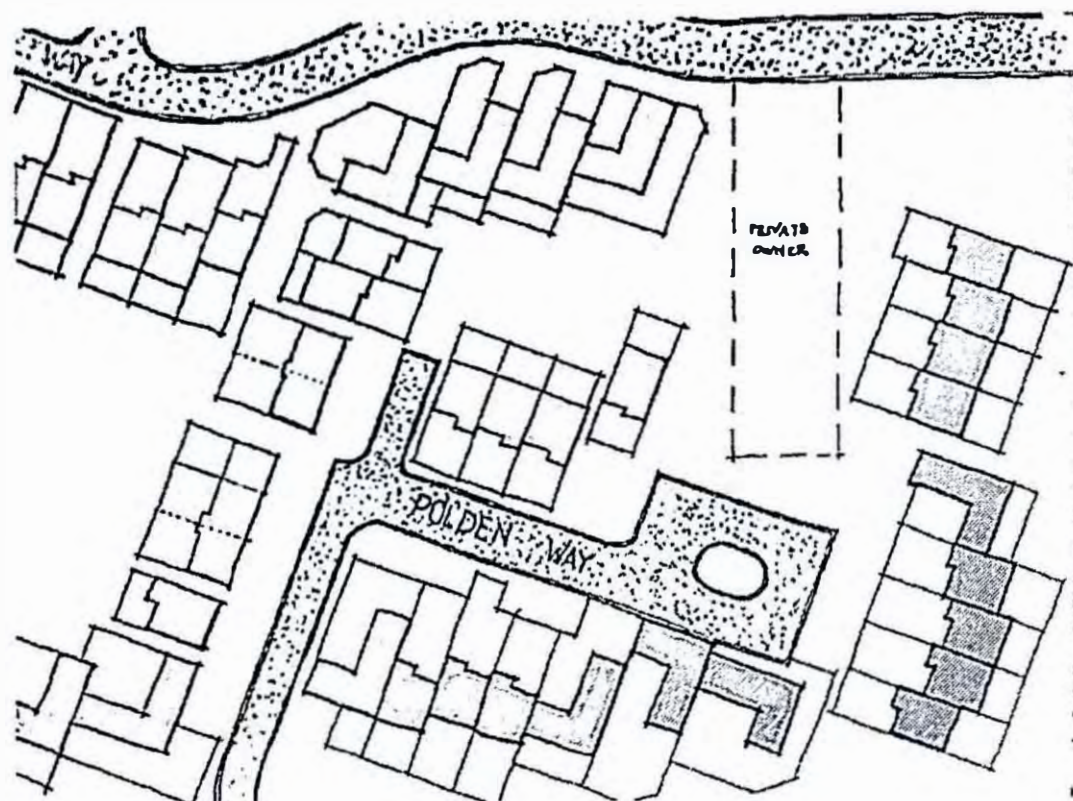
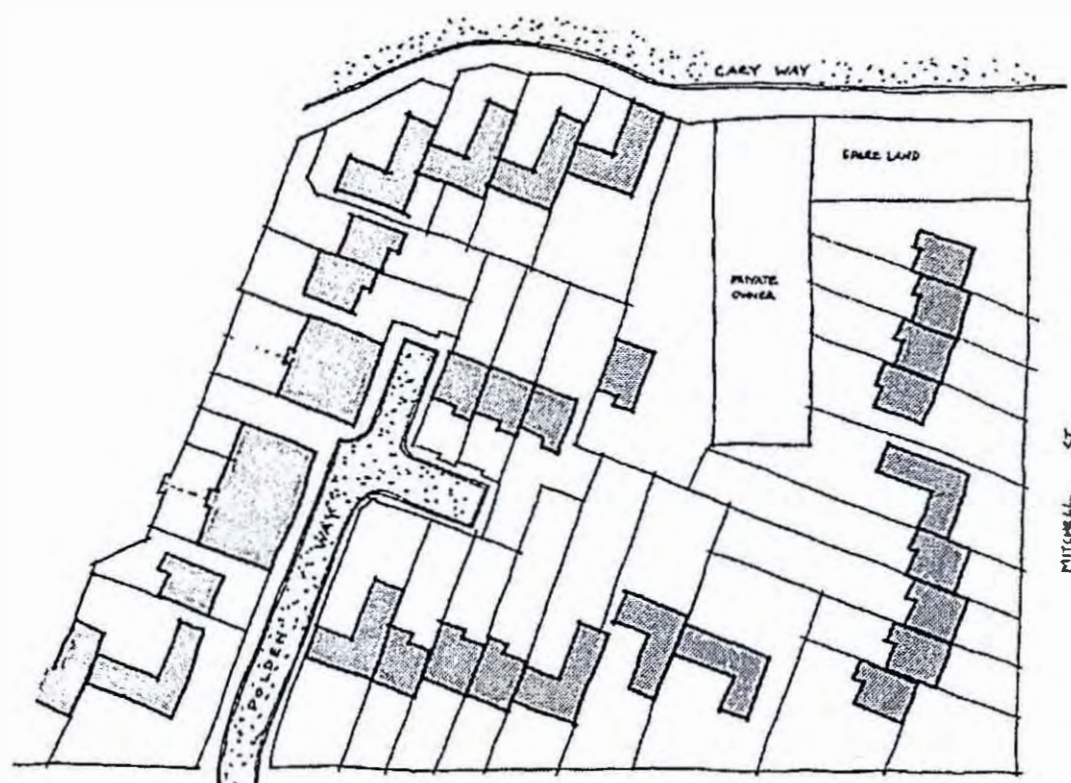


Illustration 29
Redevelopment proposal for Villawood.



4.2.23 CHARNWOOD - CANBERRA

A Radburn approach was adopted for the development of a residential estate within Charnwood, a suburb of Belconnen on the north-eastern outskirts of Canberra, in the mid 1970's.

Although the project was primarily a Government housing initiative, a significant proportion of the residential lots were given over for private development.

The National Capital Development Authority (NCDA) was the government agency responsible for the planning and design of the subdivision layout but could only exert control over the siting and design of government sponsored dwellings.



Illustration 30
Location Plan - Charnwood,
A.C.T.



Illustration 31
Layout Plan - Charnwood

Co-ordination between the NCDA's objectives and the actions of private developers was difficult to secure and as a consequence, the trend was established whereby government sponsored dwellings were oriented towards the internal park space while their privately constructed counterparts were mostly oriented towards the street.

The communities response to, and the general performance of, the suburban layout is consistent with the other Radburn applications discussed. The principle grievances of residents are with respect to security concerns and privacy intrusion while the local authority encounters continuing maintenance difficulties and costs in addition to concerns over the general appearance of the area and the anti-social activity occurring.

Not surprisingly, the dwellings privately built and those which were government sponsored but since privately acquired, have been well maintained and established attractive gardens. Many of those dwellings which remain in government ownership however have become neglected and generally detract from the quantity of the urban environment.

In an attempt to alleviate those security and privacy concerns typically encountered by the house oriented

towards the park, a number of dwellings have erected high screen fencing to enclose those "forward" areas. In some residences, the land enclosed extends beyond the actual property boundary and includes areas of the public domain. Despite the unpleasant aesthetic that results from such actions, there has been little done to discourage the practise.¹⁶

4.2.30 TASMANIAN APPLICATIONS

In Tasmania, a number of suburbs which had developed during the post WW2 years had, incorporated into their designs, elements which had derived from the Radburn approach.

Cul-de-sacs and superblocks were characteristic of many suburbs and internal open spaces had long been common place in suburbs in addition to the usual provision of pocket parks and community buildings and activities in space as inspired by the Garden City models.

In 1969, a residential estate applying the distinctive Radburn principles with respect to pedestrian linkages and road development was proposed for an area of Lauderdale south-east of Hobart.

The proposal (ultimately developed in 1974) involved a linear arrangement of dwellings bordered on one side by a narrow street for purely vehicular purposes (no footpaths) and on the opposite side by a wide pedestrian green space linkage extending to a local arterial road.

The earliest attempt at a more comprehensive Radburn approach however was in the form of a Community Housing project at Rokeby in the early 1970's. The layout adopted in Rokeby included the large internal "spine-like" open space and a series of pedestrian linkages extending from the park and through the residential estate. Houses were oriented towards the park and pedestrian linkages and

¹⁶ Hamilton, Barry 1995, 17 October

there was a determined emphasis on separating vehicular and pedestrian movement.

Following from Rokeby, the Housing Department developed estates in Bridgewater and Devonport engaging those same principles applied in Rokeby except at a reduced scale. Subsequent housing projects in Maranoa Heights, Clarendon Vale, Gagebrook and Ravenswood continued to engaged Radburn principles within their layouts however with less conviction. In these later proposals, orientations were predominantly away from the internal park, roads were designed to serve pedestrians as well as vehicles and the relationships between the residential layout and associated commercial and community centres (such as schools) was less integrated. The Radburn principles which did continue to be applied were mainly concerned with the provision of a spacious linear open space area clearly removed from the street network and the use of cul-de-sacs and the formation of superblocks. Residential estates developed in George Town, Rocherlea and Rannock in the late 1970's and early 1980's signalled the end of Government sponsored broadacre housing initiatives (refer to Appendix 1 for a detailed analysis of various Radburn residential estates within Tasmania). The departure of Government broadacre developments has resulted in the main proponent of adventurous and innovative approaches to subdivision layouts being no longer influencing the design of communities. Suburban layouts as a consequence have become typically staid and conservative. Public open space provision is mostly in the form of pocket parks or where feasible, as part of a riparian reserve along existing drainage channels.

4.2.40 EVALUATION OF AUSTRALIAN RESPONSE

Despite their best intentions, the Radburn applications developed in Australia have for the most part failed to achieve the primary objective that the typology sought to

deliver - establish an improved suburban environment and aesthetic and create a more socially interactive community.

While in some instances, the failure could be attributed to a lack of understanding, incomplete or wayward application of the Radburn principles the appropriateness of applying those very principles in the Australian context itself could be questioned. The Radburn approach which developed in America derived from a different "suburban" tradition than was already entrenched in Australian society well before the first Radburn attempts were implemented. The majority of these members of the Regional Planning Association of America who developed the Radburn model were from New York and Radburn itself was designed with New Yorkers in mind. It is reasonable to suggest therefore that the urban lifestyles and perceptions of persons from New York would differ significantly from those inhabitants of Australian cities.

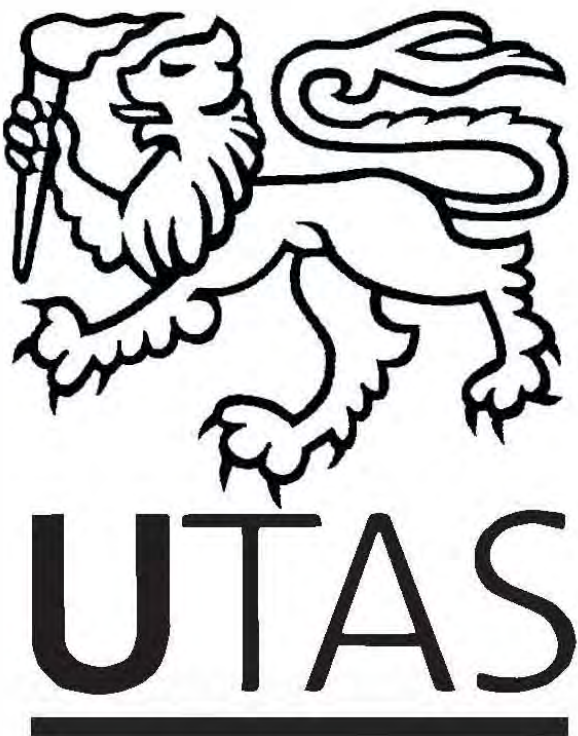
The variances are reflected in the way Australian applications adjusted their layouts to be in closer alignment with the Australian vernacular. While Radburn, New Jersey incorporated a combination of detached and semi-detached houses, Australian applications were in most instances purely detached and located upon spacious allotments. The provision of spacious, private and clearly delineated personal outdoor areas was not such a central issue for New Yorkers more accustomed to high density living, diminished privacies and less reliant on expansive areas of private open space (backyards). Even attempts to revitalise Australian applications have pursued approaches which clearly conflict with the Radburn idiom - privatising of public spaces, erecting screen fences, closing off linkages and preventing public access.

It is the ultimate objective of this paper to identify an more suitable approach and subsequent response, demonstrated by example, to revitalising these type of public open spaces.

PART 5

A CASE STUDY ANALYSIS

- ROKEBY -



5.1 A PHYSICAL AND SOCIAL PROFILE

5.1.10 BACKGROUND

The Rokeby district was one of the earliest areas of Tasmania to be settled. Its rich alluvial soils enabled the development of some of the earliest farms needed to sustain the new colony. The first wheat produced in Tasmania was grown and harvested in Rokeby using convict labour soon after colonisation.

The area was also notable for its role, in conjunction with Bellerive, as a landing point for convicts bound for Port Arthur. After disembarking at Bellerive or Rokeby, convicts travelled on foot to the tip of Seven Mile Beach, were ferried across to Dodges Ferry and from there continued their walk to Port Arthur.

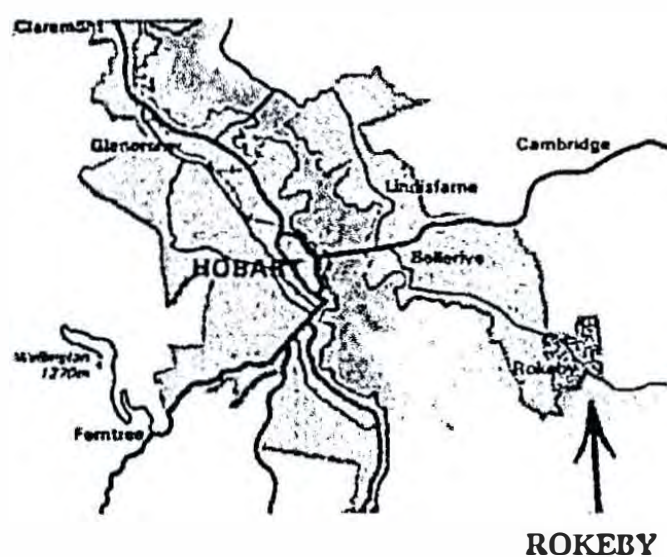


Illustration 32

The naming of the area has been generally accredited to George Stokell, an early settler from England, who had lived near the town of Rokeby in Yorkshire.¹ Developing quickly, the area soon became the hub of the district and by the mid 1800's a distinctive village had developed.

The town essentially remained a small village serving the needs of the rural community until the early 1960's.

The Housing Department started acquiring land in the area in the early 1960's and by 1969 had accumulated a sufficient amount to warrant serious consideration to the preparation of a comprehensive suburban development plan.

Motivated in part by the rapid growth that had occurred over the previous twenty five years, the Clarence Municipal Council in 1969 produced a draft development plan for the area indicating the type and scale of

¹ City of Clarence 1989, pg 57

development and facilities that would accommodate a population of up to 25,000 persons.

The layout proposed included large internal open spaces accommodating sports fields, schools and community buildings. There was also a comprehensive network of interconnecting open spaces and pedestrian paths.

The draft plan displayed the application of several classic Radburn principles. Separate neighbourhood units with primary school and shops at their core; superblocs; interconnecting open space areas and a clear hierarchy of roads (refer to Illustration 33).

In 1970 the Housing Department commenced work on the Rokeby Grange Stage 1 subdivision. Contained primarily within the area bordered by Grange Road West, Hookey Street and Burtonia Street, the subdivision's layout generally reflected that proposed by the 1969 draft plan, however its detail was typical of broadacre development of the time and did not incorporate any uniquely Radburn principles. Such was also the case for Stage 2 a few years later (refer Illustration 34).

However for Stage 3, south of Burtonia and Hookey Street, the Housing Department resolved to implement the Radburn approach. It was hoped that the separation of traffic from children's play areas, the orientation of houses towards open space areas and walkways, and the locating of roads at the rear of houses would make for an improved environment.

The development of Clarendon Vale, east of Rokeby, was commenced in 1975. Also similar in many respects to the approach intended for the area by the 1969 Draft Plan, its general layout closely resembled the Rokeby Stage 3 (Radburn) development although without the internal pedestrian linkages (accessways) and with houses oriented to the street rather than the public spaces.

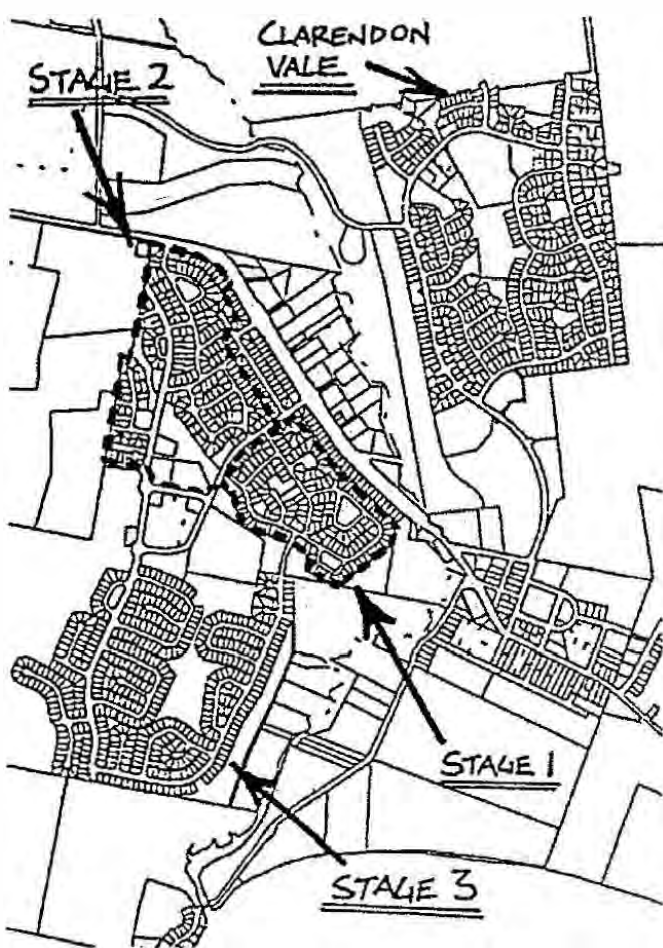
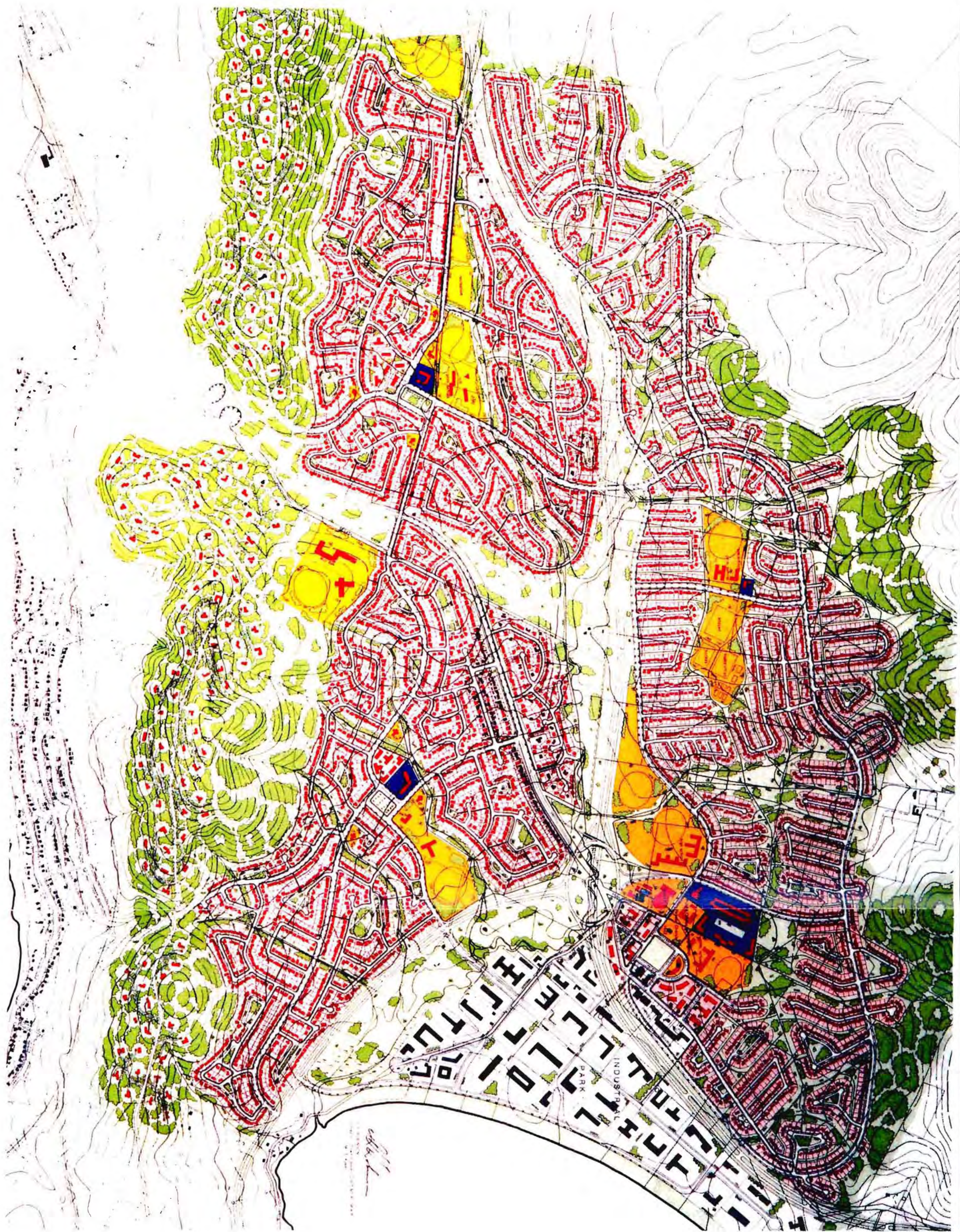


Illustration 34



A subsequent change in Community Housing policy away from broadacre residential estates however, and a diminishing of population growth trends generally, resulted in an end to the suburban expansion of Rokeby and to the likelihood of the 1969 development plan being realised to its full extent. Rokeby and Clarendon Vale have in fact both experienced declining population levels since the 1981 Census.

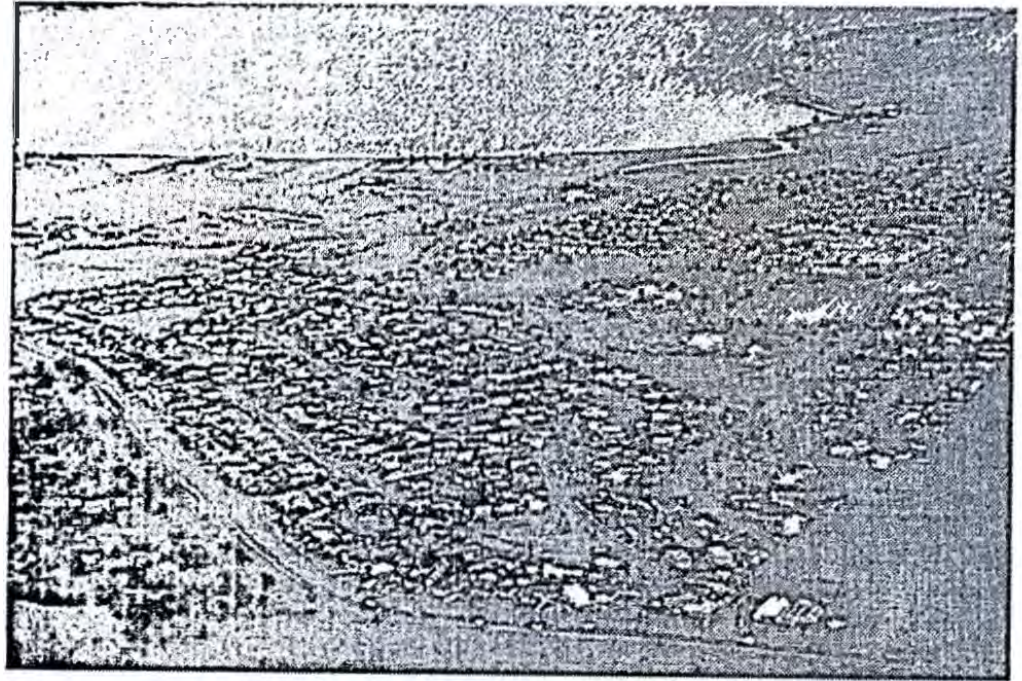
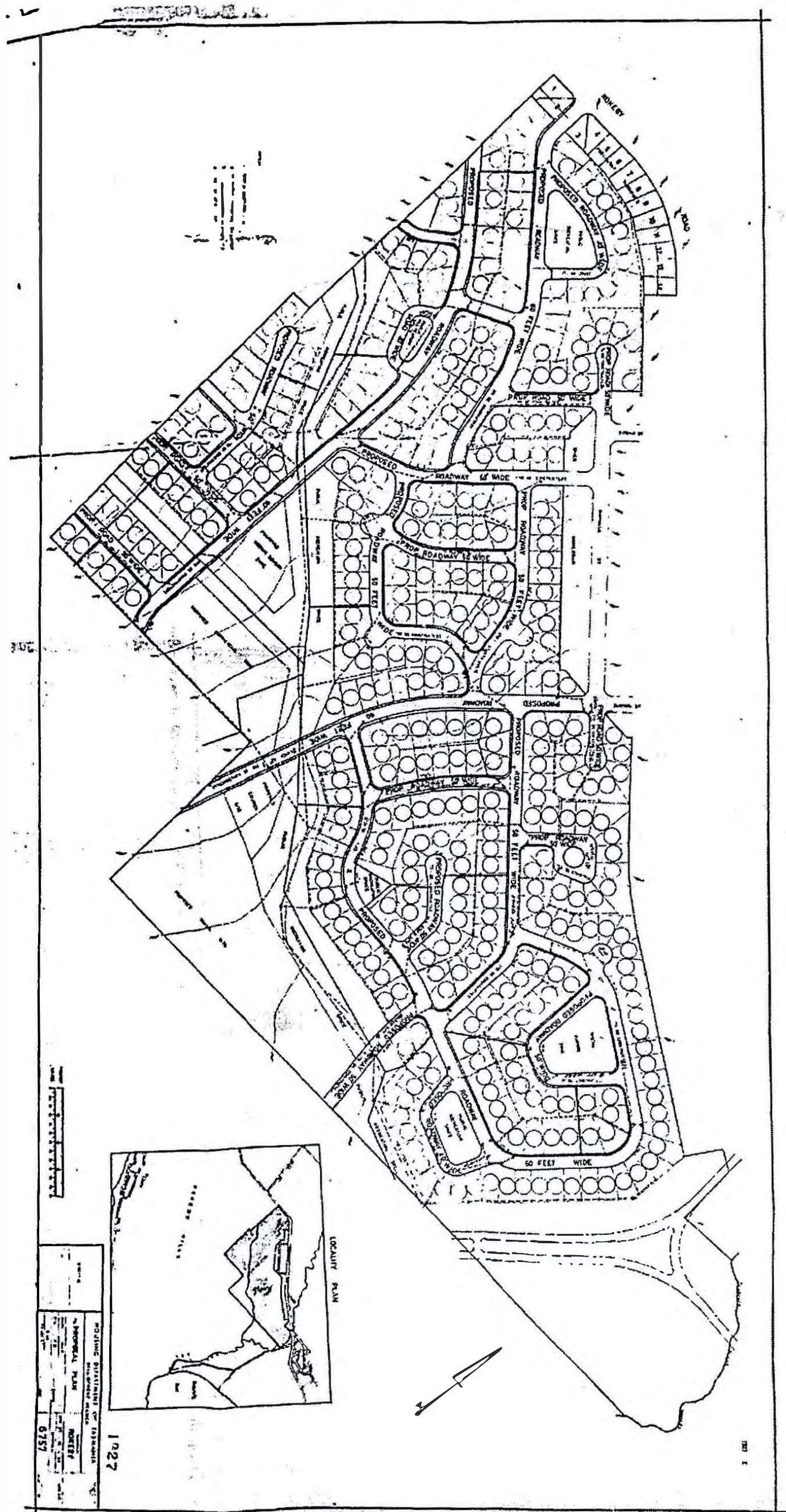


Illustration 35
Aerial view of Rokeby.

