10 CONCLUSION

Chapters three to eight in Part II have provided the base data that has been analysed in chapter nine to identify trends and patterns. Chapter 10 draws from the data and analysis to develop a series of conclusions that attempt to answer the questions raised in the first part of this study. These were: what makes a good suburb, why were the early exemplars regarded as innovative and of durable design significance, why do so many suburbs seem lacking in comparison, and finally can we develop a useful framework to design better suburbs?

The first part of this chapter identifies durable characteristics of elements from the form groups studied and analysed. The second section draws from the earlier analysis of social values to identify responsive forms. The third section argues that durable suburbs are those that contain durable characteristics and that respond to values and issues of the day. The two contemporary Case Studies included in this study, Seaside and Newington are examined using the evaluative framework developed here. Finally the fourth section identifies contemporary issues and emerging values assuming that these will require new forms that designers of the suburb will need to respond to over the next decade or more. Again, Seaside and Newington are examined in this context to speculate how current forms may evolve over the next decade/s.

The final chapter concludes by putting forward a possible design framework that may guide the design of better suburbs.

11 APPENDICES

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11.2 SYDNEY RESIDENTIAL PLANNING MODEL CHRONOLOGY

TIME FRAME	MODEL	CURRENT PLANNING SCHEME	EXEMPLARS
1850 – 1890'S	Terrace House	None	Paddington 1880/90's
1900 – 1920'S	Garden City/ Suburb	1909 Royal Enquiry - Sulman's City Beautiful	Daceyville 1912 Haberfield
1920'S	Early City Flats Garden Suburbs		Elizabeth Bay/ Edgecliff Flats / Catlecrag
1945	Post War Expansion/ Prosperity	1948 Cumberland County Plan – Planned Expansion within the greenbelt	Bankstown / Kingsford
1960/ 70'S	High Rise Flats Radburn	1968 Sydney Region Outline Plan – Growth Corridors EP&A Act 1979	Campbelltown / Green Valley / Redfern
1980'S	Urban Consolidation	1988 Metropolitan Plan Dual Occupancy AMCORD Centres Policy	Waverley / Green Valley North West Sector
1990'S TO PRESENT	New Urbanism Sustainable Suburbs Apartment Standards	Better Cities 1991 Commonwealth Biodiversity Act 2000 SEPP 65 Design Excellence	Green Square, Newington, Pyrmont Brownfield Redevelopment

11.3 SIGNIFICANT INTERNATIONAL EVENTS, PLANNING MOVEMENTS, AND EXEMPLARS CHRONOLOGY

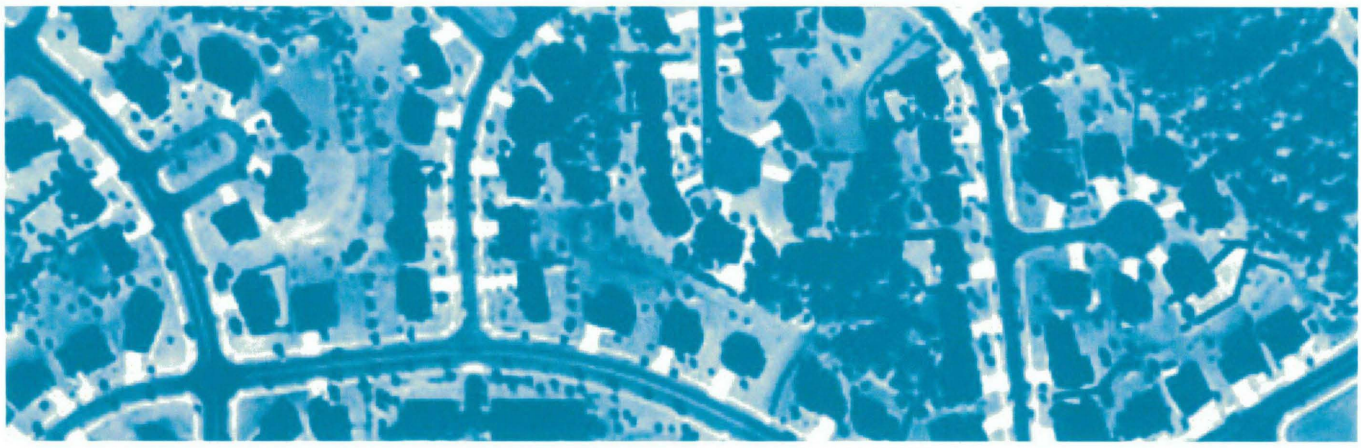
	APPENDIX A						
DATE	Socio-Economic Background	Values	Housing/ Planning Model	Planning Associations/ Acts	Exemplary Metro/ Regional Plan	Exemplary Project	Significant Text
PRE 1880	Industrial Revolution	Rejection of the overcrowded city	Railway Suburb			Riverside 1869	
1880	British Royal Commission 1869	Open Space/ Low Density	Industrial Suburb	Garden City Association 1899			
	Irrigation schemes						
	Queensland strikes	Less Footprint					
1890	Australian Labor Party forms	Utopias/ Reform	Garden City				Tomorrow - A Peaceful Path-Howard-1898
	Run on the Banks (Australia)						
1900	Plague (Syd)/ Slum Clearance		Garden Suburb/ City Beautiful	Garden Cities and Planning Association 1907	Plan of Chicago-1909	Haberfield 1902	Garden Cities of Tomorrow-Howard-1902
					Commision of Enquiry Sydney 1909	Hampstead Garden Suburb 1909	
1910	WWI		Regional City	Regional Planning Association of America 1918	Canberra Plan-1912	Letchworth 1910	Nothing Gained By Overcrowding-Unwin-1912
						Sunshine 1910	
						Forest Hills Gardens 1912	