Illustration 36
Stage 1 - Proposal Plan



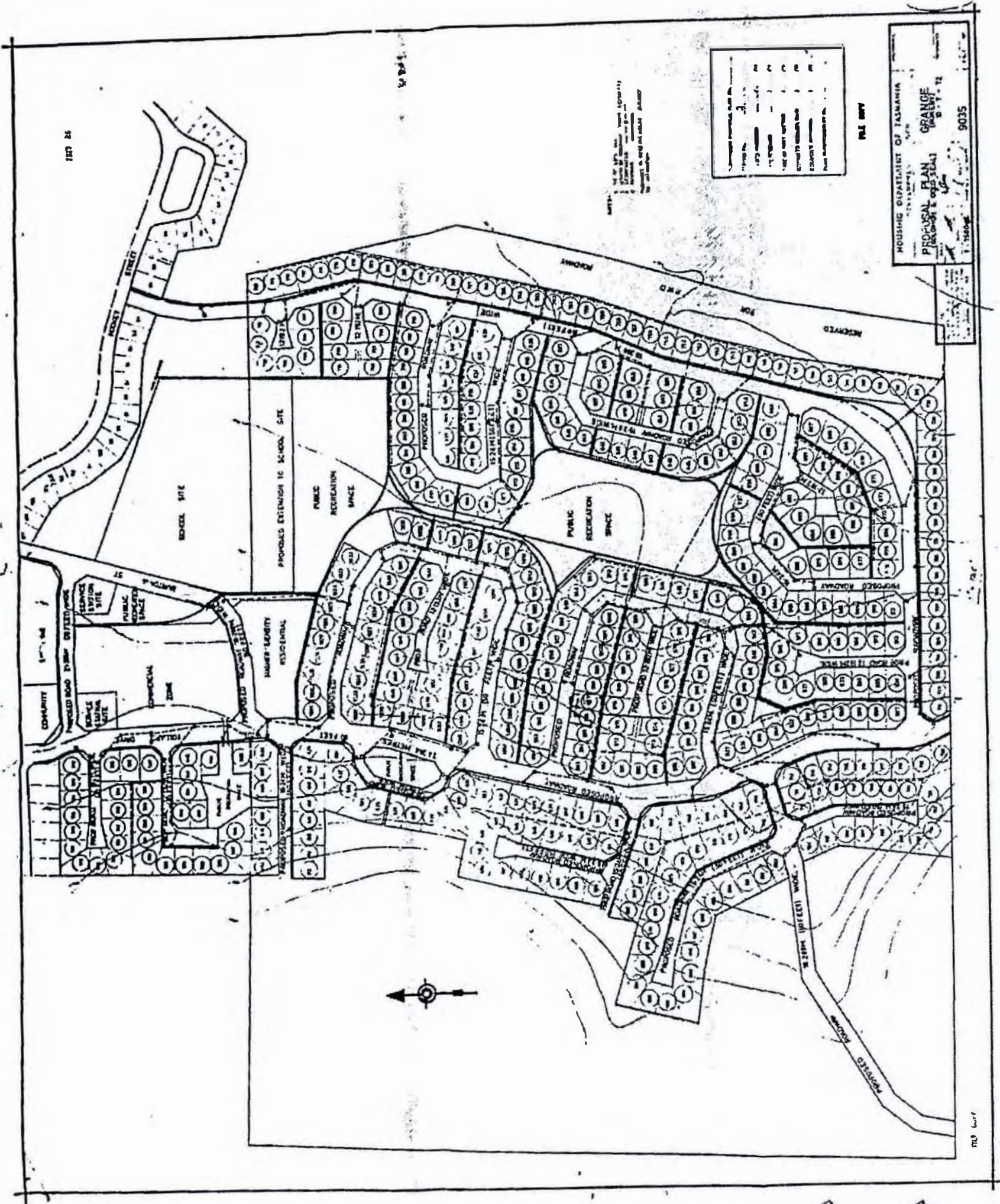


Illustration 37
Stage 2 - Proposal Plan

5.1.20 PHYSICAL CHARACTERISTICS

The section of Rokeby selected for detailed analysis with respect to the Radburn approach to public open space provision, is represented by Illustration 39. This area displays a classic Radburn suburban layout - parkway linkages, superblocks, a hierarchy of roads and the development of a neighbourhood unit with a primary school and commercial areas centrally located. The influence of the 1969 Draft Plan can be recognised in the comparison between Illustrations 40 and 41.

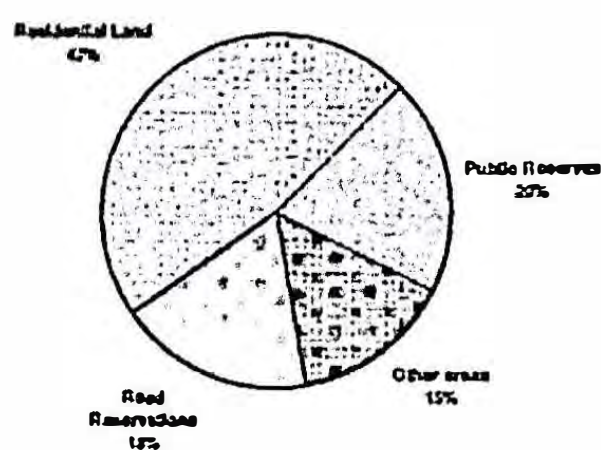


Illustration 38

Occupying an area of just under 60 hectares, the case study accommodates approximately 1400 persons within 389 individual dwellings.

Within the study area is over 10 hectares of publicly accessible reserves (excluding the Primary School and approximately 3 hectares of undeveloped residential and commercial land) with road reservations accounting for approximately 10.5 hectares. Illustration 38 demonstrates the proportion of land area dedicated to particular functions.²

5.1.21 COMMERCIAL AREA

Located centrally within the Rokeby neighbourhood unit and at the northern end of the Case Study Area, is a vast area of land specifically reserved for commercial development.

The only commercial development which has occurred however, is a 1300m² (approx.) shopping complex containing a medium sized supermarket, a take-away food shop, a hairdressing salon, a chemist and a citizens advise/information centre.

² Refer to Appendix 2 for statistical details

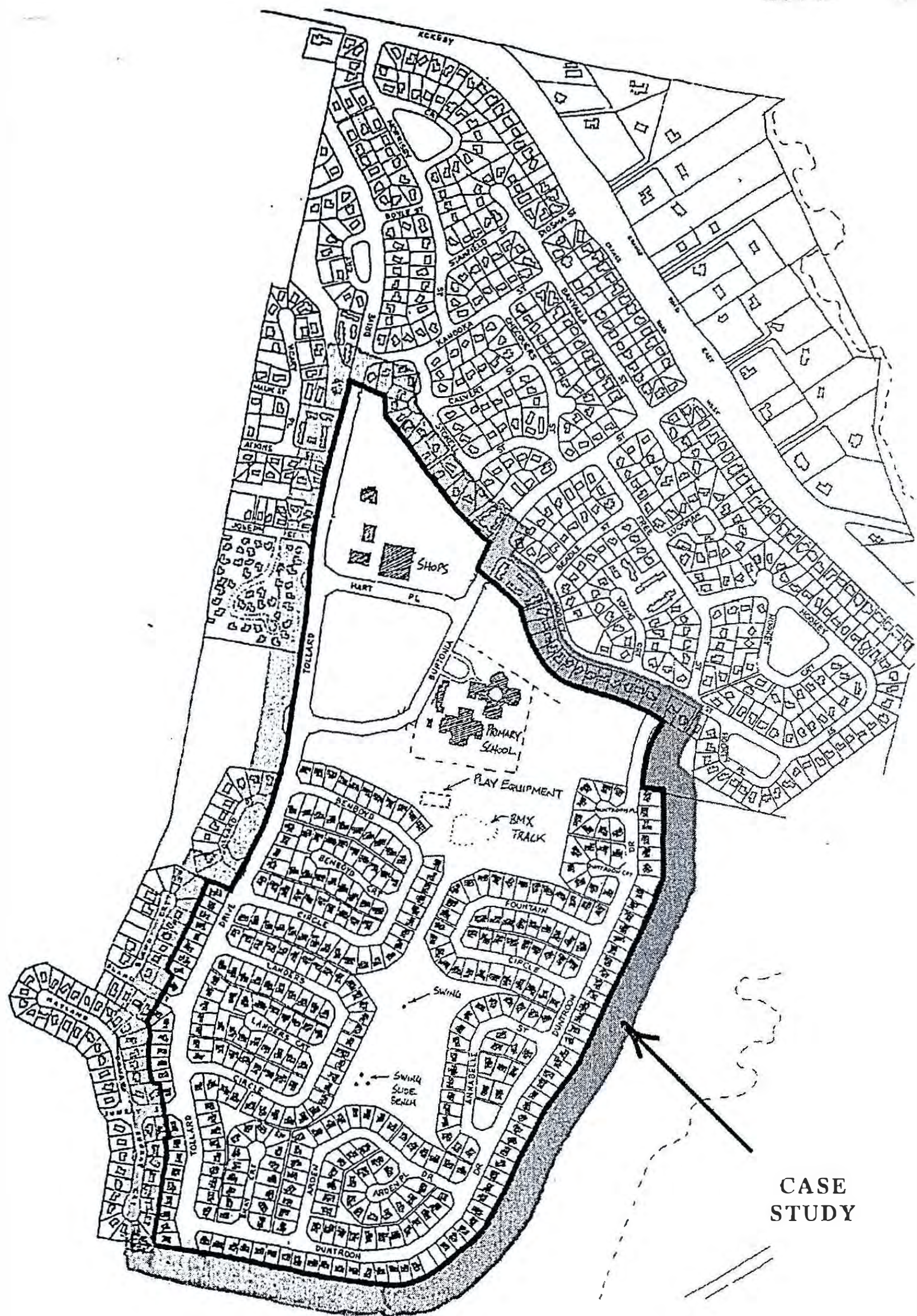


Illustration 39



Illustration 40
The Case Study area within the
1969 Draft Plan



Illustration 41
Existing Land Use zoning
relating to Illustration 40



Illustration 42

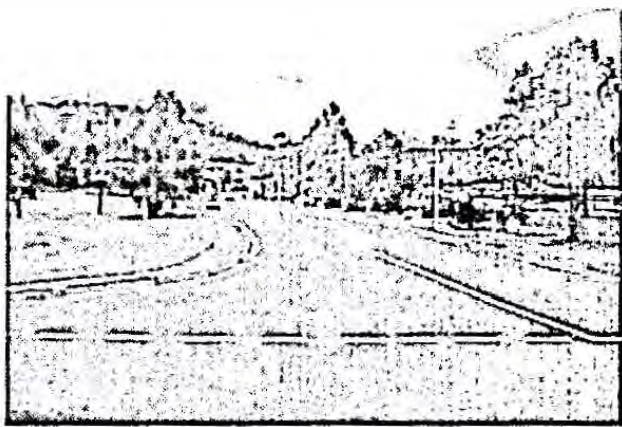


Illustration 43



Illustration 44

The shopping complex, with its associated parking area is setback a significant distance from the street and is oriented towards the car park rather than the street.

Located in a sylvan setting, it is isolated and its general appearance decrepit. Evidence of anti-social behaviour appears in the form of graffiti, property damage and the installation of security bars to all external and internal windows.

Located near the shopping centre is a Community Health Centre, a Child Care Centre and a Community Centre. These buildings are also significantly setback from the street. There is little evidence of vandalism or anti-social activity associated with these buildings although the community centre which has not been landscaped or sensitively finished has in recent times become increasingly decrepit in its general appearance.

The character of the area is generally one of baroness, isolation, and dislocation from the adjoining residential community. These qualities are compounded by the large tract of undeveloped land bordered by Tollard Drive, Hart Place and Burtonia Street which is reserved for, but almost certainly never likely to be used for, commercial development.

5.1.22 PRIMARY SCHOOL AREA

Located upon a large (approximately 4.5 hectares) parcel of land east of Burtonia Street is the Rokeby Primary School and associated grounds. Five buildings comprise the primary school complex which is surrounded by generous amounts of green space. The school buildings are set within gardens attractively designed and maintained. There are large areas of hard paved surface and generous provision of recreational/play equipment. The School grounds also include a large expanse of grassed and mostly undeveloped sports grounds. Containing only a set of soccer goals and a cricket net, the space is not clearly



Illustration 45

defined or readily identifiable as belonging to the school and in fact appears quite separate. A small perimeter fence along part of its boundary does little to delineate the space.

The school grounds are well fenced without being obtrusive and small trees have been planted in preference to shrubs or bushes.

The area of land allocated to the primary school is substantial. It may not be realised by the casual observer that those grounds extending to just short of the rear fences of the houses along Hookey Street and Duntroon Drive belong to the School, they are easily mistaken for extensions of public open space.

The developed Primary School grounds are attractive and well kept however outlying areas (those not clearly identifiable as belonging to the school) are desolate and unappealing. This "unclaimed" area lacks definition and any sort of character or feature and significantly contributes to the general excessiveness of the area.

5.1.23 RESIDENTIAL ORIENTED TO THE PARK

The dwellings contained within the suburb are predominantly three bedroom, single storey and of simple design rarely measuring more than 100m² in floor area.

There is however a variety of designs applied and it seldom occurs that two houses of the same design are located beside each other. Gable roofs are predominant and roof materials are usually the same type and colour (ie tile - dark brown) as are the walls (ie grey concrete brick with white mortar). Only the fascia and window trimmings vary by way of colour.

Most houses have their orientation towards the park (ie living areas, main access, exposed "front" yard) and many have attempted to privatise their forward space and diminish their sense of invasion by the application of



Illustration 46



Illustration 47

fences (some small, some high). A number of houses towards the southern region have adopted a side-on orientation with their main access and “front” areas accessed from, and clearly connected to the park but with a more pronounced connection to the street as well.

Subsequently, these houses have applied high fences to a portion of their park boundary and a portion of their street boundary

5.1.24 INTERNAL PARK

Measuring approximately 6 hectares in area, the internal park is for the most part sparsely vegetated and in a generally poor condition.

In many areas grass cover is sparse and there are substantial deposits of vegetation debris littering the ground in those areas where gum trees are located.

The terrain of the park varies from generally level to moderately sloping.

The sloping area of the park to the south is more substantially vegetated than the remainder of the area which is generally sparse with only the occasional gum tree interrupting the space.

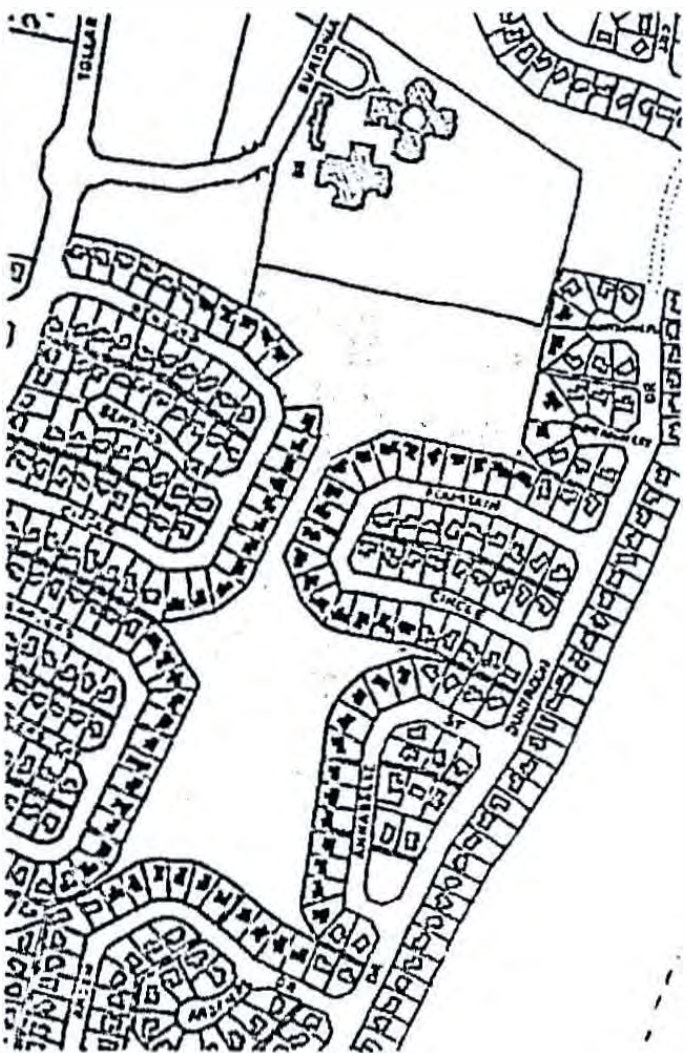


Illustration 48

Pedestrian paths illuminated by street lighting line the perimeter and sometimes extend across the park.

Children's play equipment has been provided at each end of the park. That located at the southern end is old, in a dilapidated condition, and clearly under utilised while the equipment at the northern end is modern, in a better condition but still appears to be under utilised (possibly due to its close proximity to the Primary School and its recreational facilities).

There is no predominant characteristic or feature within the space.

Access from the street network to the main body of the park is primarily by means of narrow pedestrian footpaths.



Illustration 49

Some of these are long linkages with adjoining houses oriented towards them and some are short and bordered by high paling fences. Accordingly the park is hidden away, isolated from the surrounding street network and from the community in general.

5.1.25 PEDESTRIAN ACCESSWAYS

The pedestrian accessways which connect the park to the street network extend well beyond the park to infuse the suburban layout of this section of Rokeby Grange.

These linkages vary from 30 metres to 20 metres in length and typically measure about 3 metres in width. Their width however appears much greater when "front" yards have been left exposed.

The orientation of houses towards these accessways is in the same manner as those towards the parkland area however there has been an increased tendency to privatise and delineate forward private open space by the erection of fences. These fences are quite often tall and result in an apparent narrowing and general confinement of the pedestrian path.



Illustration 50

These pedestrian accessways classically represent the internalisation of the suburban layout as demonstrated by the cul-de-sac park subdivision promoted by the 1943 Commonwealth Housing Commission -

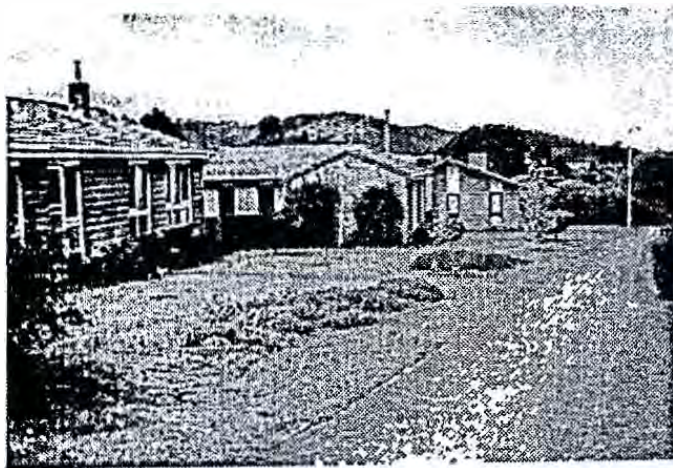


Illustration 52

Illustration 51

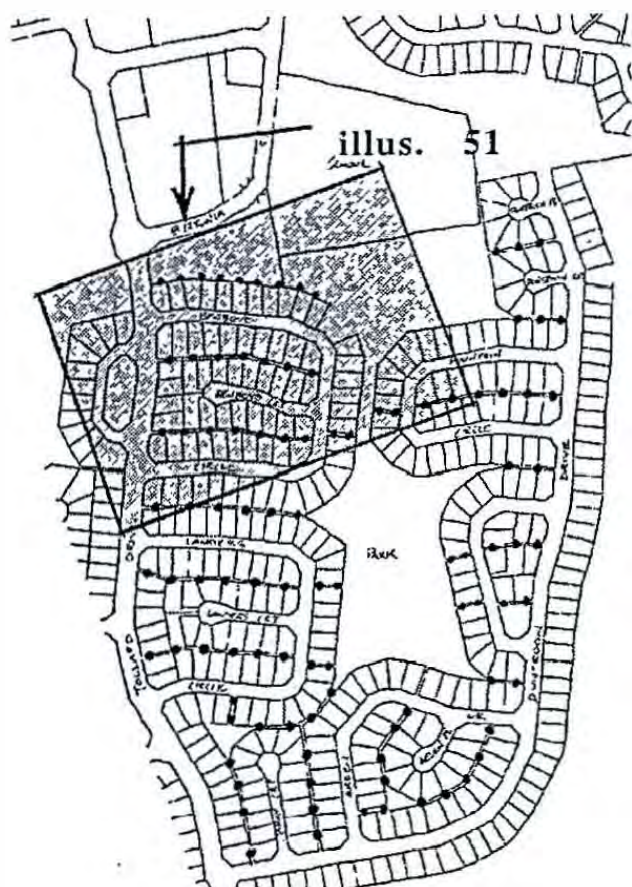


Illustration 53

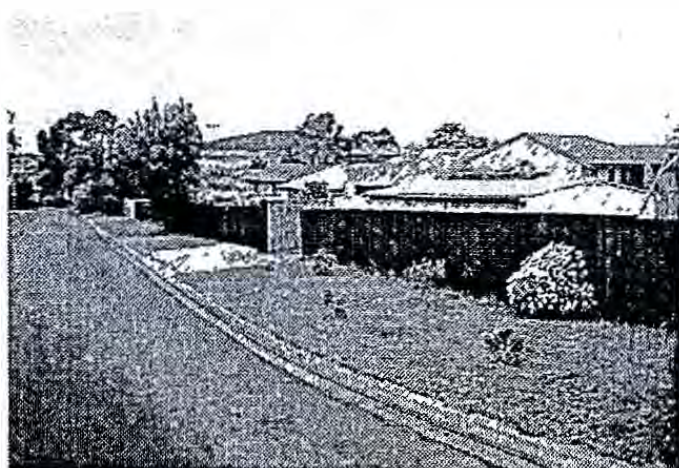


Illustration 54

Public/communal spaces located within the core of the block while the private fenced areas are adjoining the street network.



Generally, these accessways are poorly maintained with damaged paving and intruding weeds and grasses being recurrent characteristics.

5.1.26 STREETSCAPE

As a consequence of adopting a Radburn approach to the suburban layout of Rokeby, a distinctive streetscape has resulted.

The need to provide private dwellings with private open space has resulted in a continuous band of paling fences (none less than 1500mm high) along the street edge. These fences are mostly identical in height, style and finish.

Were it not for the fence being such a prominent feature in the streetscape, the observer would see outbuildings, children play equipment, clothes drying facilities and what is typically identifiable as the rear elevation (service areas) of a house.

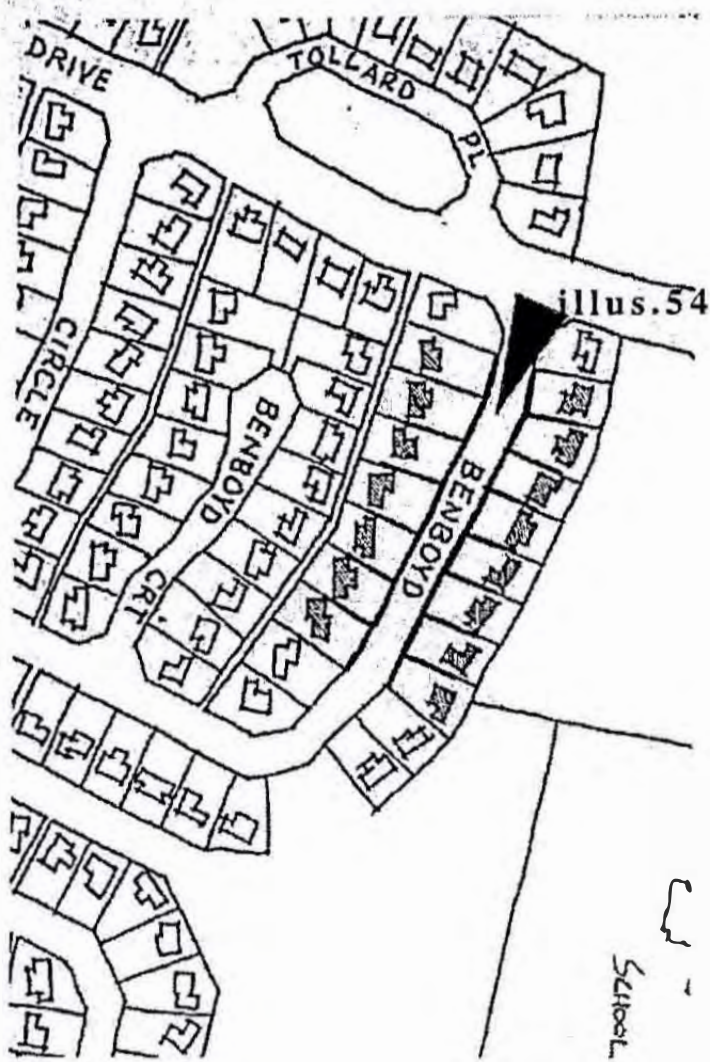


Illustration 55

As part of Rokeby's concerted effort to separate pedestrian from traffic movement, there are no pedestrian footpaths within the road reservations adjacent to the street. The aim being to encourage use of the footpaths provided within the internal park and the pedestrian linkages located within blocks. Despite the roads and their adjoining reservations being quite wide and often planted with substantially sized trees, the continuous wall established by the screen fencing creates an unalluring gun barrel streetscape.

While some houses do not have high fencing along their entire street boundary (their vehicular access and parking areas remaining more exposed to the street) there is little change to the overall appearance of the streetscape.

5.1.30

SOCIAL CHARACTERISTICS

In an attempt to gain an understanding of the social profile of the community for which the large open space and extensive pedestrian accessways have been provided, an evaluation of selected social characteristics was undertaken.

This evaluation derived from statistical information acquired by the 1991 Census and with respect to Collector Districts 6051608 and 6051609.

To facilitate an improved understanding and appreciation of the social characteristics identified, the results were correlated with the co-responding statistics for the Greater Hobart area³ and with a portion of Geilston Bay (represented by Collector District 6051406) which was developed during the same era.

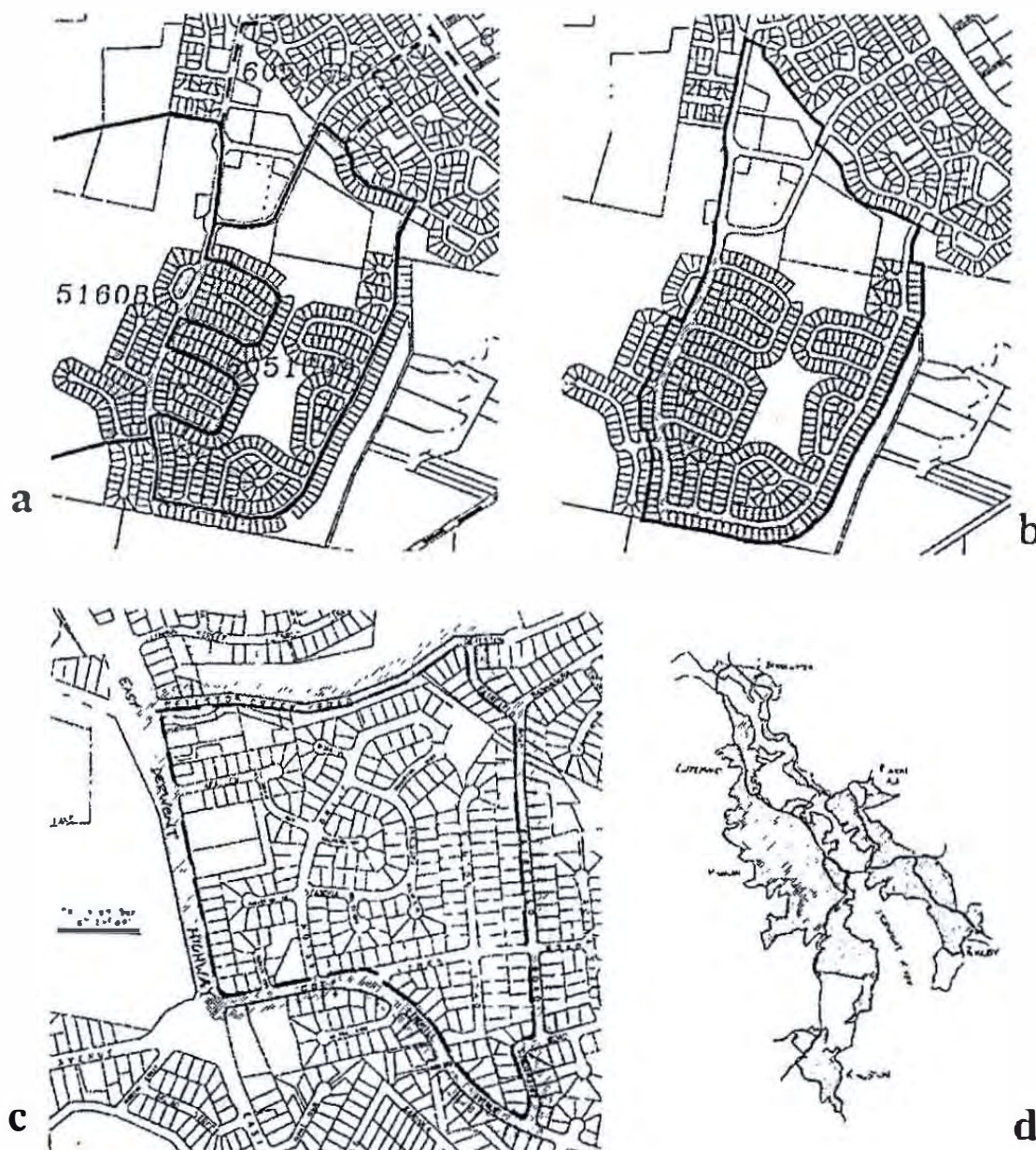
Illustration 56

56 a
Collector Districts
6051608 & 6051609

56 b
Case Study Area

56 c
Geilston Bay
Collector District
6051406

56 d
Greater Hobart



³ Fern Tree, Lauderdale, Seven Mile Beach, Midway Point, Sorell have been specifically excluded from the calculations which determined Hobart's average.

	Case Study Area	Case Study (Stat.) Area	Geilston Bay Selected Area
Total number of persons in selected district in 1991	1400(a)	1532	720
Total number of persons in selected district in 1986	N/A	1582	699
Area of selected district (hectares)	57.98	48.02	29.80
Area of road reservation within selected district (hectares)	10.49	6.80	5.09
Area of public parks within selected district (hectares)	10.76	8.03	2.16
Area of pedestrian linkages within selected district (hectares)	0.75	0.75	nil
Commercial or Community Areas (eg Shops, Schools etc.) (hectares)	8.58	4.58	1.40
The number of dwellings within selected district - 1986	N/A	450	227
The number of dwellings within selected district - 1991	389(a)	453	267
Average allotment size within selected district (m ²)	667	667	720

While the two collector districts chosen do not correspond exactly with the extent of the Case Study area, the departure is minor and would have a negligible effect on the comparative results. For the purpose of this study I shall refer to Collector Districts 6051608 & 6051609 as the "Case Study (Statistical) Area".

The results demonstrate a decidedly different social character for the Case Study (Statistical) Area when compared with the selected area of Geilston Bay (GBSA) or the Greater Hobart area generally.

As illustrated by Table 2 and Charts 1 and 2, the Case Study (Statistical) Area is clearly distinct in respect to both its social and physical characteristics.

Table 2

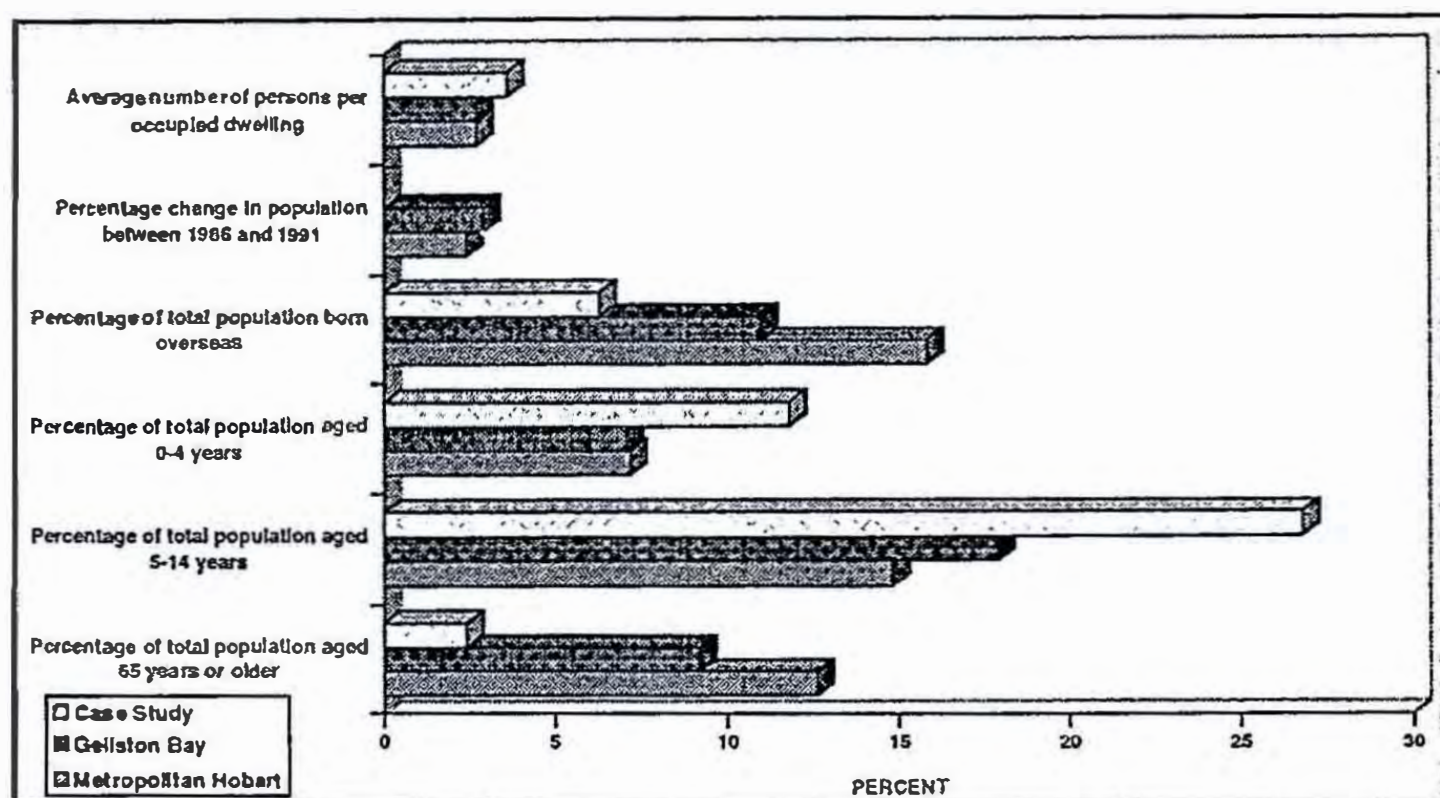


Chart 1

The greater number of persons per dwelling in the Statistical Area reflects the fact that the suburb is still relatively young and therefore the proportion of families with dependant children is high. This is reinforced by a comparison of the respective population proportions for selected age groups.

The proportion of the population aged between 5 and 14 years in the Statistical Area is almost double the GBSA and Hobart average. The proportion of the population aged 65 years or older however is substantially less in

the Case Study (Statistical) Area than for GBSA and Greater Hobart.

It would be reasonable to assume that since the majority of the Statistical Area has been established for nearly twenty years, the families accommodated within would generally be maturing and as a result of children becoming adults and leaving home, the overall population would be in decline.

Such a scenario is reflected by a population change of - 3.3 percent within the Statistical Area between 1981 and 1986. The construction of additional dwellings in the Geilston Bay selected area (mostly infill development) has resulted in the total population for that area slightly increasing.

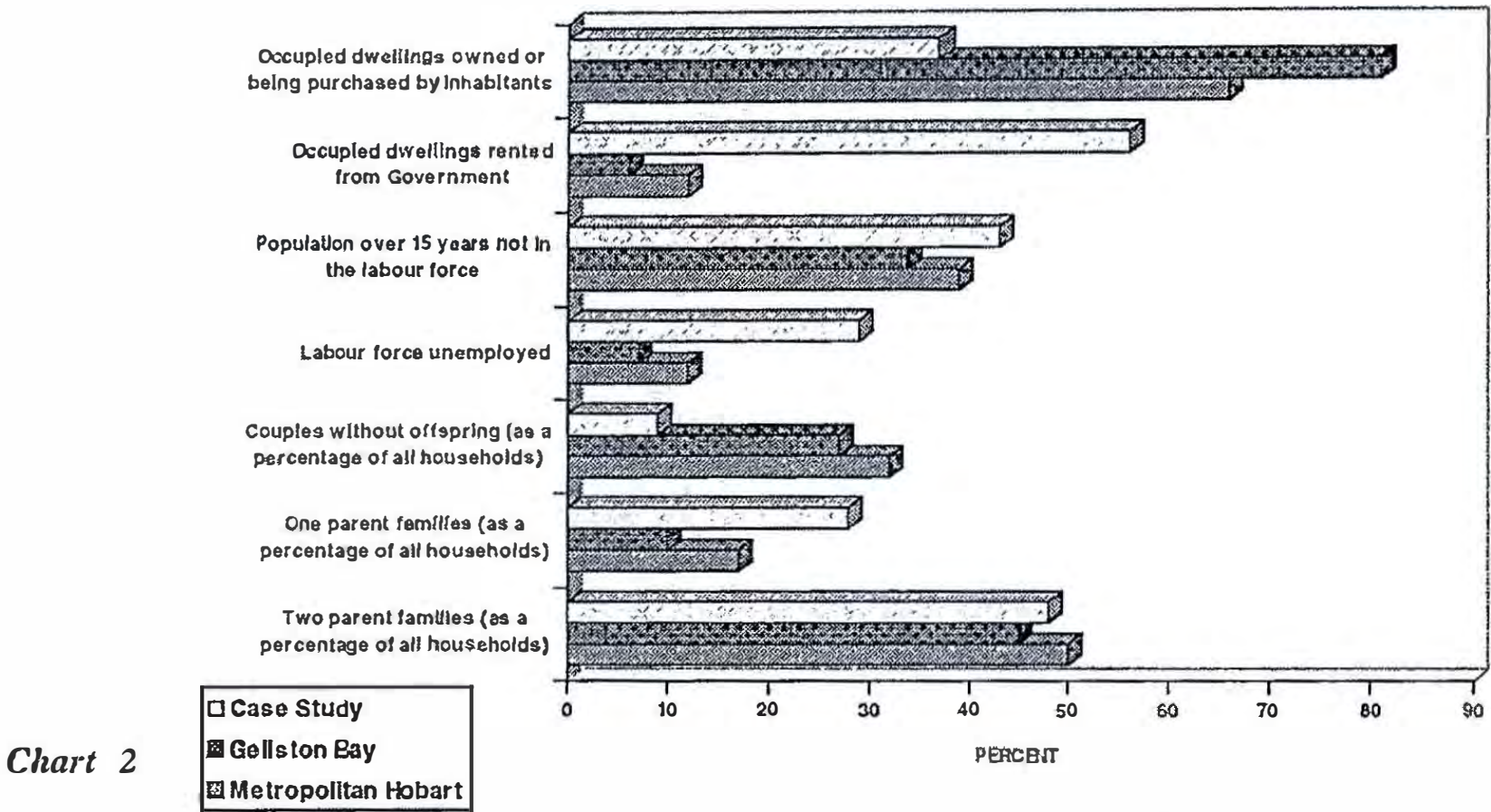
Despite the subsequent decline in populations that results from the natural ageing process of communities, a number of factors have combined to prolong the “youthfulness” of the Statistical Areas residents.

As was earlier referred, the proportion of the Case Study (Statistical) Areas population aged between 0 and 4 years is significantly greater than the GBSA and Hobart average. However not to the same degree as the 4 to 15 age group. This could be explained by the opportunities provided to first home buyers to acquire inexpensive housing as the Government disposes some of its housing stock or as private home owners become more financially secure and decide to acquire improved, higher quality housing elsewhere. Similarly, as the occupants of Government Housing improve their financial position over time, the opportunity arises for those persons to acquire their own home. The vacated dwelling therefore becomes available for occupation by a new family with dependants urgently requiring housing.

For whatever reason, public housing tenants on average only live in the area for 137 weeks before moving

elsewhere (the state average for public housing is 164 weeks).⁴

As a consequence, it could be reasonably anticipated that Rokeby will age at a slower rate than most residential areas and that the proportions of young persons within the community will remain high for some time as young families replace older residents who avail themselves of the opportunity to relocate to more desirable locations.



The characteristics illustrated by Chart 2 relate to the nature of the families residing within households and the financial and social commitment to their communities.

There is a distinct departure from typical home ownership and home rental trends. Also demonstrated is the proportion of the population over 15 years who have removed themselves from availability to participate in the labour force and the proportion of those who have made themselves available to participate in the labour force but cannot gain employment. The high proportion of the population who have removed themselves from participating in the labour force may be contributed to in part by the large proportions of young persons within the community and the accompanying child rearing

⁴ Leibeknecht, P 1995, 8 November

responsibilities assumed by a parent, particularly if a sole parent, at the expense of seeking employment (64% of sole parents in the Case Study (Statistical) Area are not in the labour force).

The result is a community of which a significant proportion either by choice, or by circumstance, spends the majority of their time within the immediate suburban environment. This contrasts with other communities whose residents have the greater opportunity to inter relate with other urban environments and to whom suburbs often serve a more dormitory (and recreational) purpose.

It is also interesting to note that only 11% of all households within the Case Study (Statistical) Area contain just one person, over 75% of all households have a motor vehicle and approximately 30% have more than one.

5.2 EVALUATION

5.2.10 PROBLEM IDENTIFICATION

Statements of the perceived problems identified within the Case Study Area have only been included in this paper in so far as they relate to the physical characteristics of, or activity within, the internal parkland areas and associated pedestrian accessways

In addition to my own observations and assessment, the identification of such problems involved discussions with a variety of local citizens, business operators and community groups. These groups included the Clarence Plains Information Network, Rokeby and Clarendon Vale Primary Schools, Emmanuel Christian School, Business operators within the Hart Place shopping centre, the local representatives of the Police force and officers of the Clarence City Council.

There does not appear to have been any previous surveys of relevance or comprehensive evaluations of the area undertaken which identify those problems encountered or perceived by the community. Given the time and resources available to undertake this study, a postal survey seemed the only feasible method of obtaining broad based community views and input. It was considered however that such an approach in this instance would have been unlikely to yield any information, or identify any additional problems, beyond those already obtained.

The problems which have been outlined relate to the physical appearance of the public spaces, the nature of the buildings which surround and create them, and the activities and general amenity that results. For this reason, the problems identified have been categorised

into five groups - identity; urban setting; safety and security; condition; and use.

5.2.11 IDENTITY

The following details those aspects of the parkland which impede the development of a distinctive identity, prevent an understanding of its extent and purpose within the community:

- The public reserves are isolated - hidden by their lack of exposure to the surrounding street network. They are therefore not easily discovered and their public accessibility is concealed.
- The parkland boundaries are vague and overscaled. There is seldom any clear delineation of where private areas end and public areas begin. The result is contention over ownership and reluctance to accept maintenance responsibilities. There is no intimacy or equanimity provided due to excessive scale and general appearance of these areas.

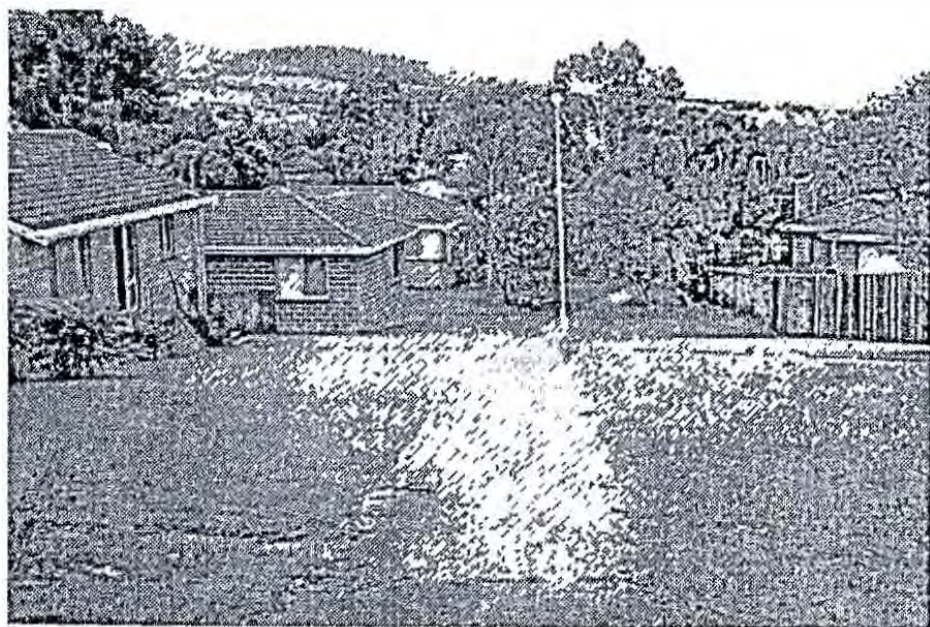


Illustration 57

- The destination of some paths are not readily decipherable. Consequently, confidence and enthusiasm to venture along them is diminished.

- Public open space areas invade the houses and the houses invade the open space areas via the undefined and unprotected “front” yards of the houses. Privacy is further impacted by activities in the park spilling over onto private property.
- The park lacks character and identity. There are no distinctive focal points within the park nor any sense of place generated by the setting. Many spaces are barren, lifeless and uninviting “dead” areas.
- There is no meaning associated with many of the spaces. The open space areas appear functionless. There is an absence of clearly defined specific purpose areas.
- House orientations lead to confusion. Visitors attempt to enter houses from the rear (private) areas not realising that the park is there and that more public access is available to the homes from that direction. Although the houses face the open space, they seldom incorporate a formal “front” entrance from those areas.

5.2.12 URBAN SETTING

The following details the problems which have been created by the built environment which defines the open spaces. It includes building works which were originally applied as part of the overall design concept as well as those which have been subsequently applied or as a result of individual requirements or perceived needs.

- Although the dwellings surrounding the open space areas generally incorporate a variety of designs, the uniformity of materials, textures and colours applied has resulted in an aesthetic lacking in diversity or

sense of individuality. This uniformity is emphasised by the continuous band of screen fencing along the street boundaries.

- Commercial and community buildings located within spacious surroundings and dislocating themselves from the street network act as a magnet for anti-social activity. They ultimately become mangy and scarred buildings and unflattering icons of the degenerative aspects of the community.
- The location of the primary school with its generous space provisions and associated sports grounds compound the overscaled and excessive qualities of the surrounding open space areas.
- The orientation of houses towards an internalised public space confuses, and makes difficult, the access opportunities to those houses. Visitors attempt to enter houses from the rear (private) areas either not realising that access is available from another direction or because they consider the alternative to be onerous and indirect. Despite the house orientations being towards these spaces, they seldom incorporate formal “front” entrances inviting access from that direction.
- Attempts to delineate and privatise “front” areas by erecting tall screen fences further erodes the quality of the adjoining public areas. Particularly with respect to the pedestrian accessways, such measures create an ambience of unsightly, monotonous and claustrophobic “back lanes”.



Illustration 58

- Some access paths to the park are formed by placing a pedestrian footpath between the side boundaries of two adjoining houses. These paths (alleys) are uninviting and compromise the privacy and security of those adjoining dwellings.
- Screen fencing erected around the parks perimeter or at the edge of pedestrian accessways contribute to an accumulation of litter and the less effective maintenance of the landscape.

5.2.13 SAFETY AND SECURITY

The following details those aspects of the parkland areas and pedestrian accessways which compromise the formation of a safe and secure residential environment.

- The secluded nature of the open space facilitates vandalism, harassment, graffiti, loitering and other anti-social activity. Vacated houses are particularly vulnerable to vandalism.

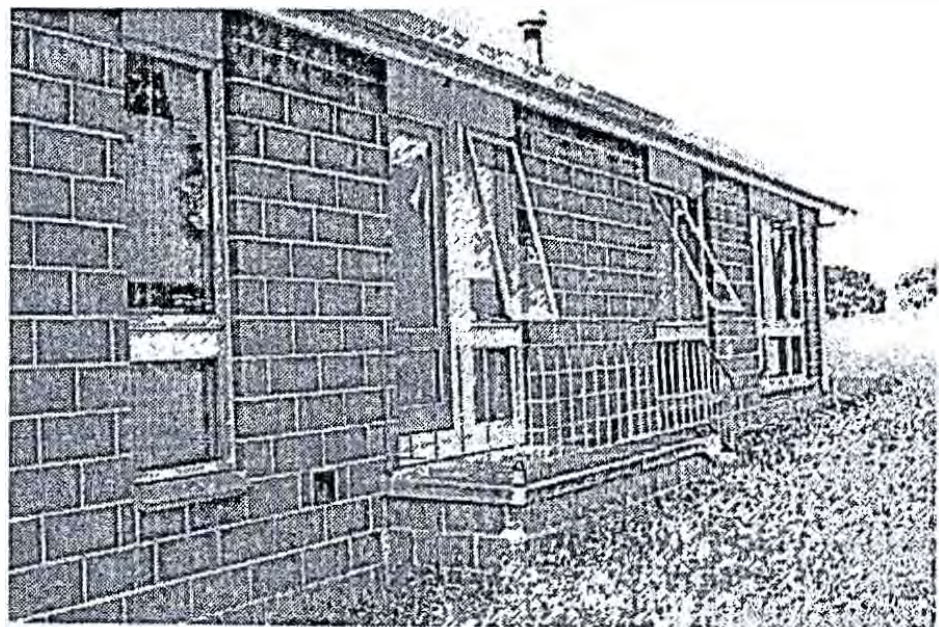


Illustration 59

- The seclusion, and the easy access it enables to and from private properties creates security problems and increased opportunities for burglaries and trespassing. This is particularly so with respect to

the narrow alleyways located between the side boundaries of two adjoining houses.

- Police have difficulties in gaining access to the public open space areas and adequately supervising them. Apprehending an offender fleeing on foot is particularly difficult.
- The planting of bushes provides the opportunity for concealment jeopardising the safety of park users and enabling other anti-social activity.
- The large scale and undulating nature of the terrain prevents easy surveillance of the parkland areas and therefore restricted opportunities for use by toddlers.

5.2.14 CONDITION

The following details the condition of the natural environment and of those elements introduced to improve the quality of the spaces provided.

- The general condition of the parkland areas and pedestrian accessways is very poor. The level of maintenance is insufficient with substantial amounts of litter and broken glass scattered throughout its expanse.
- Debris of various types is particularly heavy in the more densely vegetated areas. The inappropriateness of the planting in these areas (bushes, shrubs and clusters of small trees) combined with overgrown ground cover exacerbates the problem.

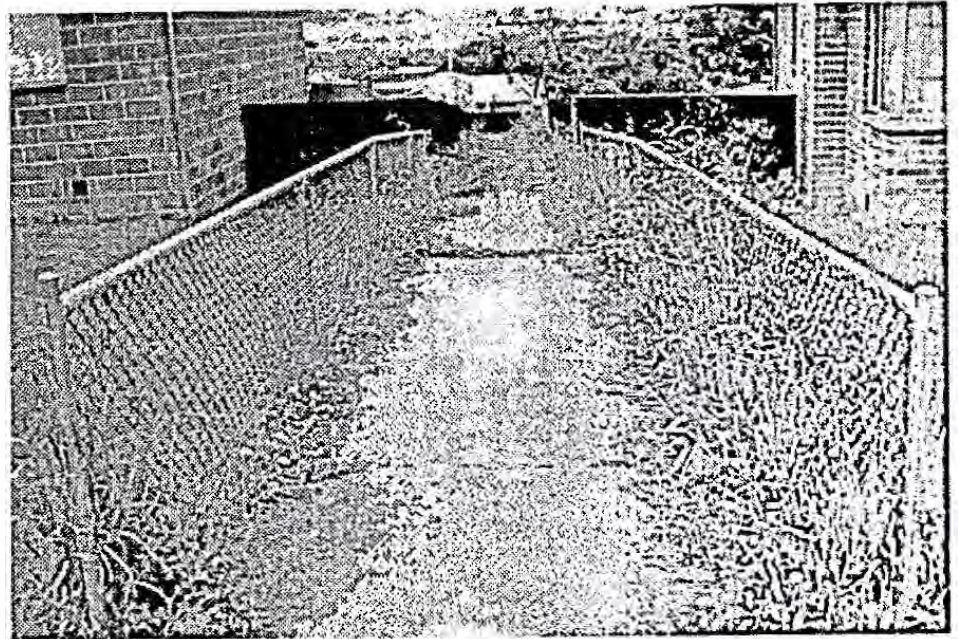


Illustration 60

- The parkland area is becoming increasingly barren as existing trees fall down or are removed without new ones being introduced as replacements.
- There has been minimal introduction of play equipment or attempts to promote activities within the park space. The play equipment which has been provided is located in exposed undefined areas and does not appear to experience any significant levels of usage. The use of a BMX bike circuit introduced into the space has obviously waned and the facility has fallen into disrepair further spoiling the area.
- The quality of the soil, the lack of planting and the nature of the terrain results in stormwater runoff impacts being imposed upon adjoining dwellings.

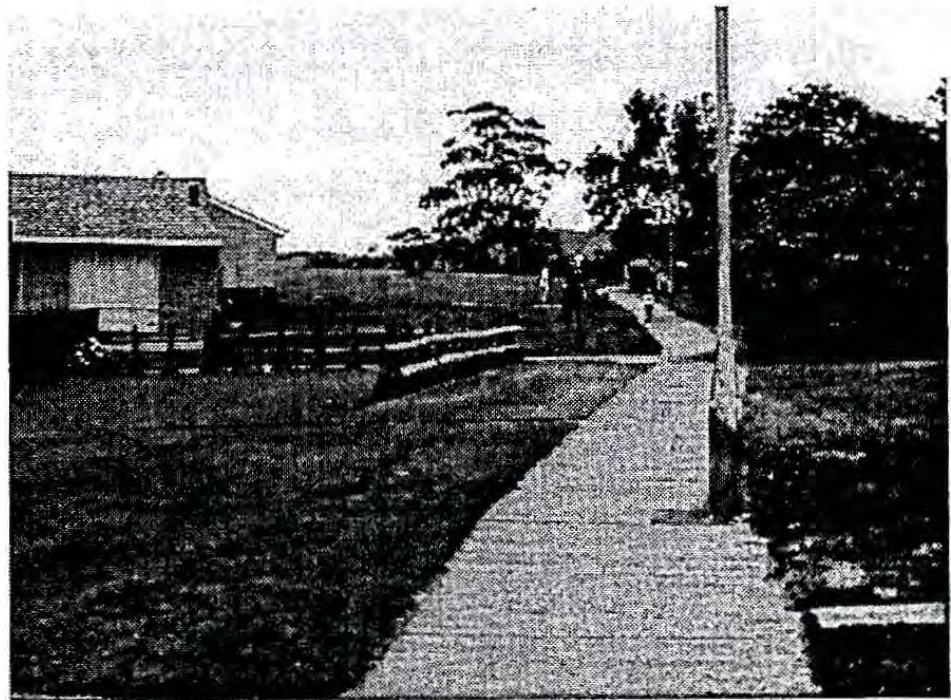
5.2.15 USE

The following details those qualities and recurrent activities which create problems within, and impedes the usefulness and general amenity of, the public open space areas:

- Cars, motor bikes, horse riding and various activities (such as golf) which occur within the

public open space areas conflict with the passive recreational use intended for the area. The area subsequently becomes less appealing, increasingly dangerous for children and unsightly as the ground surface becomes spoiled.