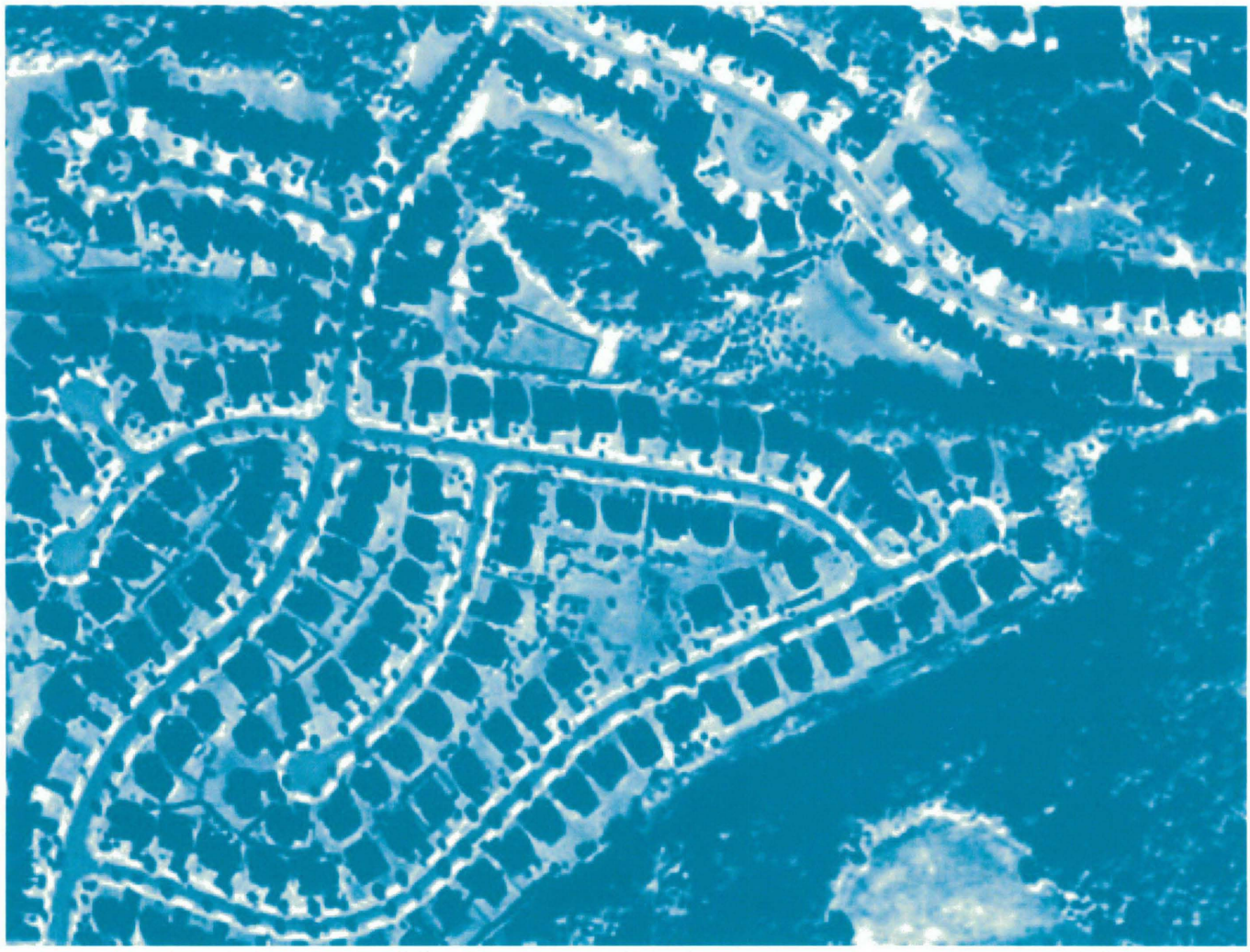
						Dacey Garden Suburb 1912	
					New Delhi Plan-1913	Leeton 1914	Cities in Evolution-Geddes-1915
						Colonel Light Gardens 1917	
						Lutana Village 1919	
1920	Post War Housing Shortage	Rebuilding	Satellite Town/ Ville Radieuse		London Satellite Plan-1920	Welwyn 1920	The 'Survey'-Mumford/ Stein-1925
						Yallourn 1920	
						Castlecrag 1921	
						Sunnyside 1924	
						Garden City Victoria 1925	
						Radburn 1928	
			Radburn Idea/ Super Block		Plan Contemporaine-Paris-1922	Siemenstadt 1929	
1930			Apartment Garden City/ Broadacre City	a	Abercrombie Plan for London-1938		The Culture of Cities-Mumford-1938