Illustration 61



- Recreational pursuits in the pedestrian accessways such as cricket and football lead to property damage and invasion of personal territory.
- The absence of public conveniences such as seating and public toilets diminish the attractiveness of the public reserves for use by elderly persons.
- The lack of a “human” scale and a generally unattractive aesthetic prevents attraction to the open spaces.
- The activities for which the parkland areas were intended are often being undertaken within private yards or on the surrounding street network regardless of the proximity of access to a park. Parkland spaces are mostly use for purely pedestrian purposes.

5.3 ADMINISTRATION AND MANAGEMENT

5.3.10 RESOURCE ALLOCATION

The Case Study's internal parkland area is one of thirteen such spaces (ie. local parks greater than one hectare in area) which the Clarence City Council has the responsibility to maintain.

During the spring and summer months, when maintenance demands are greatest, up to twenty (20) persons are engaged solely in the upkeep of those (and playground) areas. This constitutes approximately two-thirds of the total Parks and Recreation Division workforce. Approximately one-quarter of the workforce is engaged in the upkeep of the Cities sports grounds while the remainder undertakes new construction works. In addition to these staff resources, approximately fifty percent of capital expenditure is dedicated to the management of these spaces.⁵ Such outlays are considered typical of such areas as confirmed by figures from the Australian Municipal Information System (AMIS) detailing that expenditure on parks, gardens and recreation reserves comprise fifty percent of total expenditure shown under recreational and cultural activities.⁶

Appendix 3 illustrates a table extracted from the National Capital Development Commissions Urban Open Space Guidelines (1981) detailing the maintenance and annual cost implications of sports grounds, parklands and laneways.

⁵ Stuart, J 1995, 19 October

Bussell, R 1995, 25 October

⁶ Henderson, B., et al. 1977, pg77

5.3.20 METHOD

Inspection and evaluation of the space occurs on a fortnightly basis with maintenance work undertaken at that time as required.

Tractors, roller mowers, brush cutters and trimmers are used to control grass levels and the general spread of shrubs while more intricate attention is required for the maintenance of flower beds and the removal of weeds and overgrowth along the edge of perimeter fences.

Hand mowing is seldom undertaken in the park, the area is not irrigated and fertilisers are rarely applied.

5.3.30 EXTENT OF RESPONSIBILITY

The Council assumes responsibility for the maintenance of the large internal park space as well as the vegetation and play equipment contained within but not for the vegetated areas within or along the pedestrian accessways. These areas are expected to be maintained by the adjoining property owners under the same principle that Council applies in relinquishing its responsibility for the maintenance of nature strips.

Council will however undertake maintenance in respect of overhanging vegetation or the safety and general condition of constructed pathways.

Furthermore, grass reducing measures may be undertaken within the pedestrian linkages on an annual basis if the grass levels are considered to have attained a level whereby a fire risk has been imposed.

5.3.40 SPECIFIC PROBLEMS IN MANAGING THE SPACE

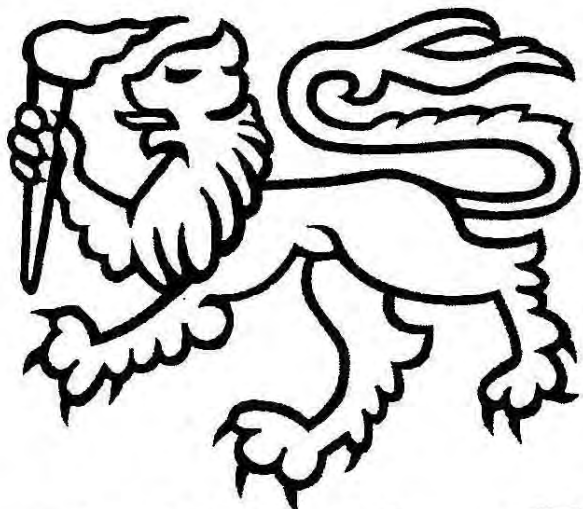
The following details some of the recurring impediments to sustaining, and effectively maintaining, a quality

environment within the parkland areas and pedestrian accessways:

- The ease of access provided to motor vehicles.
- The litter and broken glass that eventuates from activities facilitated by the spaces secluded nature.
- The inappropriateness of the landscaping applied at the original inception of the space:-
 - limbs fall from trees under strong winds
 - the roots of trees and shrubs interfere with underground services that are located in close proximity
 - garden beds and the grouping of shrubs increase maintenance difficulties and require additional resources
 - vegetation falling from trees quickly forms a troublesome ground cover
 - shrubs and small bushes act as a net accumulating discarded litter and making its retrieval difficult
- Increased levels of trimming and spraying of errant grass is required as perimeter fencing is erected adjacent to public open space areas.

PART 6

REDEVELOPMENT STRATEGIES



UTAS

6.1 GENERAL APPROACH TO REDEVELOPING “RADBURN” INTERNAL OPEN SPACES

6.1.10 AN OVERVIEW OF THE PROBLEMS

The problems identified in the previous section are generally reflective, either in part or in full, of those typically encountered within areas that have adopted a “Radburn” approach to suburban layouts. Although seeking to improve the quality of the residential environment and foster interaction between adjoining residents, the techniques applied to achieve this - primarily the reversal of traditional building orientations so that living areas of houses faced internalised parks or pedestrian linkages which were decisively removed from the surrounding street network - failed in their objective and instead resulted in an overtly introverted community. The houses, having intentionally turned their back on the street network, have thereby limited their exposure and relationship to the most public areas of a community. This subsequent introvertedness is compounded by the screen fencing of “front” areas by property owners concerned over privacy or security issues. The result is housing, completely surrounded by high fencing rejecting any sort of relationship with areas beyond their boundaries.

The internalised parks are often overscaled and forlorned spaces while the pedestrian accessways leading to them tend to have intruding and claustrophobic qualities (they are particularly unsafe at night). These characteristics are subsequently compounded by the erection of boundary screen fencing.

Screen fencing is often perceived by home owners as a means of alleviating those privacy and security concerns which arise from the seclusion of internal public spaces and the ease of access they enable to their property.

While such measures may provide psychological reassurance, the likely perils are not diminished. The seclusiveness of the public spaces remain, and in many instances is increased, by such actions. The opportunity for a trespasser or burglar to secretly gain access to, and for their activities to be concealed within, a private property is increased by the erection of screen fencing and the subsequent elimination of any opportunity for community surveillance of the residence. Such measures also erode the legibility and the overall character of the space.

The aim of the “Radburn” principle incorporating internal park areas was to provide spacious areas for children to play which were safe from vehicular activity. Such a strategy has been proven as unsuccessful. Regardless of the ease of access to park areas that may be provided, children often prefer to play upon the surrounding streets, in backyards or in surrounding bush land. It was even identified in the prototype suburb - Radburn, New Jersey - in the 1960’s, thirty years after it’s inception, that children preferred to play in the service streets.¹

Children are clearly attracted towards hard paved areas for many of their recreational activities. They also continue to undertake a significant proportion of their recreational activity within the private yards of individual dwellings. An evaluation of the contemporary suburban typology and the communities response to it by Ian Halkett in the 1970’s, identified that 51% of children and 57% of adults spent at least half of their outdoor recreation time within their private yards.²

Although the allotment sizes in typical Tasmanian applications are nearly half the size of those reviewed by Halkett, it would be reasonable to assume that they remain indicative of the existing trends. Children like delineation and defining parameters.

¹ Girling, C. L. & Helphand, K. I. 1994, pg66

² Halkett, I 1976, pg119

The parkland areas often fail to provide the proper surveillance opportunities necessary for parents to consider that area as appropriate for toddlers.

The seclusion afforded by the park provides the opportunity for harassment and other anti-social activity while the isolation and inability to have appropriate surveillance of the space results in it becoming an environment of male dominance which is threatening to families and children. Supervision difficulties are further compounded by the overall scale of the park, the nature of the terrain and the planting which has been applied.

The lack of a defining edge to the internal park and the pedestrian linkages results in an invasion of those spaces onto the “front” yards and into those adjoining houses. The orientation of the houses towards the park and particularly the pedestrian accessways, results in enclosure and claustrophobic impacts upon those areas as the houses “invade” the public space. Attempts by adjoining residents to combat such impacts by screen fencing “forward” areas have further eroded the quality of the overall urban environment as well as contributed to the seclusion and vulnerability of those very dwellings they seek to protect (illicit activities are shielded by the high fence).

Insufficient levels of maintenance by the Local Authority and by adjoining property owners contribute to the sullied appearance and unalluring character of the internal park and pedestrian accessways.

The general layout which has been applied to the park and pedestrian accessways requires a substantial commitment, both with respect to time and financial resources, for the area to be continually maintained in a neat and orderly fashion. This is particularly so when specific landscaping features, playground equipment or other features are introduced into these spaces. Efforts to release Local Authorities from their maintenance obligations have included the formation of specific community groups,

principally responsible for coordinating and resourcing open space maintenance programs. Such an approach however has rarely been successful with enthusiasm in the community groups waning with time and particularly undermined by residents reluctance to contribute to the resourcing costs.

6.1.20 DEPARTURE POINT

A determination of the appropriate open space provision, and the application of remedial measures to achieve that provision and improve the amenity of an area in general, will involve the careful evaluation of the needs of a particular community. Such evaluation will involve an analysis of the social characteristics of a community, consideration of the development trends and consultation with that community to identify the type of changes they wish to see made and the type of environment within which they wish to reside. Care should be exercised however to distinguish those qualities desired by a community which are practical and appropriate and capable of making a positive contribution to the context, from those which may be more traditional or romantic notions but possibly compromising to the realisation of an effectively utilised and sustainable public space. For example, it is often considered by many that flower gardens, hedges and bushes are desirable features to be incorporated into open space areas. The difficulties encountered in maintaining such features however, and the problems they cause with respect to general park management effectively discount their appropriateness in most contexts. Similarly with respect to the popular suggestion of increasing children's play equipment and other activity oriented opportunities (eg BMX tracks, skateboard rinks, etc). The need for such facilities and the appropriateness of their setting (ie easily accessible, attractive and comfortable surroundings) should be carefully considered. It could result, as has been previously proven, that the introduction of such features

has no impact upon the overall usage of the space and are themselves seldom utilised. Also, a popular view is that the more public open space you can reserve, the greater the benefit to the community. Such perceptions are misguided.

Prior studies investigating public perceptions and use of open space areas provide a useful departure point from which the evaluation of appropriate open space provision may be determined. These studies found that:

- open spaces measuring less than one hectare are perceived by people as being too small.
- a wider range of age groups make use of parks with permanent pools, streams or lakes. Such open space areas seem the most adept at creating a community identity and sense of place.
- those reserves which have scattered trees and non-irrigated lawns are primarily used as pedestrian thoroughfares and little other purpose.³

6.1.30 A GENERIC EVALUATION AND RESPONSE

The problems associated with public open spaces within “Radburn” suburbs are generally consistent regardless of their location (in the Australian context).

Similarly, the general approach to redeveloping and revitalising those areas can also be a generic one. The following table details those issues that should be considered, the relating problems typically found, and the recommended approach to revitalise the public open spaces of a “Radburn” suburb.

³ Just, D 1989, pp34-39

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
<ul style="list-style-type: none"> The development of public open space reserves relevant to the needs of, and appreciated by, the community they serve. 	<ul style="list-style-type: none"> Open space reserves fail to meet the needs of the community and are therefore not effectively utilised or appreciated. Features and conveniences desired by the community are absent from open space areas. Lack of inclination or incentive to assist in maintaining the open space areas or to ensure that their quality is protected. 	<ul style="list-style-type: none"> <i>Social surveys and statistical research to determine a social profile.</i> <i>Community meetings and workshops to determine needs and generate interest.</i> <i>Active involvement of the community in developing the open space areas may assist in creating feelings of ownership and willingness to protect and preserve the qualities of the space.</i>
<ul style="list-style-type: none"> The scale of open spaces should be appropriate. 	<ul style="list-style-type: none"> Public open space areas which are exceedingly large lack intimacy and any sense of a human scale. Sprawling purposeless space inhibits comprehension of the surroundings and diminishes surveillance opportunities and the sense of safety and order. Overscaled open spaces are difficult to instil with a distinctive character or sense of place. Large open space areas can result in a sense of 	<ul style="list-style-type: none"> <i>Determination of appropriateness with respect to scale will depend on the individual characteristics of the particular space being considered. The nature of the terrain, the extent and type of vegetation contained, the application of geographical or other features within the space, and the scale and appearance of buildings surrounding the open space.</i> <i>Overscaled areas can introduce features such as planting, mounding or other geographical or recreational features to break up the space.</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
	<p>isolation, anonymity and seclusion and provide an ideal environment to engage in anti-social, or generally undesirable, activity.</p> <ul style="list-style-type: none"> • Small open space pockets or narrow accessways can be uncomfortable and unsightly. They usually provide for only a limited range of activities. • Small public open spaces are difficult to maintain and if their scale is such as to inhibit tendencies to venture into them, they soon become decrepit and increasingly unalluring. • Commercial precincts, schools and other community areas adjoining public parklands exacerbate the overscaled nature of those areas. 	<ul style="list-style-type: none"> • <i>Further residential development or other infill building works can be undertaken to break up or reduce the area of the public open space reserves.</i> • <i>Underscaled areas can be completely removed by segregating and adhering those portions to adjoining properties.</i> • <i>Boundary screen planting can be applied to alleviate the sense of under scale.</i> • <i>Increase the delineation between parklands and other sparingly developed open space areas.</i>
<ul style="list-style-type: none"> • The delineation between public parkland areas and private (personal) open space should be clearly identifiable. 	<ul style="list-style-type: none"> • Activities conducted within public open space areas "spill" over into private (personal space) areas. • Contention arises over where public areas end and private areas begin. 	<ul style="list-style-type: none"> • <i>Low unobtrusive fences.</i> • <i>Bollards with discreet but delineating planting within private yards.</i> • <i>The use of short, low volume and narrow width</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
	<ul style="list-style-type: none"> • Confusion over the extent of maintenance responsibilities. • Superficial delineation methods which are applied due to the uncertainty and confusion (eg screen fences), can further erode the quality of the space. 	<p><i>streets to separate houses from the parkland.</i></p>
<ul style="list-style-type: none"> • Create a more attractive and distinctive character and sense of place. 	<ul style="list-style-type: none"> • Despite their size, the public parklands are often a concealed feature within the suburb. • The public parklands often lack character and identity. • The open spaces are usually barren and featureless (except for a few trees) and often appear functionless. • The type and uniformity of materials and finishes applied to buildings surrounding open space areas (in Public Housing estates) erodes the character of the area • Tall screen fencing erected along open space edges adversely affects the quality of the area. 	<ul style="list-style-type: none"> • <i>Increase exposure of, and access opportunities to, the parkland.</i> • <i>Considered and appropriate planting should be undertaken within open spaces in coordination with items of interest, landmarks and/or focal points into larger spaces.</i> • <i>New buildings erected need to incorporate a variety of design, colours and finishes. Existing property owners should be encouraged to display some personal expression around their homes (eg painting and planting's).</i> • <i>Screen fencing along open space boundaries should be prohibited.</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
	<ul style="list-style-type: none"> Outbuildings and other building works erected close to or against fences bordering parklands or accessways detract from the quality of those spaces. 	<ul style="list-style-type: none"> <i>Development controls should be effected which ensure that buildings erected alongside parklands or accessways do not adversely impact upon those areas.</i>
<ul style="list-style-type: none"> The development of a safe, clean and hazard free environment. 	<ul style="list-style-type: none"> Many areas of the parkland and pedestrian accessways are isolated and secluded and facilitate anti-social behaviour, especially at night. Often the planting applied provides opportunities for concealment and contributes to the accumulation of litter. Inappropriate landscaping by virtue of trees which generate high levels of forest litter or whose limbs fall off in windy conditions. Numerous activities (horse riding, motorbikes, golf) occur relatively unimpeded which conflict with the intended recreational pursuits designated for the spaces. Recreational pursuits (cricket and other ball 	<ul style="list-style-type: none"> <i>The parkland's exposure to the surrounding community should be increased.</i> <i>Increase illumination of pedestrian paths</i> <i>The final destination of a pedestrian accessway should be identifiable from its access point.</i> <i>Apply appropriate planting that will not congest ground areas or require substantial levels of maintenance.</i> <i>Encourage community involvement in landcare initiatives and the instigation of revegetation programs.</i> <i>Reducing the scale of the parkland areas and increasing its exposure to the wider community should result in reduced incentive to engage in</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
	<p>games) within the confines of the pedestrian accessways cause property damage and impact upon pedestrians.</p> <ul style="list-style-type: none"> Confusion over maintenance responsibilities and difficulties encountered in maintaining result in a littered and disorderly environment. 	<p><i>non-conforming activity and enable more effective supervision of park activities.</i></p> <ul style="list-style-type: none"> <i>Measures may be introduced to prevent non-conforming activities from gaining access to the public open space reserves.</i> <i>Improving access opportunities to open space and improving the demarcation of public/private spaces will result in better maintenance levels.</i> <i>The narrow pedestrian linkages should be eliminated and undersized open space pockets should be sold.</i>
<ul style="list-style-type: none"> To decrease the need for public open space areas and provide only the areas required to satisfy the need. 	<ul style="list-style-type: none"> Many recreational activities are conducted upon the streets rather than in the park areas. Large areas of parkland which have been provided from a perceived need to accommodate a particular type and range of activities are not being utilised. The private open space (yards) of most houses provide the venue for a significant proportion of 	<ul style="list-style-type: none"> <i>Implement traffic calming and controlling measures upon surrounding streets and encourage the use of those spaces for recreational activity.</i> <i>Reduce the overall provision of public open space areas and better equip the remaining areas to facilitate more effective use.</i> <i>Consolidate with, and better utilise, similar or</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
	<p>recreational activity despite the close proximity of parkland areas.</p> <ul style="list-style-type: none"> Pedestrian accessways are used for recreational activities inappropriate for those spaces. 	<p><i>related areas nearby (eg school grounds).</i></p> <ul style="list-style-type: none"> <i>Eliminate the pedestrian accessways by adhering them to adjoining private properties.</i>
<ul style="list-style-type: none"> The security, privacy and personal space qualities of dwellings adjoining open space areas needs to be protected while enabling appropriate levels of surveillance. 	<ul style="list-style-type: none"> Narrow alleyways (located between the side boundaries of adjoining houses) providing pedestrian access from the street to the park enables the easy inspection of private yards and an easy opportunity to gain discreet access to those areas. Pedestrian accessways enable public activities to invade the personal “front” yard space of adjoining dwellings and enable discreet uninvited access to those houses and their associated private spaces. Public activity upon the parkland open space easily “spills” over onto the personal front yards of adjoining dwellings. The nature of the public open spaces is such that illicit persons can find refuge, congregate and 	<ul style="list-style-type: none"> <i>Narrow alleyways should be eliminated.</i> <i>Security concerns could be lessened by increased levels of illumination along the pedestrian accessways and parkland edge at night.</i> <i>Narrow pedestrian linkages should be eliminated.</i> <i>High screen fencing should be avoided against public open space boundaries.</i> <i>Shrubs and bushes should be avoided.</i> <i>Increasing the accessibility and exposure of the park will reduce the ability of illicit persons to seek refuge or congregate in the area.</i> <i>Children’s play equipment should be located in surroundings where supervision from a distance is</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
	<p>engage in anti-social behaviour within the space and within the neighbourhood generally.</p> <ul style="list-style-type: none"> Police have difficulty in engaging in effective surveillance of properties adjoining the park and pedestrian accessways. The nature of the space (the terrain and general layout) and the location of children's play equipment makes the supervising of children difficult and results in parental aversion to the space. 	<p><i>achievable and where children are capable of reliably gaining access to adult assistance. Community and commercial areas may provide appropriate locations in this regard.</i></p> <ul style="list-style-type: none"> <i>Personal space can be protected and enhanced by improved delineation techniques.</i>
<ul style="list-style-type: none"> The open space provided should be attractive to a variety of age groups of both sexes, enable equal access to the disabled, and be capable of being dynamic. 	<ul style="list-style-type: none"> Areas frequently become dominated by boys and particularly adolescent males. Areas often fail to provide seating for elderly persons to rest and relax. Areas often fail to incorporate any items, activity or features of interest to encourage frequenting by persons. Play equipment or other features attractive to 	<ul style="list-style-type: none"> <i>Increase the visual exposure of the open spaces to the wider community.</i> <i>Introduce park furniture, conveniences and provide interesting features into the space.</i> <i>Play equipment should be positioned in locations where social characteristics and distribution studies have identified potential users in close proximity.</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
	<p>young children is often located inappropriately.</p> <ul style="list-style-type: none"> • Recreational opportunities provided are often non-representative of the interests of the use groups targeted. • Isolation and seclusion of the park area and the confinement of the pedestrian accessways discourage use by many persons particularly females. • The public open space areas provided can become irrelevant as the social characteristics and needs of a community change. • Open space areas are sometimes unable to respond or be altered when problems are identified. 	<ul style="list-style-type: none"> • <i>If recreational facilities within open space areas are considered necessary they should incorporate the type of activity most frequently engaged in by the relevant age group (eg basketball, rollerblading, skateboarding).</i> • <i>When pedestrian accessways are to be retained, their destination needs to be more decipherable when viewed from their access.</i> • <i>No secluded nooks or areas of concealment should be contained within pedestrian accessways.</i> • <i>Remedial actions taken, or measures introduced in developing open space areas should be reversible or capable of enabling further development to easily occur.</i> • <i>Strategic development plans should consider the potential for other areas (eg schools, commercial areas) to provide public open space opportunities either immediately or in the future.</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
<ul style="list-style-type: none"> Playground areas should be appropriately designed and located. 	<ul style="list-style-type: none"> Play equipment is placed in areas where there is no demand for such and is therefore unused. Play equipment is unappealing, therefore underutilised and falls into disrepair. Parents are reluctant to allow children access to play equipment if the area is difficult to supervise or distant from reliable adult contact. Play equipment and its safe use can be compromised by other (nonconforming) recreational activities (eg golf, motorbikes) within the park. 	<ul style="list-style-type: none"> <i>Social characteristics need to be identified to determine appropriate location for applications.</i> <i>Community consultation should be undertaken to determine needs.</i> <i>Young children's play equipment needs to be in visually exposed spaces in close proximity to participants homes and capable of easy surveillance by parents/guardians.</i> <i>Increased visual exposure will assist in discouraging non-conforming activities from occurring within the park.</i>
<ul style="list-style-type: none"> Maintenance levels should be minimised and sustainable yet at an acceptable level. 	<ul style="list-style-type: none"> Open space areas can be difficult and costly to maintain. Inappropriate planting unnecessarily raises levels of maintenance required. Pedestrian accessways are difficult to maintain and often fall into disrepair. Responsibility for their maintenance is unclear. 	<ul style="list-style-type: none"> <i>Improve access opportunities.</i> <i>Privatise areas serving little public usefulness and which are difficult to maintain.</i> <i>Incorporate more appropriate and self sustaining vegetation.</i>

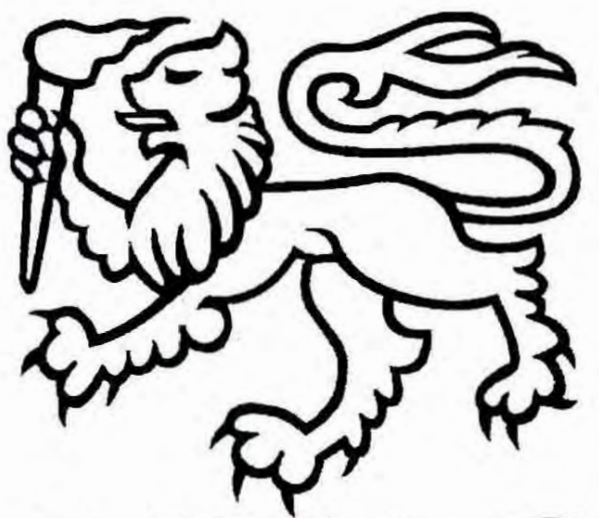
ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
<ul style="list-style-type: none"> Consolidation and integration of Community and Commercial Buildings into the urban landscape. 	<ul style="list-style-type: none"> Community and commercial buildings set within spacious surroundings are vulnerable to anti-social activity. They therefore become scarred and neglected in appearance and subsequently an unflattering icon of the community they serve. The positioning of community and commercial buildings (in their spacious surroundings) in close proximity to public parkland areas contribute to the apparent excessiveness of scale of open space areas. The land surrounding community and commercial buildings is underutilised and incurs substantial maintenance costs. 	<ul style="list-style-type: none"> <i>Increase the exposure and tangible connection of the community and commercial buildings to the street network and the community in general.</i> <i>Increase public accessibility and incentive to make use of surrounding spaces for recreational purposes.</i> <i>Where possible or appropriate, reduce the amount of undeveloped space surrounding community and commercial buildings.</i> <i>Increase the delineation between public open space areas and other open space areas.</i>
<ul style="list-style-type: none"> Planting in public open space areas should be appropriate. 	<ul style="list-style-type: none"> Illconsidered planting can provides the opportunity for concealment and a secluded area for anti-social activity therefore compromising appropriate surveillance. Some forms of planting can pose safety hazards (eg limb falling) or shed debris. 	<ul style="list-style-type: none"> <i>Shrubs and bushes and planting that will enable concealment should be avoided.</i> <i>Garden beds and planting that require high levels of maintenance should be avoided.</i> <i>Vegetation applied should be appropriate the</i>

ISSUE	TYPICAL PROBLEMS	PROPOSED APPROACH
	<ul style="list-style-type: none"> Inappropriate planting can result in the accumulation of litter and increase maintenance difficulties generally. The root systems of some plants can effect services underground or the soil quality. 	<p><i>environment, stable and not compromise the amenity of the area.</i></p>
<ul style="list-style-type: none"> Provide for the effective control of stormwater discharges and optimum use of existing infrastructure. 	<ul style="list-style-type: none"> Public open spaces are often subject to soil erosion and water ponding due to poor drainage and diminished soil quality. Houses adjoining public parklands which comprise of sloping terrains, experience stormwater runoff impacts. The outwards expansion of suburbs incur substantial costs in respect of roadworks, reticulated services and other infrastructure works (such as schools and shops). Existing infrastructure is often underutilised or capable of having its capacity easily increased. 	<ul style="list-style-type: none"> <i>Implement a stormwater system which utilises open space where possible (without compromising its principle function) for infiltration of run-off and stormwater retention.</i> <i>Appropriate planting techniques may be implemented to alleviate drainage impacts.</i> <i>Areas of public parklands, accessways and other open space areas can be given over to further residential development.</i>

PART 7

CASE STUDY -

AN APPROACH FOR ROKEBY



UTAS

7.1 **REVITALISATION OF THE CASE STUDY AREA**

- ROKEBY

The previous section of this paper detailed a comprehensive list of issues for consideration in establishing a clear direction and approach to the revitalisation of a "Radburn" suburb. These issues resulted from problems typically encountered within such suburbs and particular care was exercised to ensure that the remedial actions proposed were generic and capable of being related to any "Radburn" suburb.

The final section of this paper shall, expanding upon this generic framework, demonstrate the application of specific remedial techniques designed to revitalise a selected "Radburn" suburb - in this instance, Rokeby.

In conveying the recommended approach, a brief objective statement is followed by an explanation of the objectives intent. The relevance of the issue in the Rokeby context and subsequent need for remedial measures to be applied are discussed under the title of "Needs Analysis", while the detailed action required and the means of encouraging such actions to be implemented are detailed under the subheading of "Methodology". Illustrations 81 and 82 subsequently demonstrate the physical arrangement of the Case Study area before and after the intervention techniques detailed in this section have been applied.

The objectives to be pursued in revitalising the Case Study area therefore are as follows:

1 Identifying the social profile and needs of a community.

The social profile and consequent needs of a community need to be clearly identified. The types of open space provision, the features to be incorporated within them and the type of recreational facilities most appropriate for an area can only be determined once the social character of a community and the trends towards change, have been identified.