1940	WWII		New Towns 1946	NSW Housing Commission 1941	Greater London Plan-1944		Homes in the Sun-Bunning-1945
					Stevenage New Town 1948		
					Harlow New Town 1947	Villawood 1948	
	Post War Housing Shortage			New Town Act-1946	Cumberland Plan-1948		
1950		Rebuilding/ Home ownership	Corridor Plans 1952	NCDC 1958	Finger Plan for Copenhagen-1948	Pruitt Igoe 1955	Sydney's Great Experiment-Winston-1957
					Elizabeth 1954		
					Chandigah plan-1951		
		Modernism'			Brazilia-1956		
					Green Valley 1961		
1960			Corbusian City of Towers (mid 60's)		Helsinki plan-1960		Death and Life of Great American Cities-Jacobs-1961
					New york regional Plan?		The Architecture of the City-Rossi-1962 (Italian)

					Macarthur Centre		
					SROP-1968		
			Ecological Overlay (McHarg) 1969		Rocks Redev Plan-1964		Design with Nature-McHarg-1969
1970	Green Bans 1974/ Oil Crisis	Rejection of the high rise city	Urban Renewal (Modernist rebuild)	DURD 1972-75	Wolloomoloo Redev Plan-1975	Pruitt Igoe blown up 1972	Ideas for Australian Cities-Stretton-1971
		Preservation		Heritage Act 1977			
				National Trust		Sea Ranch	Cities for Sale-Sandercock-1977
	Environmental Movt/ Preservation Movt.	Back to the city/ Higher Density	Decentralisation/ Citizen Participation/ Revolt	EP&A Act 1979			
1980	Recession	Less open space	Design Codes (Essex Design Guide)/ Green Street	New Urbanist Conf 1987	Rocks Preserv Plan-1983	Poundbury 1988	Density by Design-Wentling-1988
			AMCORD	Green Street 1988?	Sydney Metrop Plan-1988	Kentlands	New Urbanism Charter-DPZ-1987
					Pyrmont Plan -1989	Seaside 1987	Vision of Britain-HRH-1987
						Raleigh Park	AMCORD 1988

		More footprint/ no Utpoias	Urban Consolidation/ City of Enterprise 1980's				Cities of Tomorrow-Hall-1988
1990	Better Cities funding 1991	Encourage growth	Global City/ Charette	National Housing Strategy 1991	East Perth Plan		Towards an Eco City-Engwicht-1992
	Urban Renewal				Honeysuckle Plan	Sydney Olympic Plan + OV-1987	Perils of Urban Consolidation-Troy-1996
					Green Square	Stanhope Gardens	
						Breakfast Point	
						East Perth	
	Rio Summit/ Kyoto	Urban Design' in the suburbs					Greenprint for Sydney-TEC-1999
2000	World Trade Towers Blown Up/ Security	Ecological sustainability	Enquiry by Design		Rouse Hill Plan		
	Sydney 'White flight'		SEPP 65 Design Excellence		Parramatta Centre	Second Ponds Creek	
					Hurstville Centre		





10.1 DURABLE FORMS & CHARACTERISTICS

From the analysis above it is apparent that all elements have evolved over time, some into new forms, others return to original forms and some fragmenting into hybridised forms. No form has remained unchanged over the past 120 years. It is therefore unrealistic to expect any form to be robust enough to adapt to different times or circumstances without modification.

There are however, a number of more general characteristics identified for each element that appear to be durable. One or more forms can share these characteristics. There are also forms that do not appear to have been durable. This raises the question of whether any forms have failed altogether. Failure here would mean that the form itself has been rejected in later physical models. As noted in the introduction, this study is limited to physical form and its social context only. The issue of whether a form is a social failure is beyond the scope of this study. Critics of 'Radburn' type solutions in Australia have called the entire Radburn plan a failure, citing the separation of pedestrian and vehicle routes as a fundamental error. As this study has shown, Radburn has in fact introduced many new forms in response to new issues such as the dominance on the car. While the separation of streets and pedestrian paths has not proved durable, the advent of the hierarchical street pattern has endured as a characteristic, even if the actual form developed has not. It is therefore argued here that identifying common characteristics is important in developing a more powerful analytic framework from which to understand suburban form.

A review of the trends identified in this analysis can be seen in table 9.3 Analysis of Evolving Forms andTrends. What can be observed is that the forms of the exemplar and case study are often different. For example the street element form of Radburn is actually different from Macquarie Fields. Perhaps more importantly, Radburn and Macquarie Fields exhibit different characteristics – the dendritic street pattern at Radburn is more connective than the spine and loop pattern at Macquarie Fields. This is an important distinction because one must recognise the characteristics of a model to understand it. Macquarie Fields is quite different in form and character from Radburn, even though Macquarie Fields is commonly referred to as a Radburn estate. The analytic framework set out here that identifies the underlying characteristics of a plan, may better indicate durability, than identifying types as has been the case with Macquarie Fields. This approach will be useful in analysing the many contemporary New Urbanism Case Studies.

While forms continue to change, common characteristics appear to continue. From the data gathered in this report and summarised in tables 9.2 and 9.3 the following common characteristics of suburbs have been identified as more durable than others in table 10.1 below

ELEMENT	DURABLE CHARACTERISTIC	CONCLUSIONS
MASTER PLAN STRUCTURE	o Accommodate links o Urban core easily accessible from major transit routes	
STREET PATTERN	o Are connective but hierarchical o Either grid, grid with short cul-de-sacs or grid o Can be overlaid with another geometry that does not reduce connectivity significantly	Early on non-hierarchical street patterns did not adequately address the increasing use of the private car. Non-hierarchical patterns or patterns dominated by loop or dendritic systems are not durable as they either do not manage traffic congestion or significantly reduce connectivity
BLOCK PATTERN	o Regular configuration o Efficient lot subdivision that can incorporate car courts, small cul-de-sacs or lanes	
SUBDIVISION PATTERN	o lot has defined edges o frontage directly addresses the public street o are regular enough in configuration to accommodate a range of housing types	Subdivision patterns where the lot is not clearly defined, such as at Tapiola or Swinger Hill, have not proved durable, with poorly defined address and an unclear division between public and private domain
OPEN SPACE PATTERN	o Can be a discrete park, linear parkland, or a hybrid of the two o Includes the following characteristics: o Well defined edges (usually a street and sometimes a pathway); - Surveillance from houses at the edges of the space	The linear forms, in exemplars such as Radburn, Macquarie Fields, and Swinger Hill, which do not share the two characteristics noted here, have not proved durable. The linear form has continued because of the need to conserve environmental areas such as creeks and watercourses
BUILT FORM PATTERN	o Durable variants include density concentrated in a central core or linear spine	Models which disperse and mix higher and lower densities, such as Tapiola, Macquarie Fields and Irvine, have not proved durable. Generally higher densities have been located either near transport, especially in the earlier rail dependant suburbs, or near amenity in more contemporary examples where affluent buyers live in apartments. This is discussed in more detail in section 10.3

10.1 Durable Characteristics

HOUSING DESIGN	o Provide a high level of functional design o Has a clear address and street presence o Is sufficiently flexible to adapt to future needs. Both site specific design and codes can share this characteristic.	Dwellings at Radburn and Macquarie Fields, designed to minimum functional requirements have proved too inflexible to meet current standards. They were designed specifically to respond to the separated road and pedestrian network. The street pattern has not proved durable, neither have the dwellings. Houses at Swinger Hill were relatively small with little street presence. Contemporary exemplars, Newington and Seaside, include either architecturally or specially designed and design guidelines. Both offer a high level of functional design, amenity, and street presence. In the case of Newington, the houses are designed specifically for small lots. While the design is of high amenity, the small lots may prove inflexible for future changing needs. The fit may be too 'tight'.