NEEDS ANALYSIS

Rokeby has a high proportion of single parents as well as young and adolescent children. Although the population is decreasing and generally maturing, the availability of inexpensive or government sponsored housing for young families will ensure that the proportions of children within the community will remain significant for some time to come.

The large percentage of the population whether unemployed or not in the labour force by choice, suggests that residents of the community spend a significant proportion of their time within that environment.

METHODOLOGY

- Whether they be streets or parklands, areas of open space should be available for the recreational pursuits of a community providing an alternative, and more socially interactive, option to that provided by private yards.
- Parkland areas should be retained to provide a pleasant variation of the urban aesthetic and to satisfy the perceptions of the community.

2 *Establishing a sense of ownership and respect for the urban landscape.*

Thorough community consultation should be undertaken. Such measures will assist in determining the social character of the community and help identify perceived needs with respect to open space provision. It will also encourage “ownership” of the public space and an increased desire to see the area protected and properly managed.

NEEDS ANALYSIS

Property owners are reluctant to assist in the upkeep of public open space areas immediately adjoining their homes.

Anti-social responses to the open space areas, such as vandalism and littering, frequently occur.

METHODOLOGY

- Citizens action groups should be encouraged and provided with the opportunity for input into redevelopment processes and the development of strategies.
- Schools and community organisations should be encouraged to assist in the physical implementation of redevelopment measures.
- Individual surveys and general canvassing of perceptions should be undertaken and incentives provided for residents to be actively involved in the physical implementation of redevelopment strategies and techniques. Such incentives may include employing or encouraging residents in a broad spectrum of activities ranging from site clearing and preparation to planting and construction works.

3 *The scale and area of public open spaces should be appropriate.*

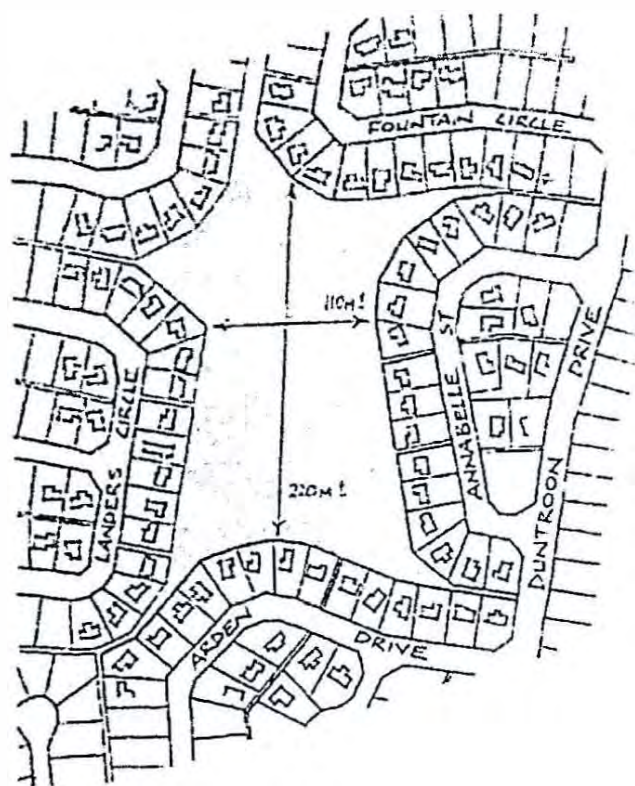


Illustration 62
Existing Parkland Area with
connecting pedestrian accessways



Illustration 63
The size of the Parkland Area is
reduced to a more appropriate scale
by means of residential infill
development

Public open space areas should be developed at a scale appropriate to their surroundings. The belief that the more space that can be provided the better the environment that will result is misguided. Inappropriately scaled open spaces, whether large or small, will diminish the quality and effective utilisation of an urban environment.

NEEDS ANALYSIS

The scale of the internal parkland is so great that from many positions within the area, it is not possible to gauge its extent. This gives the impression of it being endless and prevents any feelings of intimacy. The location of school grounds, undeveloped residential areas and commercial areas in spacious surroundings adjacent to the park emphasises such deleterious qualities as does an absence of considered landscaping approaches.

Some pedestrian accessways however are so underscaled as to impose a sense of claustrophobia and entrapment.

METHODOLOGY

- Reduce the size of the parkland area to a more appropriate (human) scale by implementing in-fill residential development around the parks perimeter. Providing the land upon which to build these houses at an attractive (ie inexpensive) price or incentives such as rate holidays or low interest loans over the first two years may provide the stimulus needed to see such initiatives succeed.
- The clear separation of public open space areas from other open space areas (such as school grounds) should be undertaken to reduce the apparent scale

and proportion of the parkland area. Alternatively, further reduction of public parkland areas may be implemented in conjunction with, and off-set by, school grounds and spacious commercial areas being made more freely accessible for use by the public for recreational purposes.

- The pedestrian accessways can be removed altogether by adhering portions of these areas to adjoining property owners. The result being an increase in the size of their private yards. As an incentive to accept such an offer, assistance could be provided in the fencing of these areas.

4 *The clear delineation of the boundaries of public open space.*

The boundary of the public area needs to be clearly delineated. The transition from public open space to areas where unimpeded public access is not acceptable needs to be readily identifiable. In those areas close to public open spaces where the “spilling” over of activities is considered undesirable (ie invasion of private space), clear measures should be undertaken to demonstrate the delineating boundaries.

NEEDS ANALYSIS

Due to the absence of boundary fences between private properties and the internal park and pedestrian accessways, it is difficult to identify public from private spaces.

Those who have undertaken substantial planting measures (namely bushes, shrubs and flower gardens) within their yards facing the public open spaces have achieved a degree of success in delineating between the areas while enhancing the visual aesthetic however such initiatives are infrequent and the yards are mostly barren.

Many have delineated these areas by erecting tall screen fences. These efforts further erode the visual aesthetic and overall quality of the space.

METHODOLOGY

- A road provides the best means of separating private and public areas. Wherever possible, as part of the scale reducing (residential infill) process, roads should be introduced to form the parkland perimeter. They should be narrow, low usage, service roads (no thru roads) maintaining a safe environment and accessibility to park areas. Roads however should not be introduced if it will result in street frontages to both the forward and rear areas of a single dwelling -

orientation and private open space concerns would be difficult to address.

- When roads cannot be introduced or pedestrian accessways cannot be deleted, planting and/or the erecting of low unobtrusive fences within private “front” yards should be encouraged. Subsidised nursery supplies and fencing materials as well as specifications as to how to erect appropriate fences may prove a useful incentive. Also a community levy, deducted with local authority rates, to provide funds enabling regular maintenance of forward areas may assist in preserving the quality of those areas.

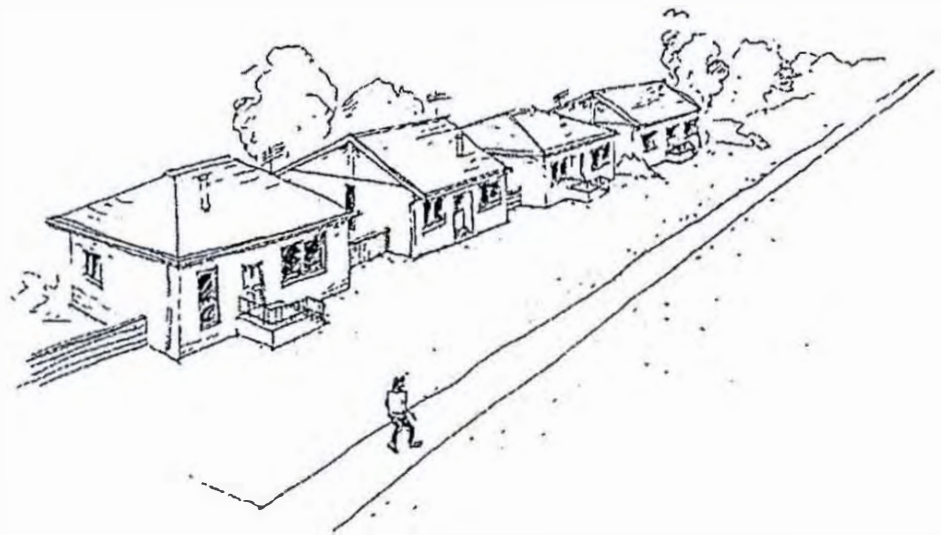


Illustration 64

*Existing image - little or no
delineation of public/private open
space boundaries*

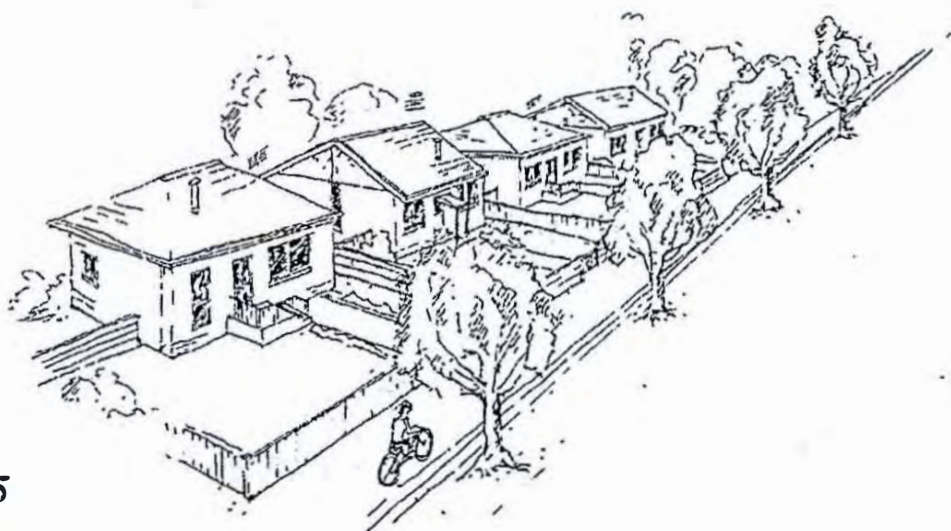


Illustration 65

Proposed approach

5 *Create a sense of place*

Larger public open space areas should have a distinct character and establish a sense of place. Features should be introduced into larger open space areas to enable the development of a distinct character to the public area which can be iconic of the surrounding community and an assertive landmark in itself.

NEEDS ANALYSIS

The internal parkland area is generally undeveloped and contains no distinctive features. A significant proportion of the area is flat, expansive and barren and its seclusion is such that it has little impact or influence upon the character of the region.

The pedestrian accessways are often monotonous and fail to convey a sense of purpose.

METHODOLOGY

- The visual exposure of, and accessibility to, the park needs to be increased to enable the area to have a greater influence upon the character of the region. This can be achieved by increasing the “glimpses” of the park that are attainable from road areas and more effectively by the inclusion of roads as boundary delineation mechanisms. Such measures would need to be incorporated as part of residential infill works.
- Assigning a sense of place to the parkland area could be achieved by means of planting techniques such as tree clusters or similarly considered arrangements (but not shrubs and other safety compromising approaches). Earth mounding may be another approach as well as the introduction of prominently placed features which can act as focal points. Such features could be in the guise of play equipment,



Illustration 66

A

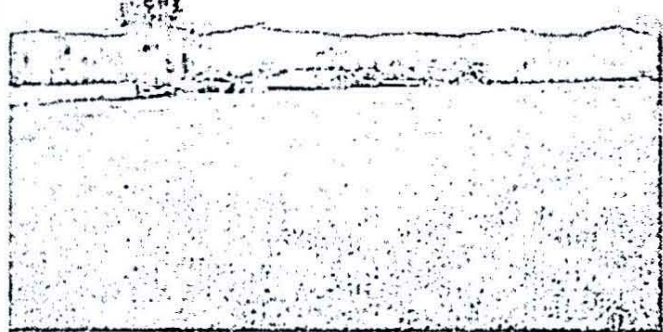


Illustration 67

View as experienced from 'A'

A barren featureless landscape

geographical features (eg mounding or water bodies) or obelisks. Such measures would need to be implemented as part of a Local Authorities public works program, with assistance possibly being attained from the Public Housing Authority.

- Important also in establishing a sense of place is the ability to comprehend the extent of the space. Reducing the scale of the parkland area and clearly identifying its perimeter (as detailed in objective 3 and 4) is a key priority for Rokeby in achieving such a goal.

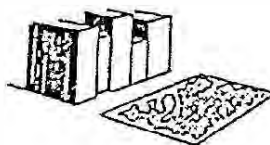
Illustration 68
Criteria for establishing a sense of place

Instilling a sense of place into parkland areas can be accomplished by a variety of means. The determination of a particular approach and application of specific techniques for a selected area will be dependant upon the resources available to, and the perceptions of, the community. The following illustrations (from Lynch, K 1960, pg 47-48) relate those elements of urban areas which contribute to the development of a distinctive character. Although their relationship is to a city as a whole, their application is also relevant in the specific context of parkland revitalisation.



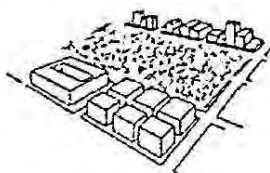
Paths

The routes along which the observer mostly, occasionally or potentially travels and from which the surroundings are usually experienced. For many, the paths themselves are the predominant elements, and form the primary image of the surroundings.



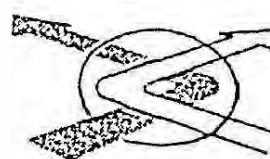
Edges

Edges are linear elements (but not those used as paths) which serve to disrupt continuity and establish a type of barricade (albeit a penetrable one) and contain the space.



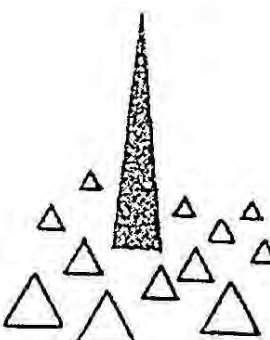
Districts

Areas which are recognisable as having some common identity and typifying character. They are identifiable from outside and from within their area and the transition into and out of the District is distinct.



Nodes

Nodes are areas of intensity and concentration usually resulting from the condensation of a particular use or physical character. Nodal points often result from a convergence of paths or form the polarising centre of a district.



Landmarks

Landmarks are distinguishable features which the observer always views externally (when the observer is absorbed into the feature it is no longer recognisable as a landmark). They are usually simply defined physical objects which are visually prominent amongst its surroundings.

6 *Public open space areas should be safe, clean and hazard free*

The re-development of open space areas should include measures to ensure the securing of a safe, clean and hazard free environment. Recreational pursuits should be able to occur within the open space without interruption by offensive activities, without perilous impediments being imposed, and within an environment which is healthy and orderly.

NEEDS ANALYSIS

The open space areas, both the internal parkland and pedestrian accessways are isolated and secluded. Anti-social and inappropriate activity (such as golf, horse and motor bike riding) occur within them as a result. The spaces become littered and as appreciation of the space wanes, they become neglected and overgrown.

METHODOLOGY

- Increasing the exposure of parkland areas will diminish its seclusion and the ability to feel secure in engaging in anti-social activity.
- Decreasing the scale of the parkland areas (as detailed in objective 3) will diminish the incentive for inappropriate activities such as golf and horse riding to use those areas for such purposes.
- Pedestrian accessways should be abolished altogether by the expansion of adjoining private properties to include those spaces. Where such measures are not appropriate, or achievable, the accessways should be short and their destination discernible from their access point.

7 *Encourage the use of streets as recreational areas*

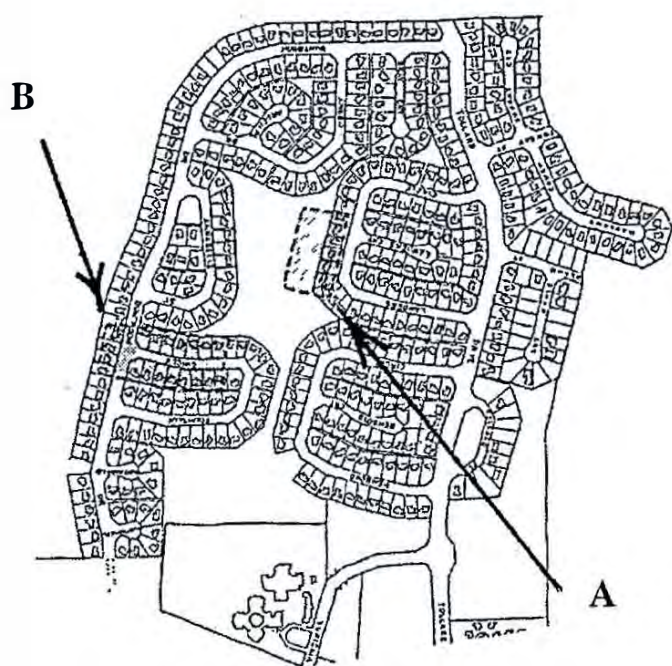


Illustration 69

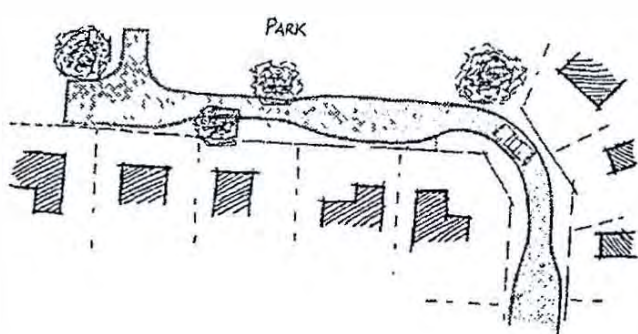


Illustration 70

Proposed low impact street at the edge of the Parkland Area - location 'A'

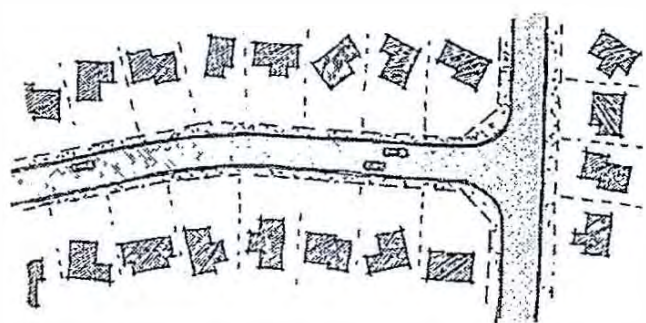


Illustration 71

Existing street design - location 'B'

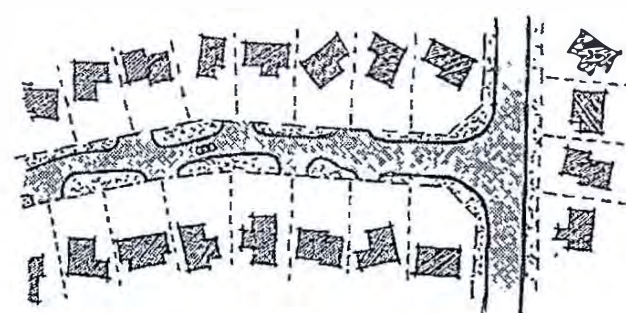


Illustration 72

Proposed street design - location 'B'

The street network should be encouraged, rather than discouraged, as an alternative venue for recreational activity. Measures should be introduced to reduce vehicular perils and conflicts and to facilitate the use of streets for recreational purposes. The diminished demand for parkland space will enable more of those areas to be designated for other more useful purposes.

NEEDS ANALYSIS

As is typically found in "Radburn" suburbs, as well as suburban areas generally, older children and adolescents within the Case Study area prefer to play and congregate upon and alongside the streets.

The nature of the existing street network is such that sightlines are generally good and traffic volumes and speed of vehicles suitably restrained.

METHODOLOGY

- New streets developed should be narrow, low usage, pedestrian friendly areas incorporating such features as roll-over kerbs and delineating paving material as well as traffic calming devices such as extending kerbs and speed humps.
- As the opportunity arises to rejuvenate existing streets, the same approaches and techniques (ie narrowing, roll-over kerbs) should be applied.

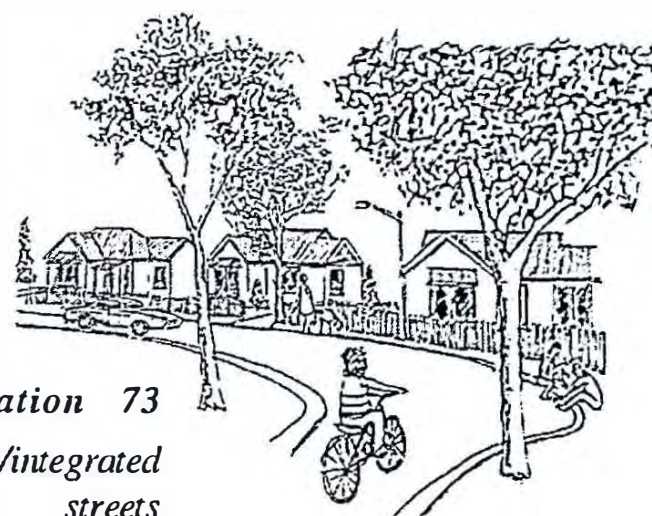


Illustration 73

Pedestrian friendly/integrated streets

8 *Surveillance of open space areas should be appropriate*

The open space areas should facilitate appropriate levels of surveillance. The appropriate levels of surveillance will be determined by the type of open space proposed, and be influenced by the nature of the terrain contained within. Surveillance capabilities are particularly important for those areas where young children will be the primary users of the space. Care should be taken in all instances to avoid areas of isolation and seclusion.

NEEDS ANALYSIS

Many areas of the park are obscured from view even when observed from within the park itself.

The detachment of parkland areas and pedestrian accessways from the surrounding street network means that surveillance is not achievable from the most public and vibrant areas and is effectively non-existent at night time when most needed.

Outlooks from within the houses are not towards the park or accessways despite their orientation - curtains are drawn or fences erected to protect privacy.

METHODOLOGY

- Increasing surveillance opportunities will involve the attachment of the parkland areas to the street network. Such would be achieved by the introduction of streets along the parkland perimeter (as detailed in objective 4 and 8). Orientations of existing and proposed infill development should be towards the parkland.
- Pedestrian accessways should be eliminated, the planting of shrubs and bushes avoided, and young children's recreation facilities only provided in

exposed areas which are capable of easy observation from a variety of directions.

- Organised surveillance may also be established by means of citizen (neighbourhood) watch groups similar to the school watch groups already established and which have enjoyed a substantial degree of success in curbing anti-social behaviour within school grounds after hours.

9 *Privacy should be protected and the potential for intrusion into the private spaces of dwellings diminished.*

Security, privacy and personal space conflicts need to be alleviated. Techniques need to be applied to protect privacy and prevent personal space invasions. Also measures are required to curb the security hazards that are presented by the easy and multiple access opportunities available to private property from adjoining public open spaces.

NEEDS ANALYSIS

The poor delineation of public/private areas at the perimeter of the internal park and pedestrian accessways, particularly where houses are oriented towards the space, result in accidental and intentional (ie trespass, burglary) encroachment into personal space areas. Attempts have been made by residents to address these concerns by the erection of tall screen fences. These erode the aesthetic qualities of the space and do not alleviate intentional invasion problems but instead accommodate them by enhancing the opportunity for seclusion.

METHODOLOGY

- Accidental intrusion into private open space should be alleviated by the application of the delineating techniques detailed in objective 4 (ie service streets & low fences).
- The potential for home invasion and other such criminal activity will be diminished by the increased exposure that results from low fences and adjoining roads.
- Pedestrian accessways should be eliminated altogether.

10 *Public open space areas should be attractive to all persons and be capable of being dynamic.*

Measures should be taken to alleviate the age and gender imbalance of those who use the public open space areas. “Radburn” internal open spaces, due to their isolation and seclusion, have typically become male dominated areas. They need to be made attractive to male and female users and to the young and elderly members of the community.

Furthermore, they need to be capable of undergoing a transformation as the social composition and attitudes of a community changes.

NEEDS ANALYSIS

The Case Study area’s public open spaces provide little attraction for parents or elderly persons who wish to supervise children using the space, or who wish to make use of the space themselves. There are no public conveniences in close proximity and seldom any provision of seating for elderly to rest upon or features of interest or comfortable settings provided for them to enjoy.

It is reasonable to anticipate that the social fabric of the Case Study area will alter as the community gradually ages and that attitudes towards open space provision may subsequently alter.

If the urban edge of Rokeby expands or outlying suburban areas grow in such a manner as to consume the large areas of natural landscape surrounding Rokeby, the desire for urban parkland areas within the Case Study area may increase to compensate for such loss.

METHODOLOGY

- The provision of an attractive landscape and conveniently located seating along the length of pedestrian routes and in areas adjoining recreational

facilities will improve the attractiveness of the park to older users.

- Play equipment should be located in very observable locations to be suitable for very young children. Older children and adolescents should be encouraged to make increased use of the service streets for recreational opportunities by increasing their pedestrian amenity (refer objective 8). This would enable greater emphasis to be placed on implementing measures to make public open spaces more attractive to the very young and the elderly and reducing the likelihood of conflicts being imposed upon those groups by the activities of adolescents.
- As the community ages, the usefulness of the school may decline and ultimately expire. It would therefore be appropriate at this stage to not impose any substantial re-development upon the school grounds thereby ensuring the opportunity to implement appropriate measures in the future in accordance with community attitudes and requirements relevant for that time.
- A similar position may be adopted with respect to excess commercially zoned areas which it would be difficult (or certainly costly) to encourage development upon at this time.

11 *Maintenance requirements should be economically viable and sustainable and planting introduced should be appropriate.*

Public open space areas should generally be designed in a manner which will not be difficult to manage or require a hefty commitment of resources to maintain at an acceptable standard. Planting measures undertaken should enhance the character of the public open spaces without compromising surveillance capabilities, or interfering with subterranean infrastructure (ie sewer, stormwater) or diminishing the quality of the park's surface generally.

NEEDS ANALYSIS

The Case Study area's internal parkland and pedestrian accessways, although sparsely vegetated, require a substantial dedication of resources to maintain in a neat and generally acceptable condition. Ill considered planting and the erection of screen fences further increase maintenance difficulties and reduce the amenity of the park generally.

The pedestrian accessways are particularly difficult and costly to maintain. As a consequence, Local Authorities have generally forsaken their maintenance responsibilities in those areas. Neighbouring residents often refuse to play any part in maintaining them and they subsequently become overgrown and decrepit.

METHODOLOGY

- Reducing the overall area (scale) of the park will result in the establishment of a more manageable space. Planting introduced should be of a variety which does not shed substantial amounts of debris nor drain excessive amounts of nutrients from the soil.

- Shrubs and bushes should be avoided in favour of planting which enables a more comprehensive surveillance of the surrounds. The maintenance of vegetation introduced should be the responsibility of the Local Authority. Residents, community groups and school children however should be encouraged to assist in its implementation and upkeep - hopefully enhancing community acceptance and ownership of the space.
- Pedestrian accessways should be absorbed as extensions of the private yards of adjoining properties thereby resolving maintenance issues in those areas.

12 *Neighbouring schoolgrounds should be more effectively utilised.*

More effective and comprehensive utilisation should be made of the school grounds near the existing public open space areas. The use of those grounds for recreational purposes (outside of school hours) should be encouraged subject to them being capable of appropriate supervision. Particularly with respect to the more active pursuits - playground equipment, cricket, skateboarding and the like.

NEEDS ANALYSIS

Children are more inclined to use the recreational equipment provided within school grounds rather than those similar facilities provided within the parkland areas - even on weekends. This may be due to familiarity, or the greater variety of options provided by the school grounds, or by the greater proportions of hard paved areas and delineated spaces which children seem to prefer.

The school grounds are spacious and their close proximity to the public parkland areas emphasise the apparent scale of undeveloped open space and create an impression of duplicity.

METHODOLOGY

- The school and its associated recreational grounds should become more distinct as a separate entity from the public parkland area. The use of residential infill, the roads servicing the dwellings and tree planting will assist in achieving such an objective. An incentive for the school to embrace such a concept may be the income that they would derive from the sale of surplus land.
- Access should be provided to school grounds on weekends to engage in recreational pursuits thereby



Illustration 74
Play equipment located in the
adjoining schoolgrounds



Illustration 75
Play equipment located within the
Parkland Area

satisfying the community demand for public open space without consuming additional land that may have otherwise contained residential development.