10.2 APPLYING THE EVALUATIVE FRAMEWORK

10.2.1 DURABLE CHARACTERISTICS OF CURRENT PRACTICE

What then are the durable characteristics of contemporary models? For the purposes of this study, New Urbanism is still considered to be the most widely adopted model amongst recognised best practice, even though it is accepted that most standard subdivisions may only contain some of the characteristics of New Urbanism. This has also been the case in the past.

As described in previous sections, the New Urbanist exemplars have developed a more traditional urban design approach and philosophy. They have also tried to re-introduce the concept of 'place' or 'place making' that is lacking in the mass subdivision. They also appear to also address one of the questions raised in this study – why do so many contemporary suburbs appear to be lacking when compared to the earlier exemplars?

The evaluative framework developed here can be applied to New Urbanism with regards to both the elements of form and whether they include enduring characteristics as follows:

- The master plan structure appears to be durable containing an urban core with good street links to the rest of the suburb

- Street patterns are generally connective, but not always hierarchical. Whether or not a street pattern should be hierarchical is a point of debate between those who believe that a grid distributes traffic more evenly and some traffic engineers who believe that it is inefficient and creates congestion. This study would suggest that concern is justified and closer study of New Urbanist street patterns is warranted. Refereed articles reviewed as part of this study are not conclusive. A study by Brown &Werner found that residents of cul-de-sac streets in lower density developments experienced a higher level of neighbouring. At the same time, 84% of residents at Calthorpe's Laguna West preferred the pedestrian emphasis of New Urbanist developments. [113]

- While connective street patterns appear to be durable, non-hierarchical patterns, especially on a larger scale may not be.

- Block Patterns are regular but sometimes modified to including car courts and some cul-de-sacss. Both patterns would appear to be durable.

- Subdivision patterns generally have defined edges, with frontages directly addressing the street. In both cases the division between public and private domain is well defined. Both forms are considered to be durable

- Open Space Patterns are generally well defined at the edges and adopt both linear and more discrete forms. Both forms would appear to be durable

- Built Form Patterns vary, with density concentrated either at the urban core or in a more linear pattern. Common characteristics are therefore more difficult to identify. It would appear that earlier models concentrated density in rental accomodation around transport, while later models have located density near amenity as more affluent buyers own cars. Whether this is sustainable in the future will be discussed in the next section. Further study on the characteristics of built form is required. In principle, proximity to transport and amenity both need to be considered

113 From New Urban and Standard Subdivisions – Evaluating Psychological and Social Goals, Barbara B Brown and Vivian L Cropper , APA Journal Autumn 2001, Vol 67 No4

- Housing Design is generally functional, with a strong sense of address and street presence. Design guidelines require integration of lot configuration and the dwelling, with relatively large houses located on small lots. Whether the relationship between house and lot is sufficiently flexible for changing future needs has not been ascertained in this study. Therefore while these forms may be durable, the potential flexibility of the detached dwellings on small lots requires further study.

10.2.2 EMERGING ISSUES AND VALUES

Will current models satisfactorily address the emerging issues of the future? Table 9.4a notes the issues that New Urbanism has responded to. This included the widespread loss of historic neighbourhoods in the late 1960's as witnessed by New Urbanism's leading practitioners such as Andres Duany, student of architecture in New Haven at the time of the physical destruction of communities[114] . The best known New Urbanism text, The New Urbanism –Towards an Architecture of Community, makes its values quite clear in the title. Its conscious rejection of modernist planning is also clear in the title's adaptation of the famous Le Corbusier 'Towards a New Architecture', replacing 'new' with 'community'. The concern with a lack of community also questioned the standard subdivision practice of the day where the private domain and car based transport became the dominant elements of most suburbs. As this study noted in the introduction, Robert Freestone believes that the most significant contribution of the Garden Suburb model is that it 'improved' the urban environment' of the average dweller. This objective was certainly central to the New Urbanists in their desire to create communities.

The New Urbanist Model has done this by reinstating the importance of the public domain, most importantly the street as a key element that supports community. Much of the codification developed by the New Urbanists require that houses contribute to the street as a place, either better addressing it and including traditional elements such as the porch or verandah where the resident may spend time in the space between the house and street providing the opportunity to socialise with others.

These issues are now however some twenty years old. What are today's issues and does New Urbanism respond to them or will new forms be required? The hypothesis underlying this study is that future suburbs will continue to develop new forms, responding to emerging issues of the day and the social values underlying them, as well as retaining the durable characteristics of elements.

It could be argued that the issues emerging today are as important as the social issues of the nineteenth and twentieth centuries. Any review of current literature reveals that environmental sustainability including climate change, global warming, water shortages, and the loss of non renewable energy sources, specifically petrol dominate current thinking as evidenced by any survey of newsprint and other media. Social values underlying Sustainable Development include 'balancing the fulfilment of human needs with the protection of the natural environment so that these needs can be met not only in the present, but in the indefinite future'[115]. It could also be argued that there is an emerging schism as the values underlying sustainability are in conflict with the values of consumerism. Not surprisingly there is not widespread agreement on how to respond to these issues.

114 Noted by Sculley in his afterward in Katz, P, New Urbanism: Toward an Architecture of Community, 1993, McGraw-Hill Professional

115 Quoted from the Rio Summit: ref United Nations. 1987. 'Report of the World Commission on Environment and Development.' General Assembly Resolution 42/187, 11 December 1987

The Australian Commonwealth government and opposition have adopted widely different responses to the Kyoto Agreement to limit greenhouse gases[116] .

From what has been argued here responsive forms will need to respond to such significant issues of the day.

These issues are however some three decades old. What are today's issues and does New Urbanism respond to them or will new forms be required? The hypothesis underlying this study is that future suburbs will continue to develop new forms, responding to emerging issues of the day and the social values underlying them, as well as retaining the durable characteristics of elements.

The issues currently emerging today are as important as the social issues of the nineteenth and twentieth centuries. Any review of current literature reveals that environmental sustainability including climate change, including global warming and water shortages, the loss of non renewable energy sources, specifically petrol; dominate current affairs as evidenced by any survey of newsprint and other media. The social values underlying Sustainable Development include 'balancing the fulfilment of human needs with the protection of the natural environment so that these needs can be met not only in the present, but in the indefinite future'[117].

There is not widespread agreement on how to respond to these issues. The Australian Commonwealth government and opposition have adopted widely different responses to the Kyoto Agreement to limit greenhouse gasses[118] .
How then can responsive forms that respond to such significant issues be developed?

10.3 APPLYING THE ANALYTIC FRAMEWORK TO FUTURE PRACTICE

The final part of this study applies the analytic framework developed here to speculate on future practice. This examination includes a review of both durable characteristics and responsive forms.

10.3.1 DURABLE CHARACTERISTICS

Section 10.1 above has identified a series of durable characteristics and 10.2.1 then examined the characteristics of contemporary practice in New Urbanist work.

Section 10.2.1 also identified a number of elements that may not be durable. It is therefore important to review current work against the common characteristics identified in 10.1 as well as carrying out further investigation of the areas of concern identified there.

It is therefore important to review current practice to determine whether it includes the durable characteristics identified here, especially characteristics where they have been identified as potentially non durable in the current exemplar and Australian case study.

116 Refer the 7.30 Report of 31st May 2007, ' Having castigated Labor leader Kevin Rudd for embracing emission targets before considering their impact on the Australian economy, Mr Howard is now expected to embrace much more conservative targets than Labor'. Note that the final draft of this study was completed prior to the last federal election

117 Quoted from the Rio summit: ref United Nations. 1987. 'Report of the World Commission on Environment and Development.' General Assembly Resolution 42/187, 11 December 1987.

118 Refer the 7.30 Report of 31st may 2007, ' Having castigated Labor leader Kevin Rudd for embracing emission targets before considering their impact on the Australian economy, Mr Howard is now expected to embrace much more conservative targets than Labor'

10.3.2 RESPONSIVE FUTURE FORMS

Further more, the framework developed here requires that we speculate on what future forms may need to respond to the evolving issue of sustainability. The section below does this by examining each of the elements and common characteristics documented here and examines whether they do or don't respond to sustainability issues:

- **Master Plan Structure** – Given the possibility of exhausting non renewable resources and increasing transport costs we can speculate that it will not be sustainable to plan suburbs in isolation from transport infrastructure. Broader sub regional plans will need to identify more comprehensive transport networks. Suburbs and master planned areas within them will then need to link to that transport system. This hierarchy of planning is currently contemplated in the new release areas of Sydney[119] , but the level of transport infrastructure proposed is not adequate to permit the majority of residents to walk to convenient public transport. Note that Ebenezer Howard's vision was based on a regional structure.