- Such actions would also be consistent with providing a preparatory base from which future redevelopment of the area (as detailed in objective 10) may be undertaken when the usefulness of the school has expired.
- An incentive for the school to accept such initiatives would be the sharing of maintenance responsibilities with the Local Authority and a resulting justification in reduced rate payments in accordance with its increased public contribution.

13 *Community and commercial buildings should become more prominent.*

Community and Commercial buildings located in spacious surroundings, dislocated from the surrounding street network, require intervention measures to be undertaken to make them more prominent features in the landscape and generally diminish their detachment and seclusion.

NEEDS ANALYSIS

Community and commercial buildings are isolated from public areas and are accordingly subjected to abuse and anti-social activity - particularly at night.

Their detachment from the street network significantly impedes their ability to act as prominent features within the landscape and as focal points of the community in general.

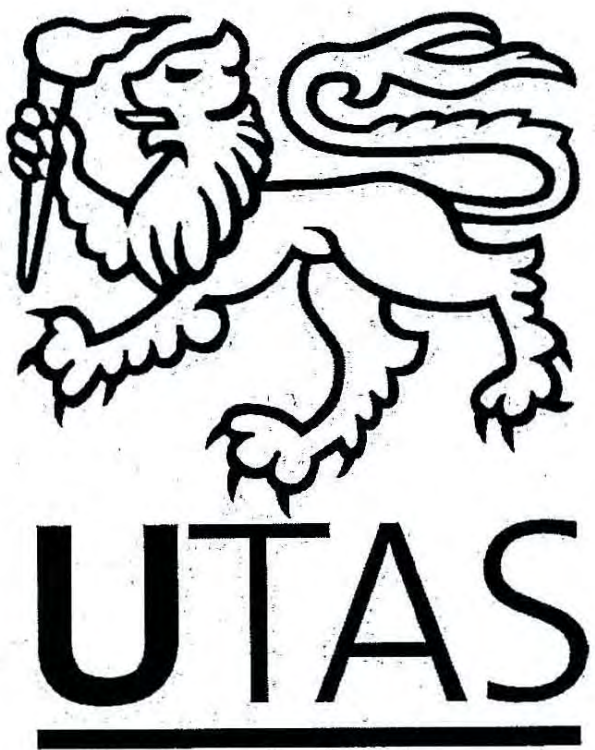
The abuse and neglect that the buildings endure portray an unflattering impression of the community and discourages further commercial activity from developing in the area further stifling any opportunity for increased vitality.

The excessive spaciousness of the surroundings erodes definition and sense of vitality.

METHODOLOGY

- The introduction of a new road in front of the shopping complex will increase its prominence. Planting between the buildings and the street should be such that their screening effects are reduced.
- Further commercial development as well as infill residential development should be encouraged to reduce the excessive spaciousness surrounding the buildings (this may be a more long term strategy - implemented once residential infill has become established in other areas and the needs and character

of the expanded community have been identified). Bringing residential development closer to commercial activity will reduce the likelihood of anti-social activity occurring around those commercial buildings.



14 *Eliminate narrow pedestrian accessways and internal pocket parks.*

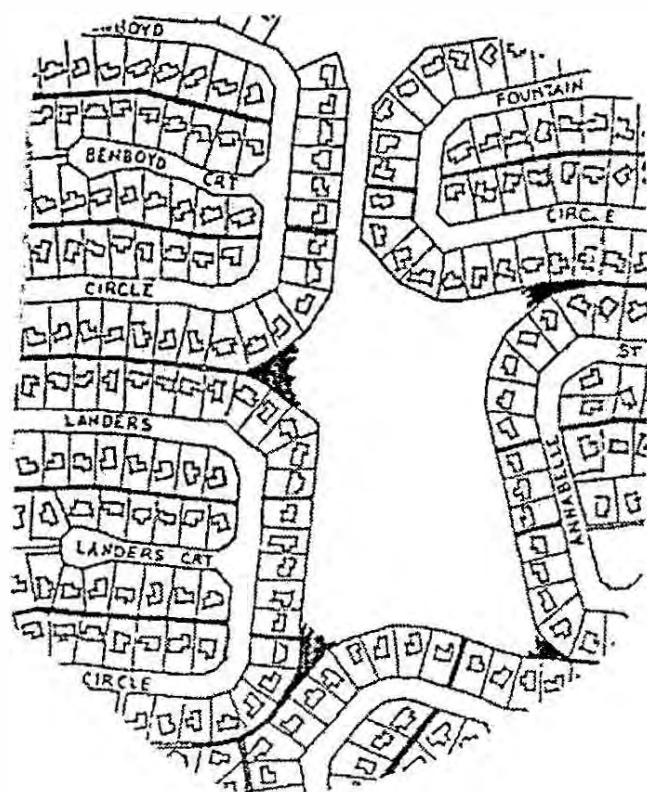


Illustration 76
Internal pedestrian accessways
(highlighted)



Illustration 77
Existing open space pockets

Where ever possible, equal portions of pedestrian accessways should be given over to adjoining private properties to form an extension of their private yards. If of a suitable size, areas of the accessways which widen to form mini pocket parks should be made available for further residential development.

NEEDS ANALYSIS

The narrow internal pedestrian accessways are too costly and difficult to maintain. The communities willingness to accept responsibility and maintain them is rarely sustained. Management of these spaces is difficult to control and they become unattractive, underutilised and perilous when segregated by the erection of screen fencing.

METHODOLOGY

- Adjoining portions of the pedestrian accessways should be offered to neighbouring residential properties free of charge. Assistance to fence those areas should be offered if incentive to accept those areas is found to be needed.
- The pocket parks should be converted into internal ("battle-axe") residential allotments. Access to these new residential sites should be gained by means of existing alleyways where they exist and are suitable. If not achievable, land should be acquired from adjoining property owners to provide access strips. Trading some parkland for access strips may also be an option.
- The additional space provided by the accessways will ensure that an acceptable distance results from the "front" of the house to the new boundary fence



Illustration 78
*Proposed development of internal
open space pockets*

erected such that the “forward” areas do not appear cramped and the main aspect of the dwellings will be over an acceptably spacious area.

- The potential exists for such actions to ultimately enable, in conjunction with further development works, the removal of street boundary fences thereby improving streetscapes. The same objective could also be achieved in methods to reduce the scale of the internal park (as detailed in objective 3).
- The land should be made available at an inexpensive price and possibly with the lure of a rate holiday period to attract private interests to develop the sites.

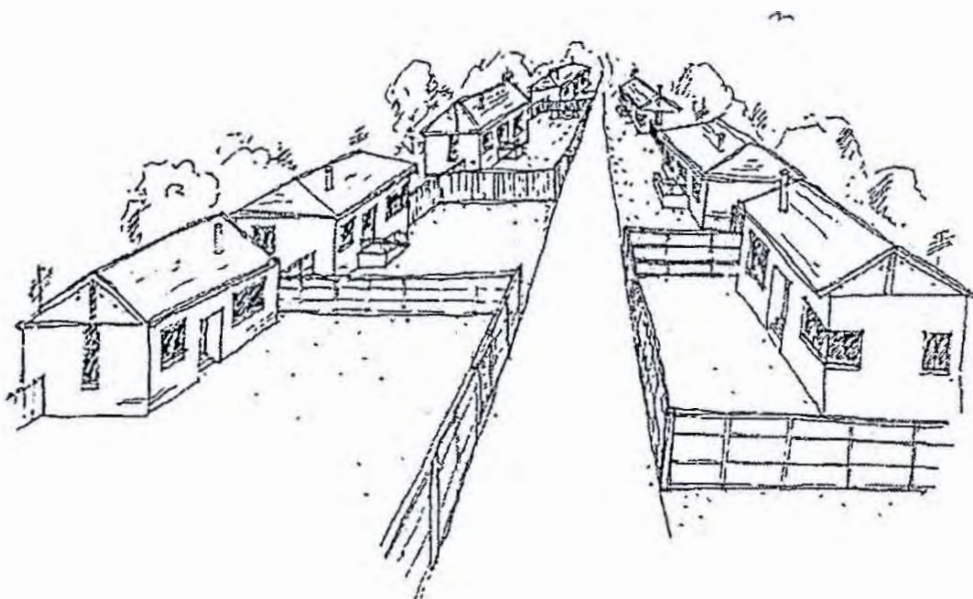


Illustration 79
*Internal pedestrian accessways (as
existing - typical)*

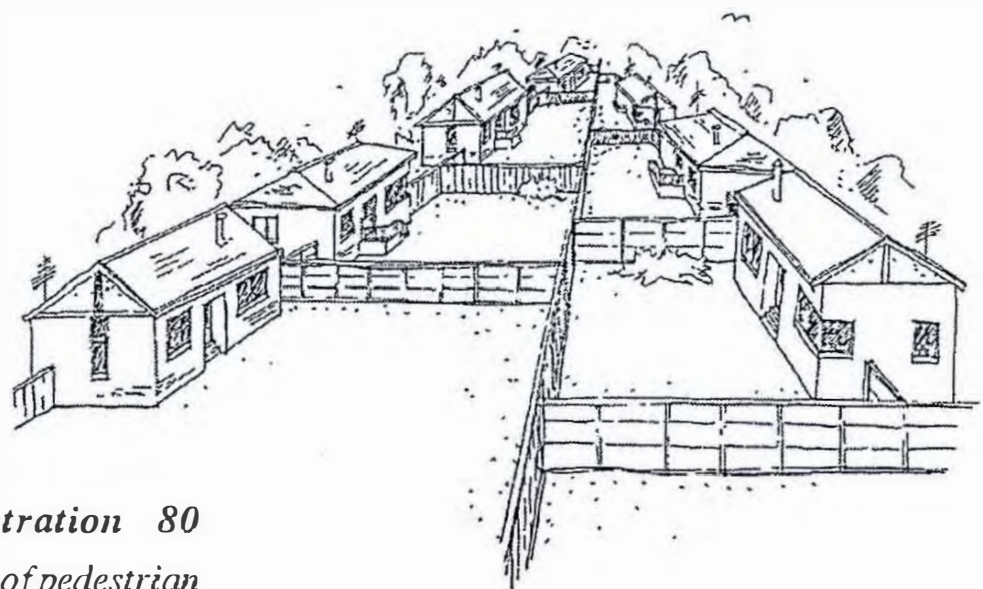


Illustration 80
*Proposed removal of pedestrian
accessways in favour of increased
private yards*

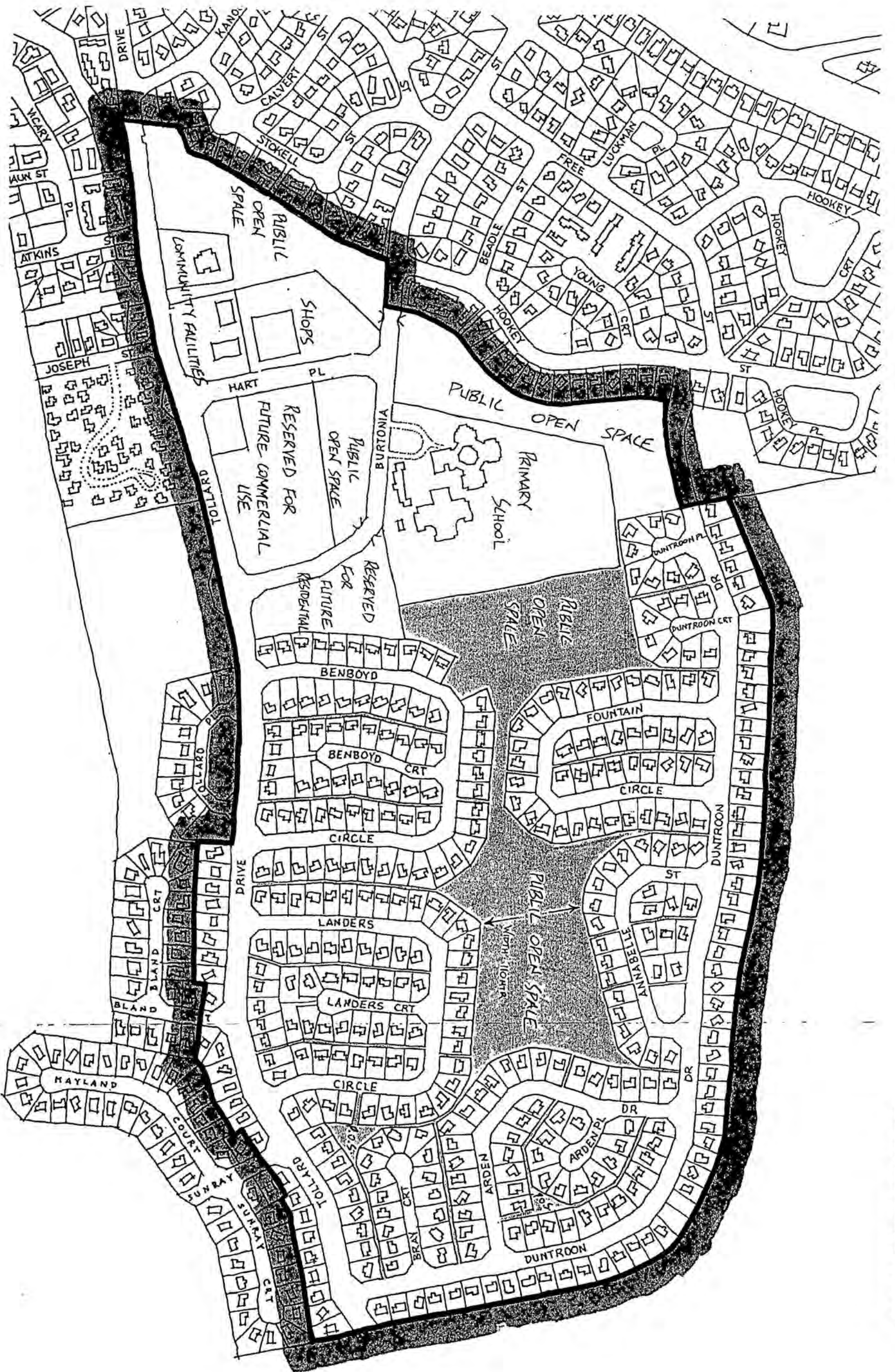
5.2 SUMMARY OF KEY INITIATIVES

While an assessment of the Case Study area has identified an extensive array of problems, and resulted in a broad range of objectives, the actions required to facilitate an improved environment are not so extensive. As would have been recognised in the preceding section, a singular initiative can often address a number of problems. Accordingly, action plans for revitalising “Radburn” suburbs may ultimately incorporate a succinct number of key initiatives. In the example of the Case Study area, these initiatives were as follows:

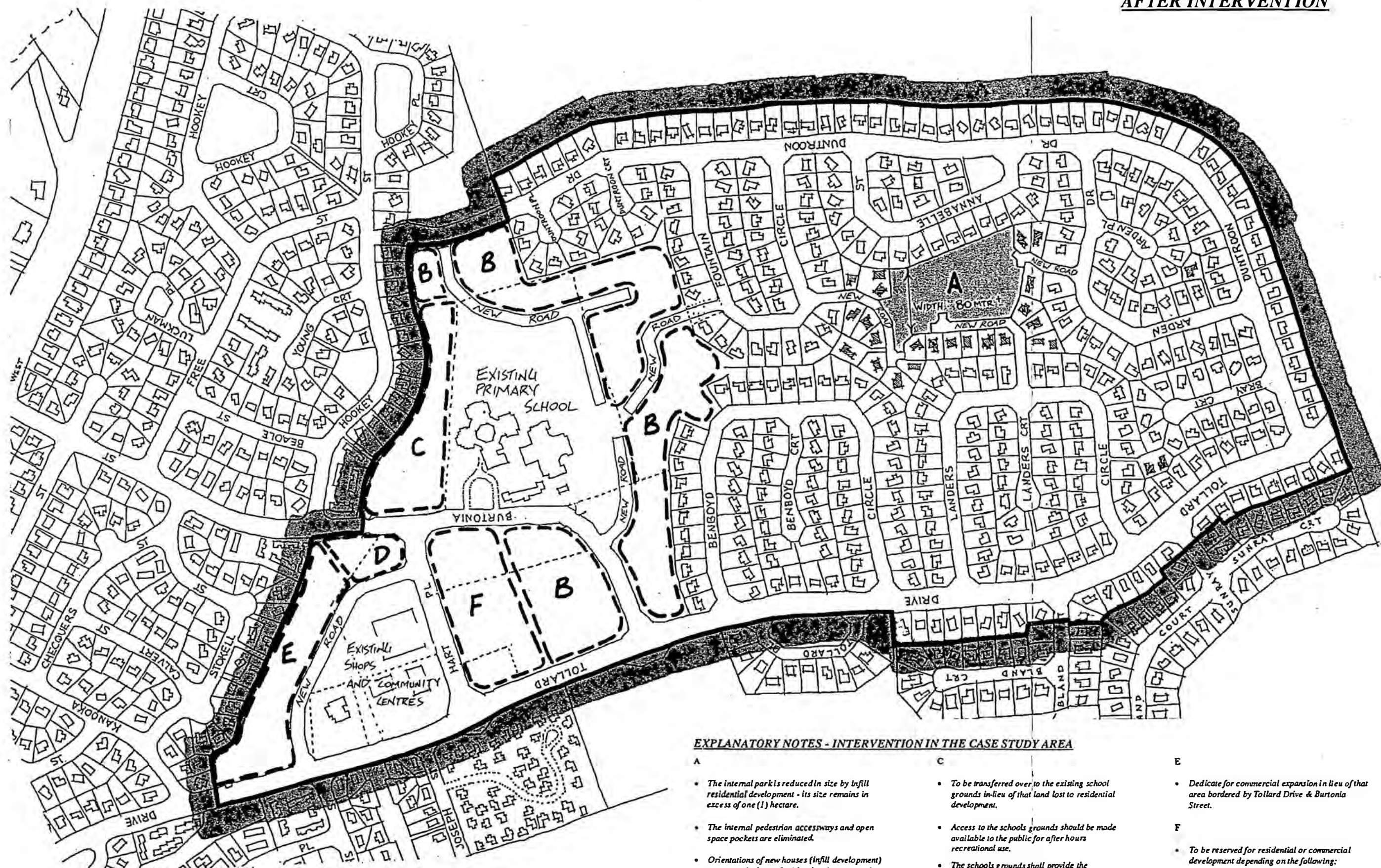
ACTION	BENEFIT	INCENTIVE
The expansion of residential “front” yards to incorporate portions of adjoining accessway or parkland.	<ul style="list-style-type: none"> • <i>Diminish the excessive scale of adjoining open spaces and provide definition and delineation.</i> • <i>Improved safety, security and privacy.</i> • <i>Problematic accessways and pocket parks will be abolished.</i> • <i>Reduced maintenance responsibilities.</i> • <i>Enhanced aesthetic and general amenity of both public and private spaces.</i> • <i>Aid the ultimate conversion of rear areas of residential properties (between the house and the street) to become less private areas and accordingly improve the streetscape.</i> 	<ul style="list-style-type: none"> • <i>Give excess land (accessways) to adjoining residents.</i> • <i>Provide assistance in fencing.</i> • <i>Sell battle-axe allotments resulting from internal pocket parks to private developers.</i>
Residential infill	<ul style="list-style-type: none"> • <i>Create a more appropriate scale.</i> • <i>Reduced areas of public open space to maintain.</i> • <i>Improve the visual character of the urban development surrounding the park (by means of improved building design and finishes).</i> • <i>Enable the rectification of problematic finishes.</i> 	<ul style="list-style-type: none"> • <i>Provide land at affordable prices.</i> • <i>Rate holidays during the construction of buildings.</i> • <i>Subsidised infrastructure establishment.</i> • <i>Relaxation of development controls, Council’s fees and general requirements for development in an area.</i>

Low impact service roads along parkland perimeter	<ul style="list-style-type: none">• <i>Enhanced exposure and attraction.</i>• <i>Improved policing, surveillance and security.</i>• <i>Enhanced delineation of private/public space.</i>• <i>Improved sense of place and contribution to community character.</i>• <i>Integration of alternative recreational areas.</i>	<ul style="list-style-type: none">• <i>Local Authority assistance in the funding and construction of roads.</i>
School grounds available for public recreational purposes.	<ul style="list-style-type: none">• <i>Formalises existing trends.</i>• <i>Enable the increased utilisation and rationalisation of undeveloped (open) areas.</i>• <i>May result in diminished maintenance costs by virtue of shared responsibility.</i>	<ul style="list-style-type: none">• <i>Shared maintenance responsibility with the Local Authority.</i>• <i>Rate reductions would be justifiable.</i>• <i>Revenue gained from the sale of land.</i>
Instil character into the Parkland area.	<ul style="list-style-type: none">• <i>Improved appreciation and comprehension of the space.</i>• <i>Provides community identity.</i>• <i>Improves general residential amenity.</i>	<ul style="list-style-type: none">• <i>Design competitions.</i>• <i>Community workshops.</i>

BEFORE INTERVENTION



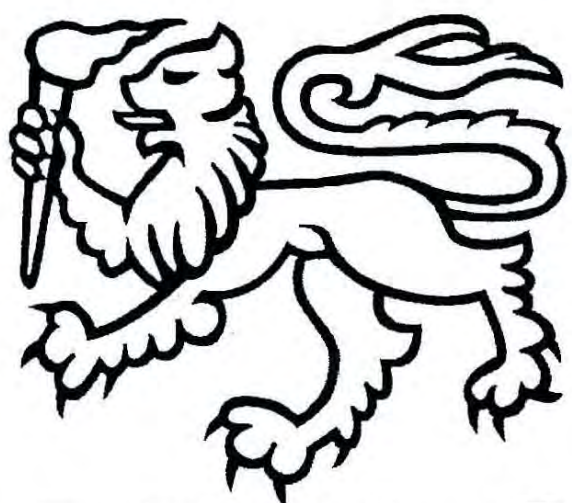
BEFORE INTERVENTION



EXPLANATORY NOTES - INTERVENTION IN THE CASE STUDY AREA

- | | | |
|--|---|--|
| <p>A</p> <ul style="list-style-type: none"> The internal park is reduced in size by infill residential development - its size remains in excess of one (1) hectare. The internal pedestrian accessways and open space pockets are eliminated. Orientations of new houses (infill development) are towards the park with a low impact road separating the houses from the park where feasible. <p>B</p> <ul style="list-style-type: none"> Residential development. Low impact, no thru streets to keep traffic levels at a minimum and facilitate their use as areas for recreational activity. | <p>C</p> <ul style="list-style-type: none"> To be transferred over to the existing school grounds in-lieu of that land lost to residential development. Access to the schools grounds should be made available to the public for after hours recreational use. The schools grounds shall provide the opportunity for further suburban redevelopment (e.g. residential, commercial or parkland) once the schools usefulness has expired and as the needs of the community change. <p>D</p> <ul style="list-style-type: none"> A monument, memorial, sculpture or some type of obelisk to act as a landmark or focal point. Not necessarily pedestrian friendly but provided purely to assist in instilling the community with identity and providing a point of reference. | <p>E</p> <ul style="list-style-type: none"> Dedicate for commercial expansion in lieu of that area bordered by Tollard Drive & Burtonia Street. <p>F</p> <ul style="list-style-type: none"> To be reserved for residential or commercial development depending on the following: <ul style="list-style-type: none"> the results of a detailed analysis of growth projections; the pending development strategies for the Rokeby Hills and Droughty Point; and the subsequent status that will be accorded to Tollard Drive in this region. |
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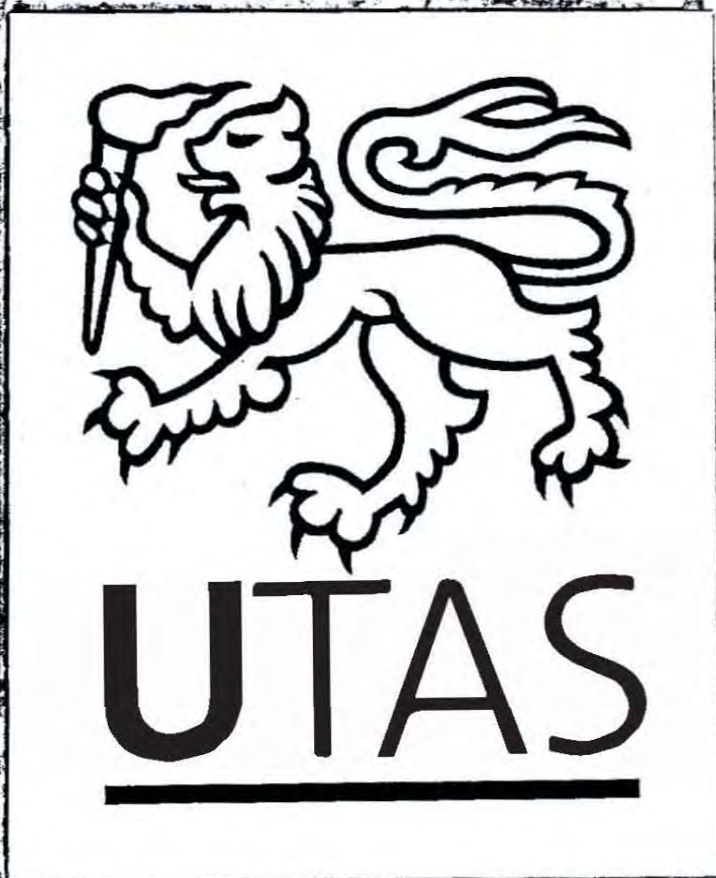
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APPENDIXES



Area 1

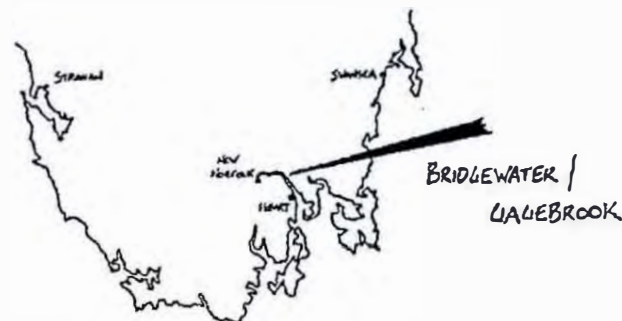
-
- A hand-drawn map of the New Haverford area. The map shows a coastline with several labeled locations: 'Seymour' at the top left, 'SUNNYSIDE' at the top right, 'NEW HAVERFORD' in the center, and 'HAWT' below it. A thick black line points from the text 'BRIDGEWATER / LIACABROOK' to a specific location on the map, likely indicating the site of the bridge.