  More connective plans with good links to the urban core located close to transport routes would support better public transport if indeed a modal split towards public transport occurs. With regards to master plan structure, the urban core should be located so that the major transit route does not divide the community within the neighbourhood. This would suggest that the urban core be located away from the centre of the neighbourhood on the transit route. Many current plans do not have strong nodes or cores.

  It may be that the Rail Suburb model provides good precedent. The issue of density is discussed in Built Form below.

  Master plan structure may also be modified by changing open space patterns as described below, to respond to environmental factors.

- **Street Pattern** - Future sub-divisions may require that dwellings are located within walking distance of either a transport node or route as noted above. The form of these nodes may evolve from the currently widely spaced rail station to more closely linked metro rail stops advocated by the Transit Oriented Development (TOD) advocates such as Calthorpe[120]. While such transit systems have been advocated for at least a decade few have been built. This is not surprising as the infrastructure required is significant. Sydney's solution may be a network of buses or a combination of the two.

  Street patterns that link the urban core and the majority of dwellings to a transport route will be required. Such a street pattern could still overlay some sort of geometry over a connective grid or similar providing that the streets between the majority of dwellings provide a direct route to the transport route.

- Block Pattern – The current block forms of Seaside and Newington would both appear to be capable to responding to environmental sustainability as the need for better access to transit while retaining a form of hierarchical street patterns can be accommodated by both the traditional and modified block form. This form can also accommodate a variety of subdivision patterns as noted below. The forms of both may therefore be durable into the future.

119 In the North West and South West sectors The Growth Centres Commission together with the local Council will develop a precinct plan that is then approved by the State Government. Refer to www.metrostrategy.nsw.gov.au

120 Refer Peter Calthorpe, The Next American Metropolis: Eology, Community, and the American Dream, 1993, Princeton Architectural Press, NY. Note also that this draft was completed prior to the announcement of the North West Metro

- **Subdivision/ Lot Pattern** - Energy and water efficiency, as well as street pattern and house design may be the drivers of future subdivision and lot patterns. Forms that achieve a high degree of solar access to both the dwelling and garden areas will be more sustainable. Bearing in mind the durable characteristics identified in this study, forms that address orientation, but do not for example, address the street will not be durable as it will create a lower amenity public domain. This can be seen in a number of suburbs where houses or townhouses were skewed to the street alignment to optimise solar orientation. This can be seen at Macquarie Fields.

  With regards to increased density on traditional lots it can be concluded that lot sizes that are tightly tailored to the dwelling will be too inflexible. It has been seen that houses have continued to increase in size. Exemplars where houses are placed on small lots such as Radburn have proved not to be durable, whereas exemplars such as Forest Hills Gardens and indeed Daceyville[121] have been capable of modification.

  One solution may be to require more tolerance between house and lot size where lots are small.

- **Open Space Pattern** – The use, function, and configuration of open space will need to respond to the requirements of a more environmentally sustainable suburb. Issues may will water conservation, water quality, biodiversity, salinity and soil degradation.

  Changing demographic profiles and the aging population may also impact on how open space is used.

  The durable characteristics identified for open space relate to how the space is defined and surveillance provided rather than on favouring one configuration over another. It therefore follows that a variety of configurations will be durable provided that these characteristics are addressed.

  Increasingly open space areas will perform both a recreational and environmental function. As suburbs spread beyond the metropolitan core, they will incorporate significant areas of natural ecosystems including vegetation, fauna and watercourses, or areas that have been previously cleared and may be degraded. Ongoing maintenance will become a significant impost either on the residents or the local authority. It would therefore seem logical that open spaces in the future must require less maintenance yet continue to serve both a recreational and environmental function.

  Future forms may be driven by natural systems and features of a site and provided that the spaces are well defined with good levels of surveillance then the form may be durable. This suggests that more linear open space forms, defined by streets with dwellings with surveillance over the open space will be developed. Because of the costs of maintenance and potential loss of developable land areas, the dual recreational and environmental function of areas will predominate. Significant areas of highly maintained open space that serve no environmental purpose will not be sustainable. The newly emerging discipline of Water Sensitive Urban Design (WSUD) will in all likelihood become more mainstream, developing more self sustaining systems.