2 1973-76 BRIDGEWATER

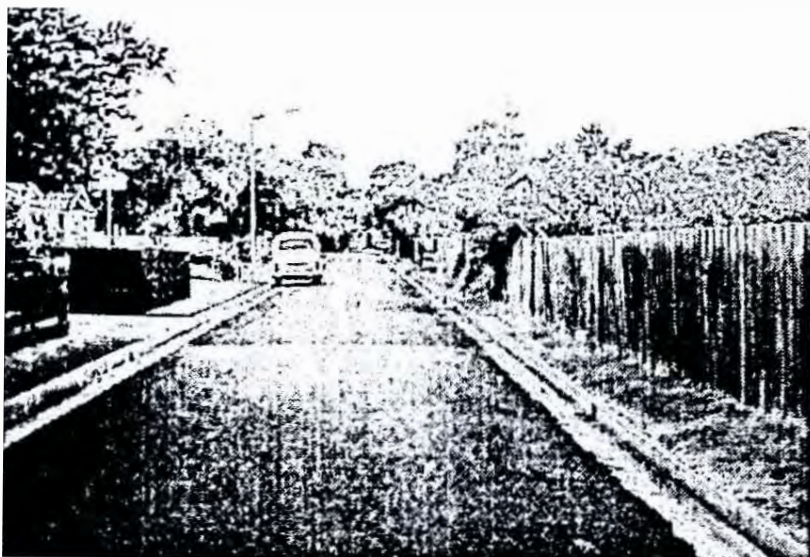
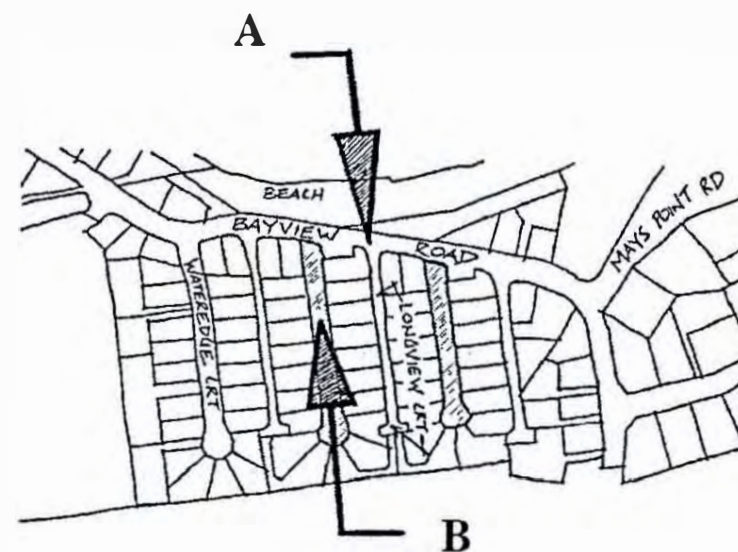
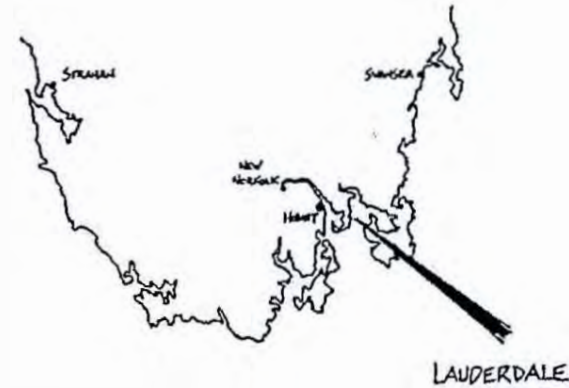
Area 2

- Large internal space behind rear of house and rear fence
- Houses oriented towards street - no street fencing
- No pedestrian linkages except for at the end of no thru streets (open spaces are seemingly hidden behind houses)
- Open spaces are barren exposed and overscaled.

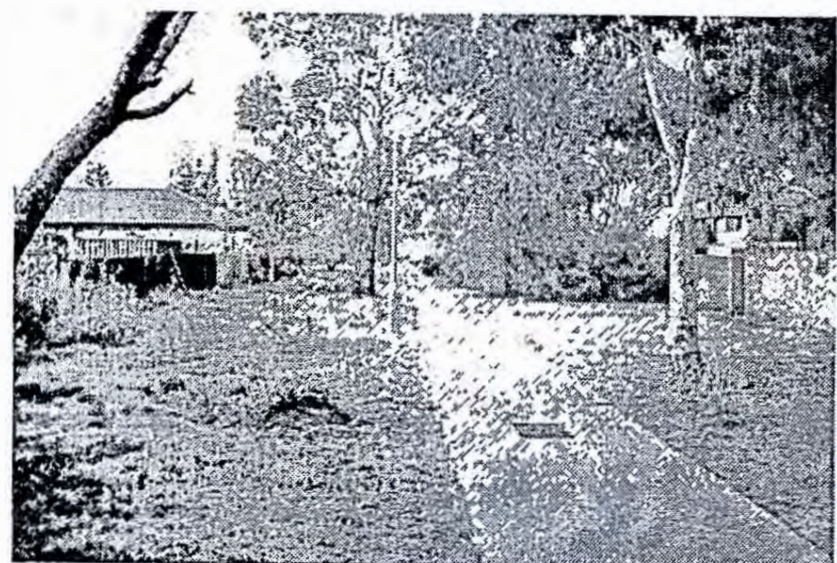


3 1974 - LAUDERDALE

- A series of wide, linear pedestrian open space pedestrian paths
- Adjoining streets are narrow and without pedestrian sidewalks
- Houses are oriented to the street.
- Most properties have erected high screen fences of varying types along the open space.
- The spaces are substantially vegetated with mature trees and undergrowth
- A footpath located centrally with street lighting above
- The open space is mostly neglected and in a poor condition particularly when compared to the well manicured front areas of adjoining dwellings.
- The pedestrian link does not extent from public space to public space. Therefore diminished potential for general usage.



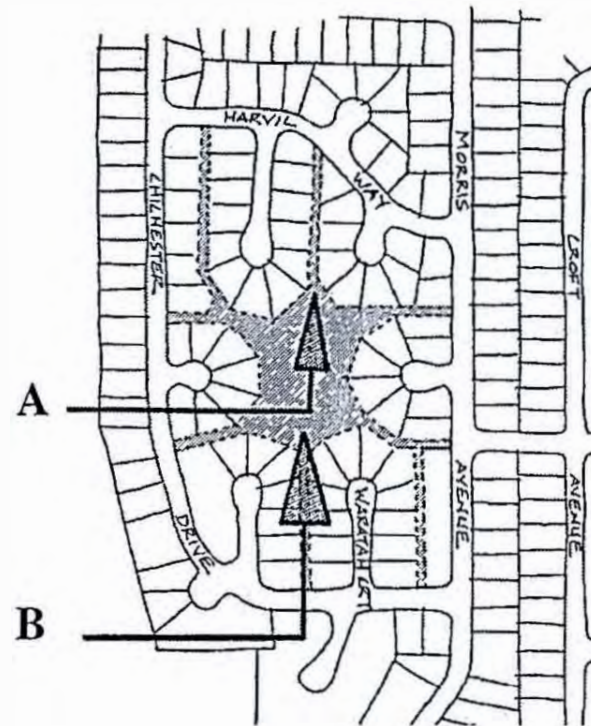
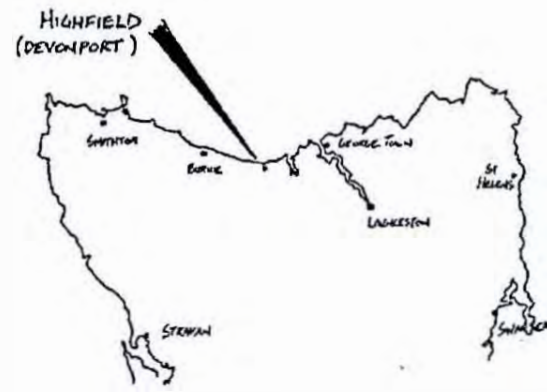
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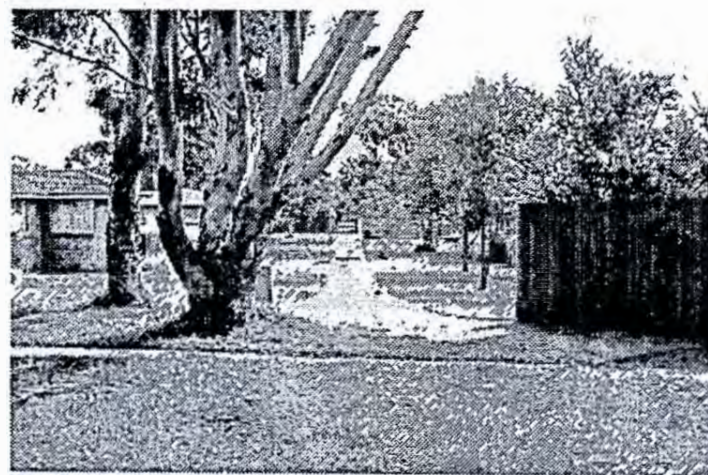
B

4 1975 - HIGHFIELD

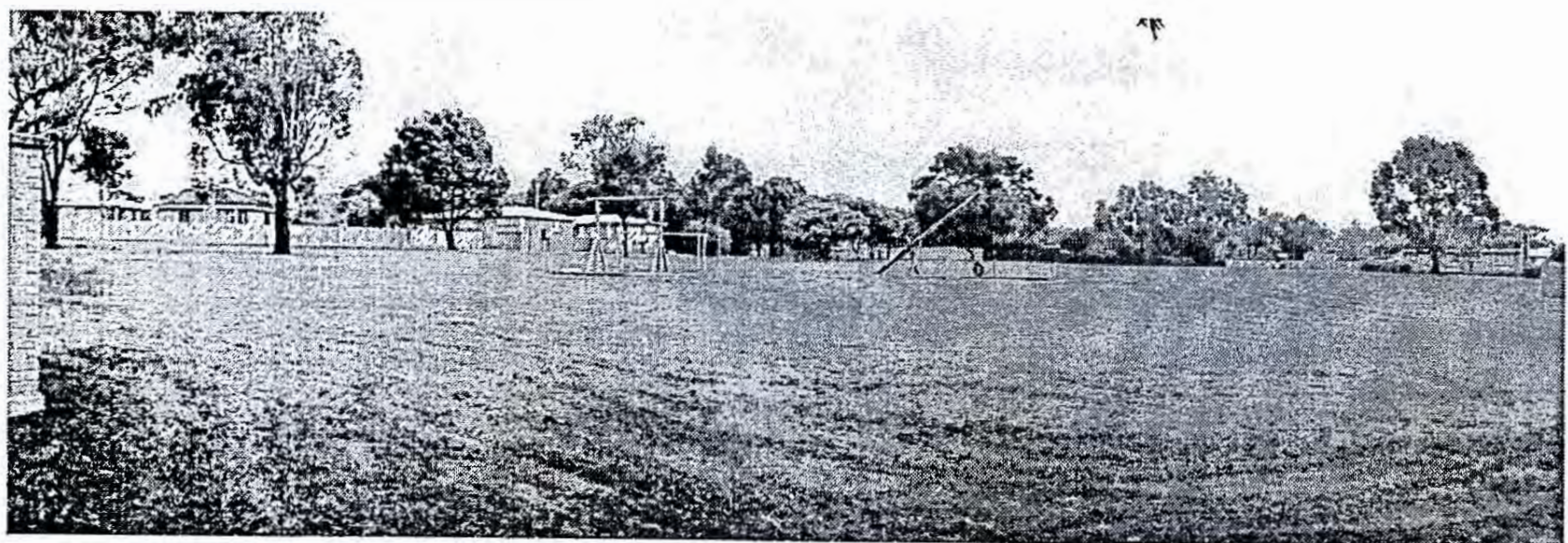
- Very similar suburban layout to Rokeby 1970.
- Orientation of houses is to the park and pathways with rear fences to the street.
- The large internal open space is easily accessed from the street with numerous pedestrian pathways however its existence is well shielded by surrounding houses - therefore somewhat isolated.
- The open space is sparsely landscaped and seemingly unused.
- The open space is generally overscaled and unattractive with little opportunity or variety offered for recreation within.
- Many of the "forward" spaces of private dwellings facing the park have been privatised by high fences.



A

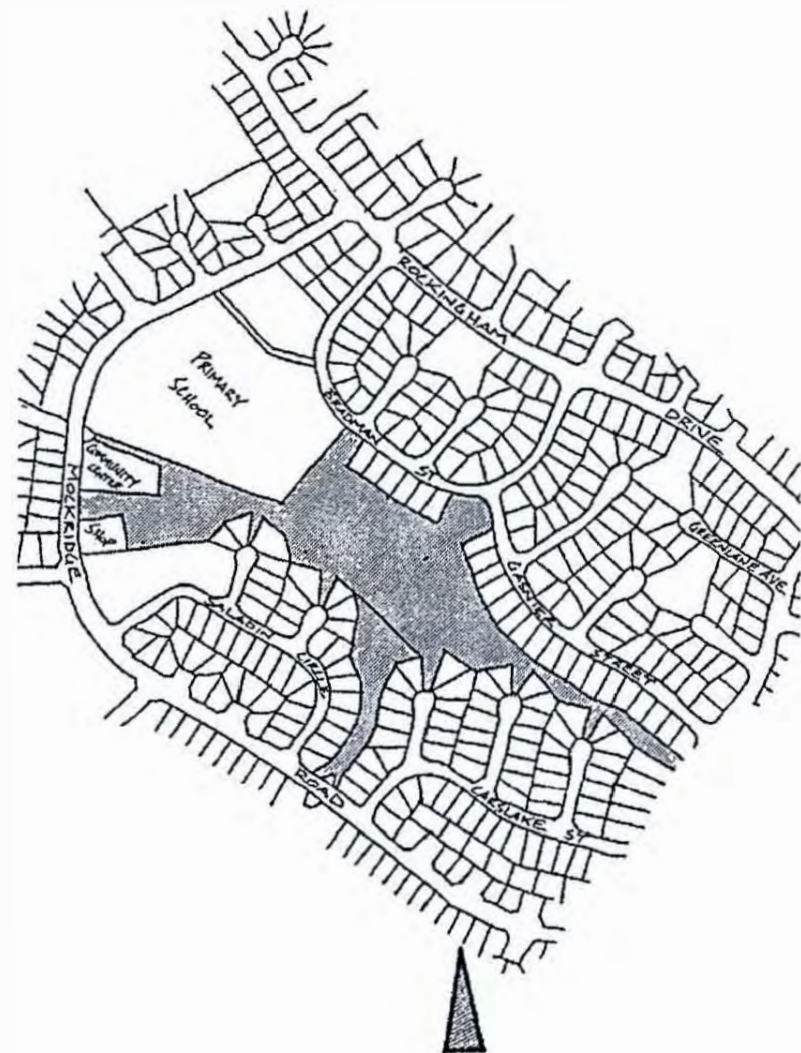


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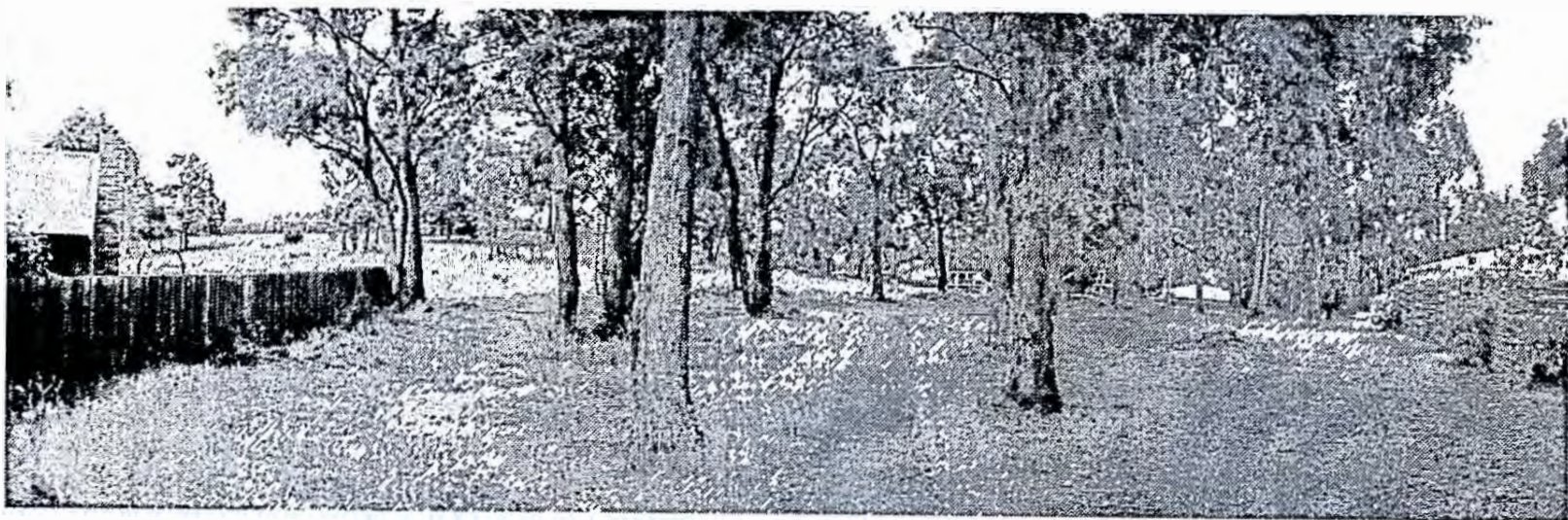
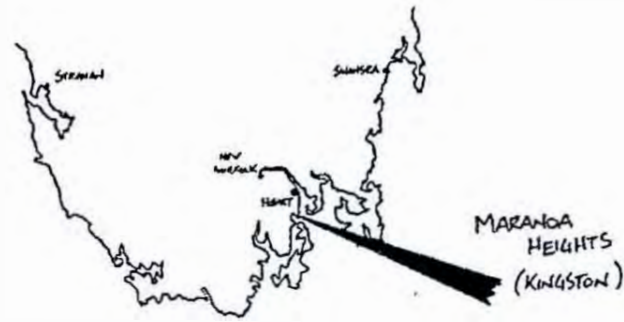
5 1976 - CLARENDON VALE

- Large internal open space area.
- Combination of houses backing onto park and some facing the park although separated from it by a street (therefore facing street and park).
- Open space barren and unimproved except for an infrequent pocket of vegetation.
- Access to parks provided by gaps along the street or at the end of cul-de-sacs.
- Reduced number of public accessways to the park area - very wide - bordered by high fences.



6 1976 - MARANOA HEIGHTS

- Large internal open space accessible and visible from cul-de-sacs and major arterial road.
- The space meanders and the topography is undulating
- The space cannot be wholly observed and there is no internal illumination.
- Houses are oriented to the street with tall rear screen fences bordering the park space.
- A substantial and indiscriminate allocation of mature trees throughout the space.
- Heavy covering of vegetation debris on the ground.
- Severe top soil erosion exposing the roots of trees and elevating footpaths and making perilous.
- Space is poorly maintained with much broken glass.
- Play equipment located centrally with substantial surrounding land degradation.

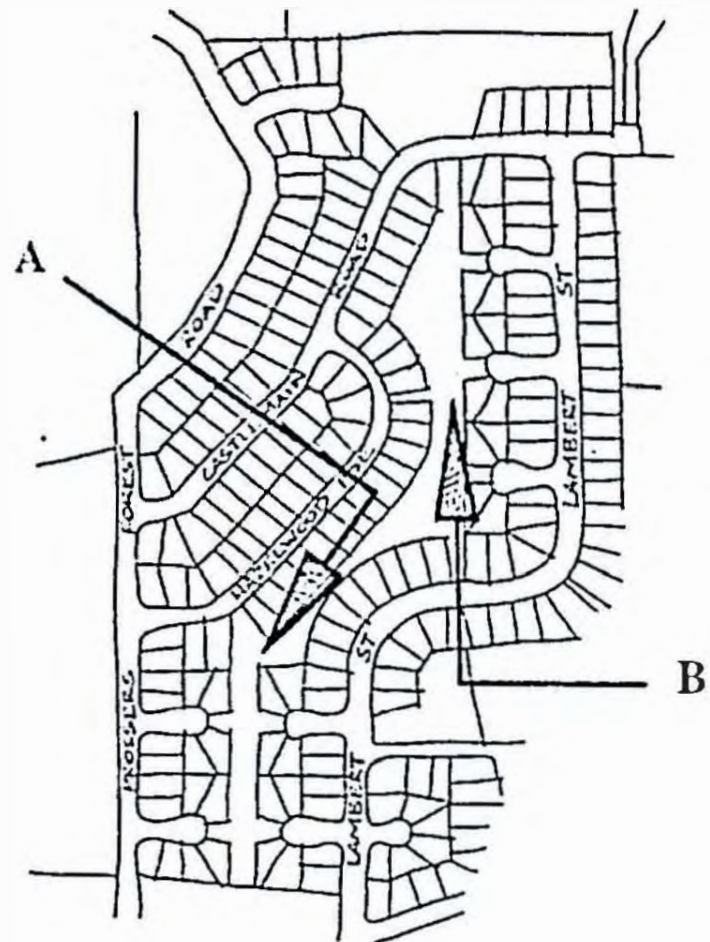


A

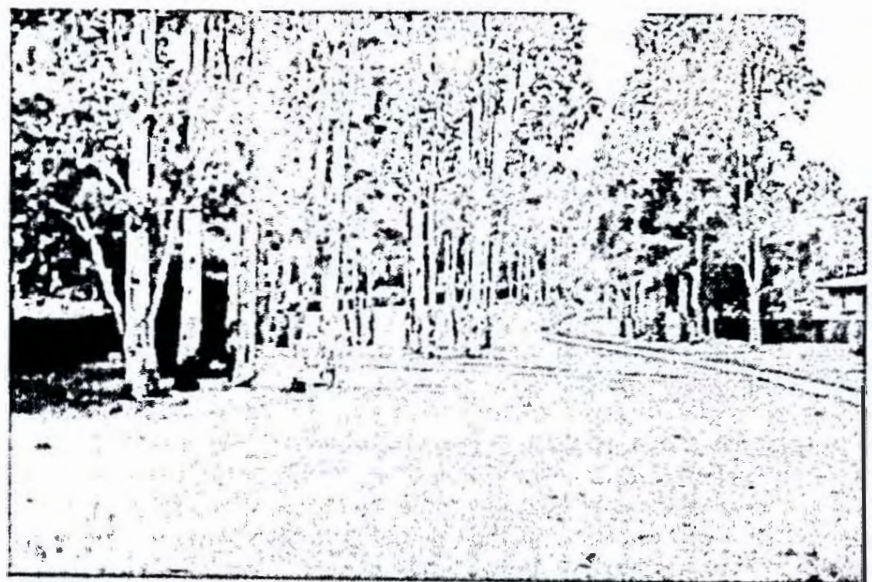
7 1978 - RAVENSWOOD

Area 1

- A long and meandering internal open space of varying width.
- Rear fences of houses adjoin park space.
- Houses oriented towards street.
- Pedestrian pathways and some small road exposure connecting park to street network.
- Moderate levels of planting applied arranged in numerous and reasonably dense clusters of tall slender eucalypts.
- No recreation equipment or focal points.
- Overscaled in some areas; no real allurement despite being lush and well kept.
- Quite isolated and secluded despite being an expansive space.



A

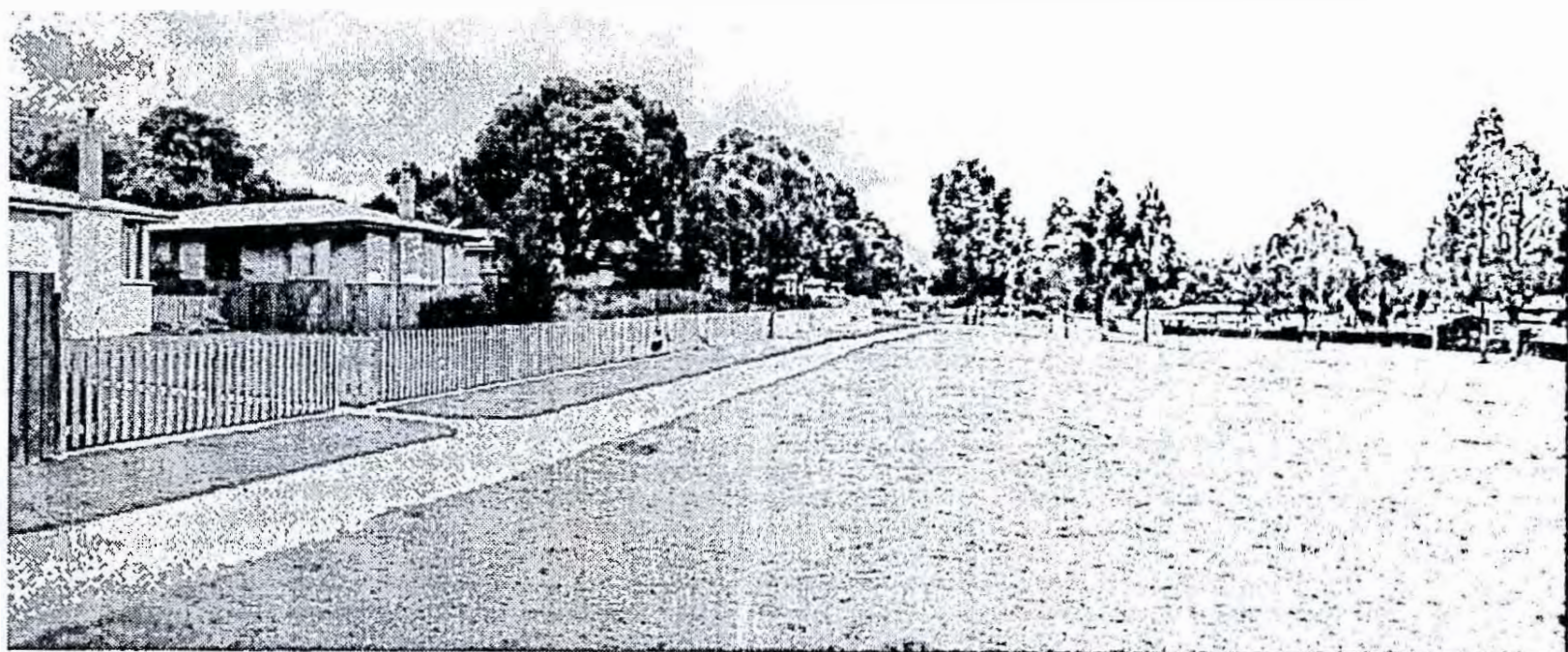
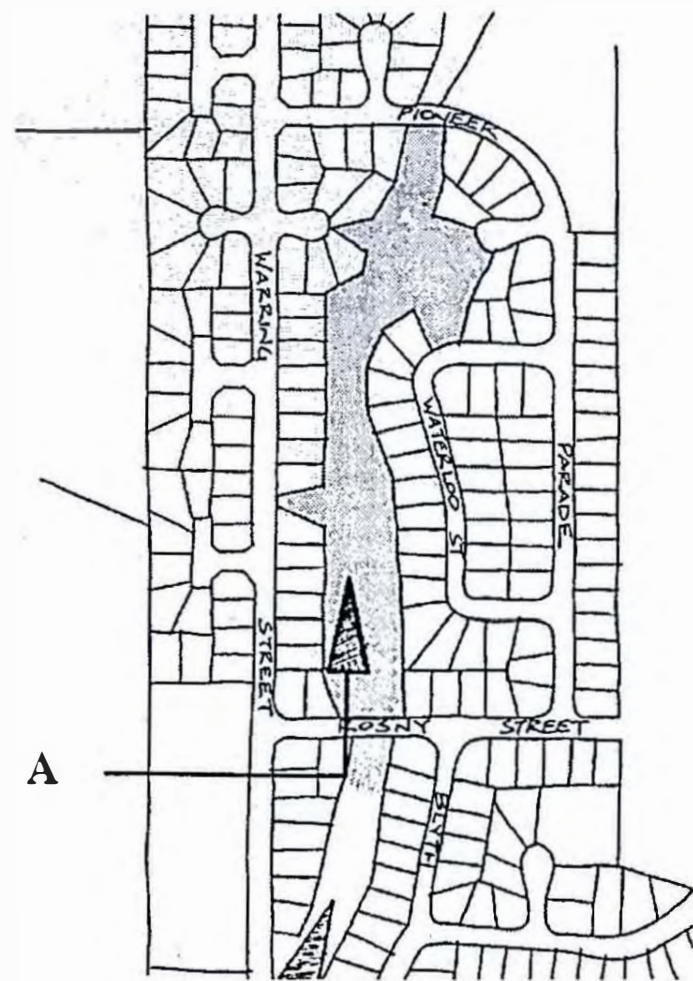


B

7 1978 - RAVENSWOOD (cont.)

Area 2

- A long linear internal open space of varying width.
- The open space follows the path of a natural drainage system but which has been piped and filled.
- Tall rear fences mostly form the perimeter of the park.
- Some pedestrian pathways and exposure to the street.
- Sparsely vegetated by means of tall, slender trees.
- Insubstantial allocation of recreation equipment.
- The area is attractive but overscaled; does not appear to be utilised to any significant degree with some areas clearly of little use.