121 In 1982 The Housing Department of NSW undertook major infill developments, in which great pains were taken to design in harmony with the older buildings and rehabilitation of 170 existing cottages. Sympathetic new buildings were sited in land taken from former back yards of older houses in order to increase residential density, changing the original subdivision of the land

- **Built Form** – The need for dwellings to be close to public transport routes suggests that the distribution of density should maximise the number of residents living close to such routes. Recognising that apartments in Australia have a significantly higher rate of owner occupiers than in the United States, locating higher densities at transport nodes may not satisfy the desires of potential owners. The amenity of centres needs more careful consideration as does understanding the demographic characteristics of those who may choose to live at higher densities. The role of building types is discussed below in Dwelling Design.

  It may be that the more durable form of density distribution is where nodes, bus routes and areas of higher amenity are planned in concert.

- **Dwelling Design** - Environmental sustainability may become a significant driver of dwelling design in the next decade. Increasing energy efficiency standards are impacting all forms of dwellings from apartments to detached houses. Whether detached dwellings will continue to increase in size as energy costs rise is not known.

  This evidence suggests that a range of dwelling types will continue to be required in the future suburb and that sustainable forms of a range of dwelling types is required, rather than simply advocating that only certain dwelling types such as apartments be provided. Too much standardisation may create dwellings that are too inflexible.

  While it is unclear what housing types will appeal to future households, it is evident that the population profile is aging. Given that flexibility is a characteristic of durability it is logical that dwellings that are not flexible enough to accommodate the aging population will not be durable. Again affordability is a competing force as providing lifts in low rise apartments, or more single storey dwellings on expensive land, cost more.

  With regards to density, the market realities of buyers need to be understood and incorporated in planning codes. It may be that lower rise terraces and apartments are more appealing while still creating high quality urban cores. We should heed Freestone's observation that 'improved' urban environments have distinguished the exemplars of the past and there is no evidence to presume that this will change

10.4 SYNTHESIS – BETTER URBAN ENVIRONMENTS

Finally, we return to the central question posed: 'What makes a good suburb?' While the bulk of this dissertation has been comparative and analytic, the answer lies in a design process that synthesises the elements discussed here to create good urban environments. From the analysis, a number of distinctive common traits or qualities are seen in the exemplars. These qualities are a result of the design integrating the elements. While the exemplars have created new forms, they have also integrated these into a strong and distinctive urban form – a clearly defined community core or heart. There is a strong sense of place that extends from the entry throughout each of the neighbourhoods, well connected to the rest of the suburb. The built form is distinctive, and varies from urban environments, well defined by buildings, to more gardenesque environments where landscape dominates. While the elements may be distinctive, they are relatively simple and consequently flexible. Again, design is important – as described previously the apparently simple street patterns of Forest Hills Gardens, Hampstead, and Seaside cleverly synthesise an axial or other distinctive geometry with a simple connective grid. While we have discovered here that the street pattern at Radburn is actually more connective than Macquarie Fields, the grid pattern while creating quiet cul-de-sacs does not create distinctive places as described above. It does not synthesise the various elements of street pattern, open space and built form into a cohesive whole.

This study has identified inflexibility as the most common trait of less successful suburbs. This lack of an ability to accommodate change is a result of forms that are narrowly designed for only one function and are therefore too specific, for example specialised street patterns, house types, lot and open space patterns.

The reasons range from economic factors bringing pressure to bear, to new forms developed to deal with a specific problems or issues. In this case, the new form is not durable because, while it may solve a specific problem, it does not synthesise the elements together to create a better urban environment. While Hampstead Garden Suburb introduced the cul-de-sac, and hierarchical street pattern, it also created distinctive places, maintaining a connected community, an urban core etc. The design of the cul-de-sac at Hampstead was not narrowly considered on a purely functional basis, but very carefully considered so that a strong sense of place was created. At Radburn, the cul-de-sac was designed for a very specific functional purpose – to solve the traffic problem created by the car. This became its sole function. It was not designed as a place or address. As a result it has proved too inflexible and unable to be easily modified. In this sense it is unsustainable.

The lesson that stands out from this study is that a better urban environment will result from a design process that considers each of the elements of form and synthesising them while developing new forms that respond to social issues of the day. If a new form is inflexible and considered only in a narrow functional context, it will in all likelihood fail to create good suburban form.