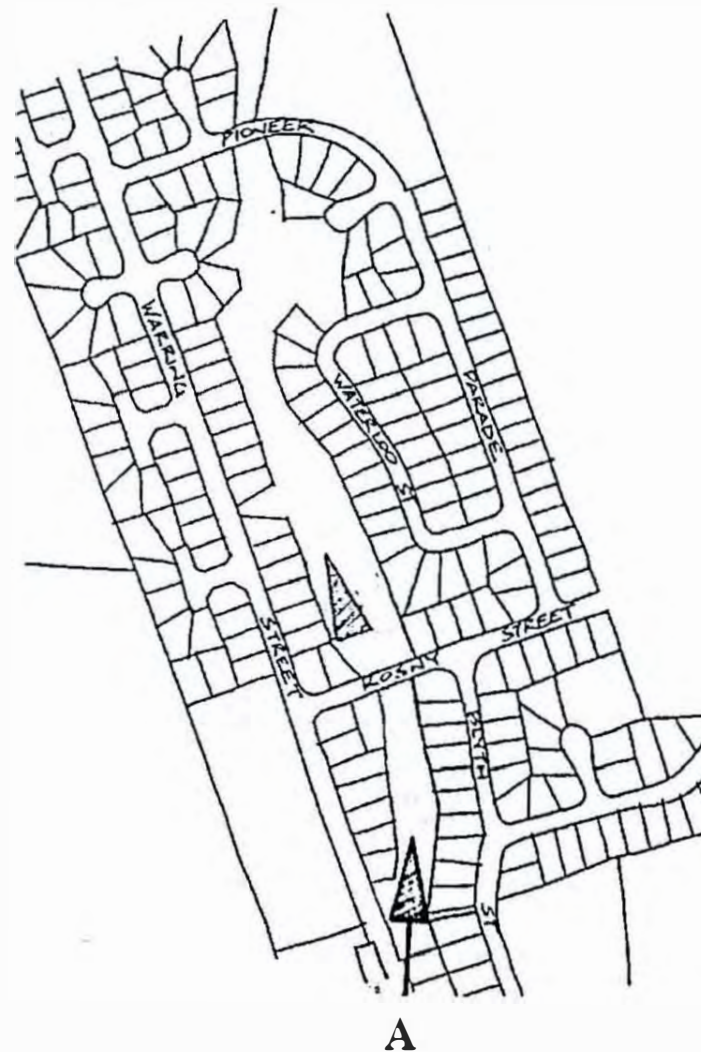


A

7 1978 - RAVENSWOOD (cont.)

Area 3

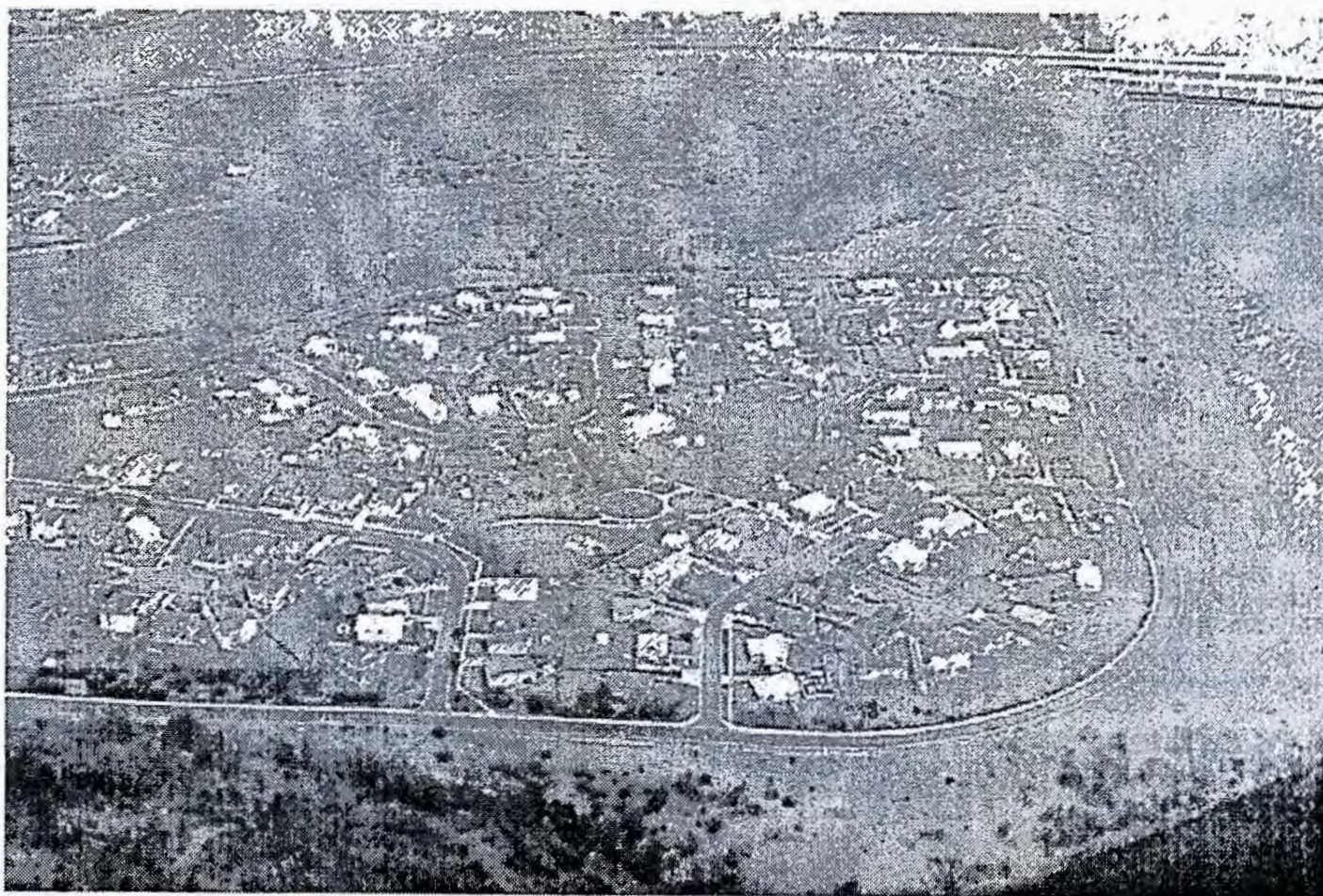
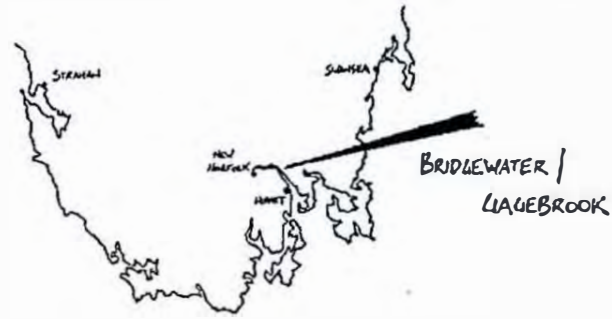
- An extension of the Area 2 open space.
- The space is more organised and deliberate.
- The topography has not been interfered with to the same extent as Area 2.
- The drainage course has been concrete channelled but left exposed; the width of the linear space does not vary and rockeries and feature walls add character to the space.
- Low fences bordering park on one side, high fences bordering on the other -consequently, some dwellings have rear fences to the street.
- Attractive and appropriately scaled the benefits of low fences compared with high fences aptly demonstrated by this areas application of both.



A

8 1978 - GAGEBROOK

- Size of internal open space areas less than in previous applications.
- Open space areas are accessed through breaks in the street.
- More economical use of space generally (ie narrower street reservations).
- Traffic calming measures have been introduced.
- Increased attention to treatment of open space areas.
 - introduced play equipment
 - more extensive planting
 - greater attempts to make qualitative



9 GEORGE TOWN

Two (2) large internal open spaces bounded by the rear fences of private dwellings.

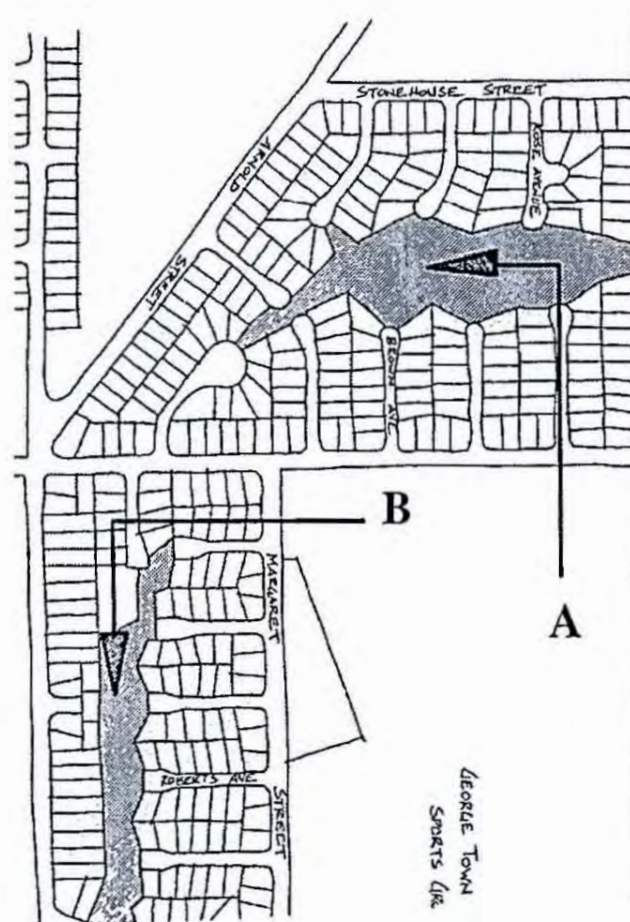
Both are overscaled and unalluring.

Minimal allocation of recreational (play) equipment.

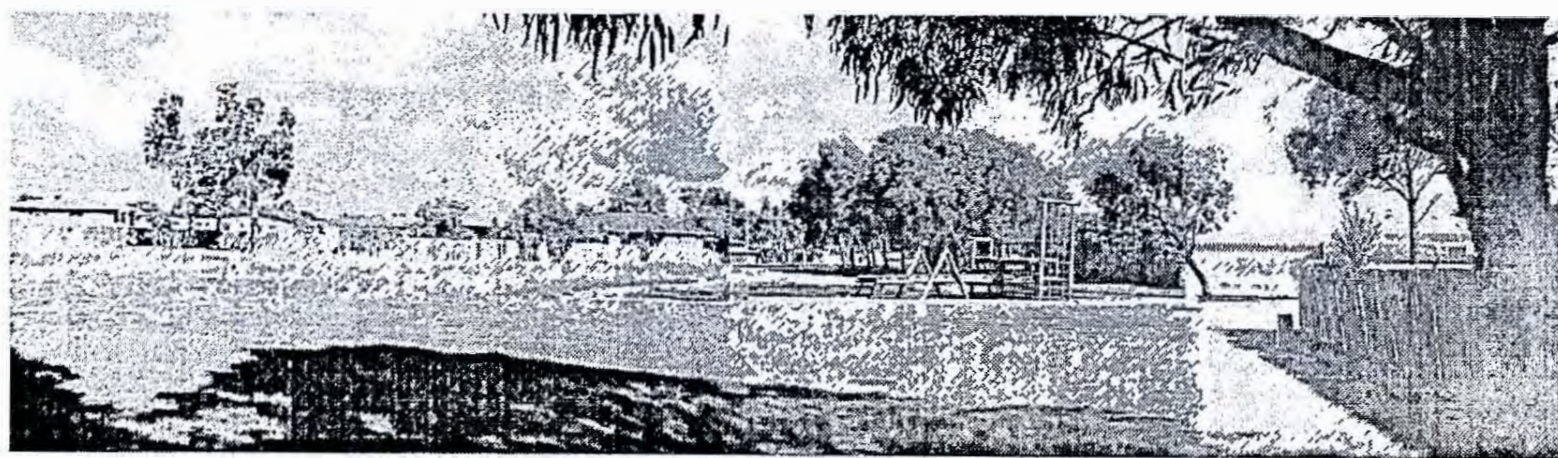
Area 1 is sparingly vegetated while Area 2 has no vegetation.

Both areas have lighting above their pedestrian paths and are accessed off the ends of adjoining cul-de-sacs.

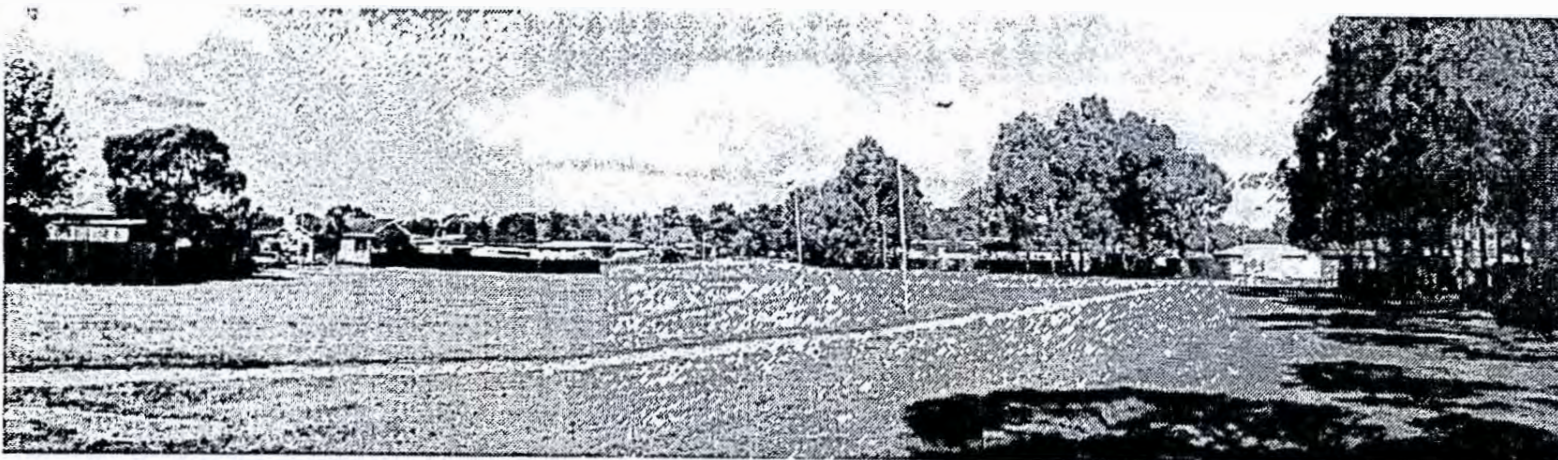
Most parts of the parks however are not visible until the observer is within them and they therefore project feelings of seclusion despite their substantial size.



A



B



10 1979 - RANNOCK

Large internal open space accessed from pedestrian pathways with some exposure to cul-de-sacs.

Undulating terrain and generous allocation of play equipment.

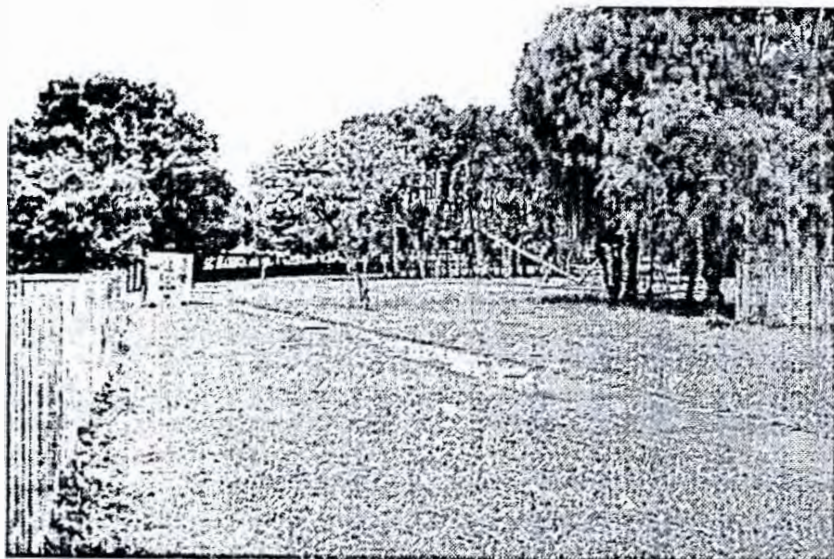
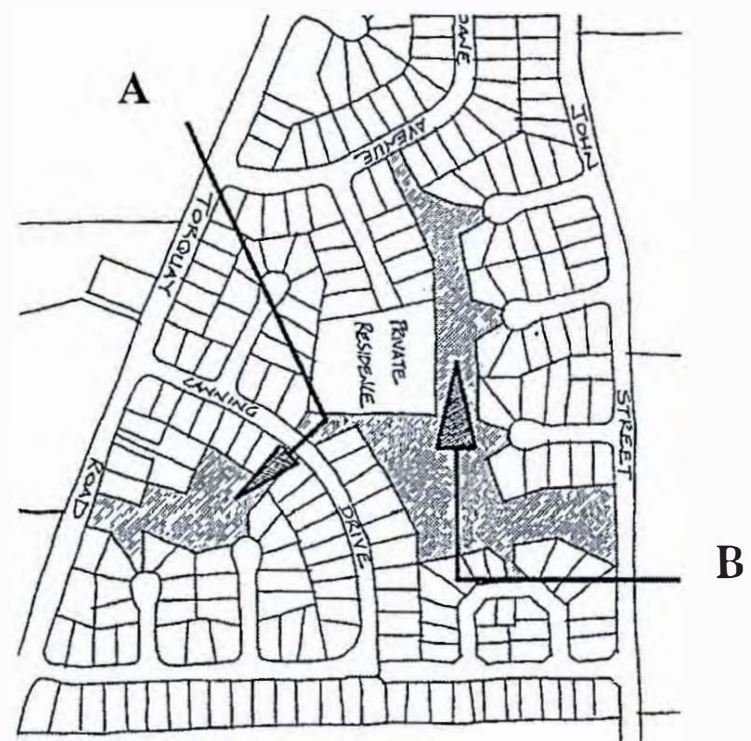
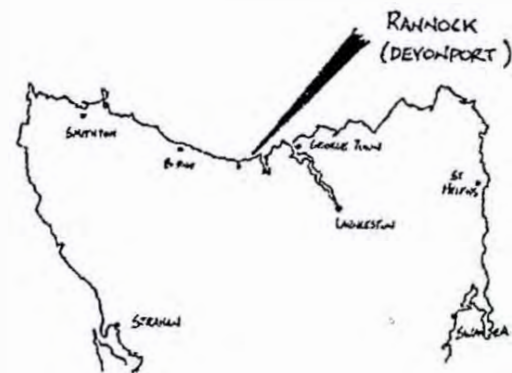
Space bordered by the rear fences of private dwellings.

Appropriate planting - tall slender trees in small clusters.

Some planting along fences to soften impacts (no bushes only trees).

Despite being expansive, scale is appropriate assisted by the nature of the terrain.

Exposure to the surrounding streets assisted by topography but still containing those seclusion and isolation qualities often inherent in these areas.



A



B

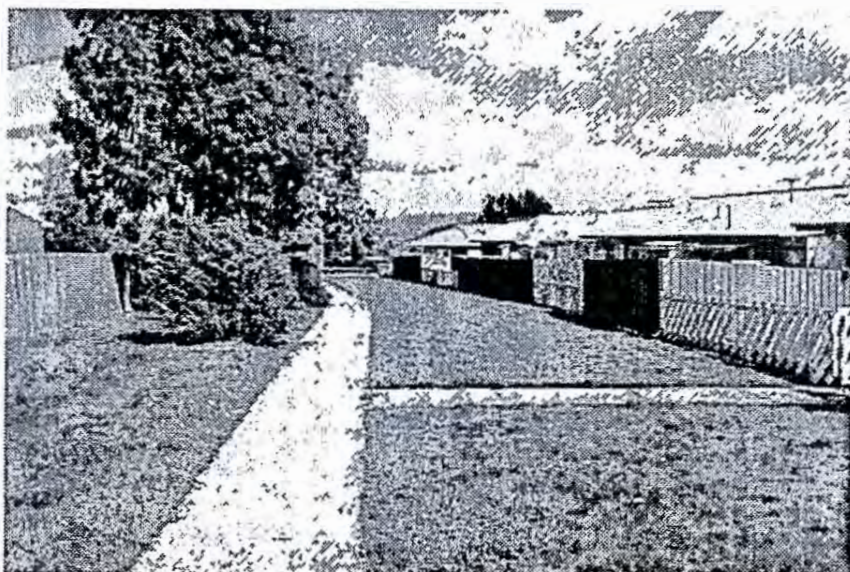
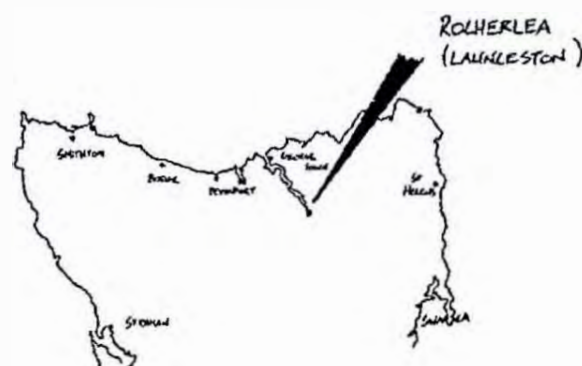
11 1982 - ROCHERLEA

A series of small internal parks closely located or connected by pedestrian pathways.

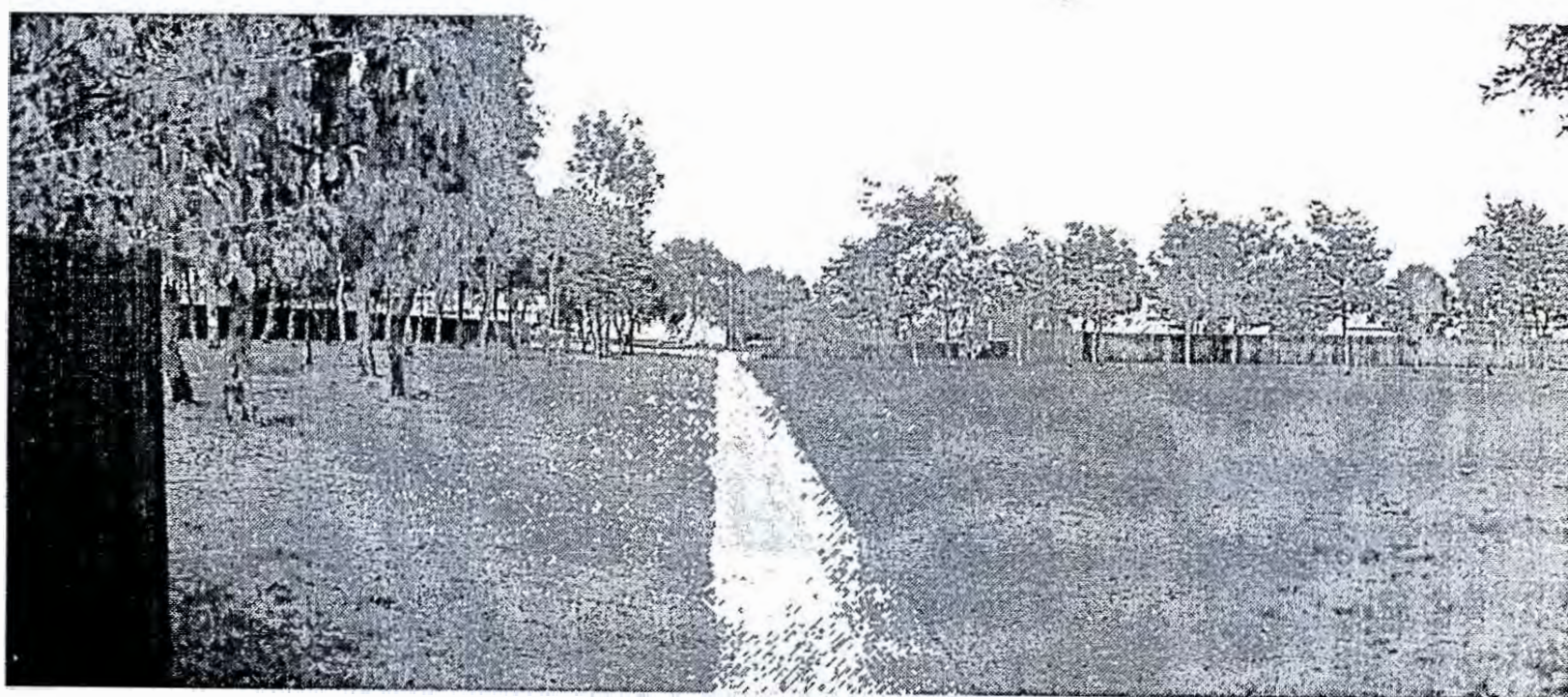
Parks and pathways mostly bordered by high rear fences although some properties have kept fences low and oriented towards the pedestrian space.

Scale of parks reasonable but no focus provided within them.

Generally unattractive or alluring with little landscaping applied.



B



A

APPENDIX 2 - STATISTICAL DETAILS

The statistics detailed below have been either extracted from, or determined using, the following sources:

- Australian Bureau of Statistics - 1991 Census - Hobart Suburbs
- Australian Bureau of Statistics - C Data 91
- Clarence City Council - Land Information System

	Case Study Area	Geilston Bay (S.A.)	Greater Hobart
Percentage of occupied dwellings owned or being purchased by inhabitants	37	81	66
Percentage of occupied dwellings rented from Government	56	6	12
Percentage of population over 15 years earning less than \$30,001	90	77	78
Percentage of population over 15 years earning less than \$12001	50	39	43
Percentage of population over 15 years not in the labour force	43	34	39
Percentage of labour force unemployed	29	7	12
Percentage of population over 15 years with tertiary qualifications	2	8	14
Couples without offspring (as a percentage of all households)	9	27	32
One parent families (as a percentage of all households)	28	10	17
Two parent families (as a percentage of all households)	48	45	50

	Case Study	Geilston Bay(S.A.)	Greater Hobart
Average number of persons per occupied dwelling	3.6	2.7	2.7
Percentage change in population between 1986 and 1991	-3.3	2.9	2.42
Percentage of total population born overseas	6.3	11.0	15.8
Percentage of total population aged 0-4 years	11.8	7.1	7.2
Percentage of total population aged 5-14 years	26.8	17.9	14.8
Percentage of total population aged 65 years or older	2.4	9.2	12.6

NOTES

“Case Study Area” refers to Collector Districts 6051608 & 6051609.

“Geilston Bay (S.A.)” refers to Collector District 6051406.

“Greater Hobart” includes all suburbs except the outlying areas: Fern Tree; Lauderdale; Seven Mile Beach; Midway Point & Sorell

APPENDIX 3 - MAINTENANCE AND ANNUAL COST IMPLICATIONS OF SPORTS GROUNDS, PARKLANDS AND LANEWAYS

From NCDC Urban park guidelines

Area	Model 1 - Sportsground 20 ha	Model 2 - Parkland 20ha in 10 x 2 ha	Model 3 - Laneways 20 ha in narrow laneways
Character	11 ha of level playing surface 9 ha of dry-grass surrounds	Neighbourhood parkland with dry-grassland, tree and shrub plantings, paths, fences on two sides and decomposed granite playground	Dry-grass parkland with one row of trees in each laneway, concrete footpath and fenced both sides
Maintenance Operations (each year)	Playing surface Gang mowing - 38 times Fertilising twice per year Aerating twice per year Surrounds Verge mowing - 14 times Hand mowing around trees - 14 times Hand mowing along edges - 14 times Hand edging along car park and paths - 4 times Fertilising once per year	Verge mowing - 14 times Handmowing around trees and obstructions - 14 times Handmowing along edges - 14 times Hand edging along paths and kerbs - 5/6 times Chip weeds along fence - 4 times Chip hardstanding area (granite) - 4 times Fertilising once per year is carried out only on very heavy wear dry-grass areas around barbecues, playground equipment and boat launching sites	All maintenance is manual Hand mowing - 14 times Hand edging - 5/6 times Chip weeds along fences - 4 times
Cost (p.a.)	Routine work - \$700/ha x 20ha \$14,000 Non-routine - 20% of routine \$2800 Irrigation maintenance - 10% of routine cost of watered area (10% x \$700 x 11ha)- \$770 Cost of water - \$850/ha irrigated \$9350 Total \$26920	Routine work - \$1400/ha x 20ha \$28000 Non-routine - 20% of routine \$5600 Total \$33600	Routine work - \$3100/ha x 20 ha \$62000 Non-routine - 20% of routine \$12000 Total \$74000