School of Design and the Built Environment

The Impact of Urban Consolidation on the Planning and Management of Open Space in Western Australia

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Human Ethics The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number BE-71-2014.

Signature:

Date: 11 May 2021

Abstract

Urban consolidation has become a primary policy goal of many large cities in Western nations. Planning authorities believe there is a need to promote higher dwelling and population densities in existing urban areas to slow the growth of cities on the urban periphery, provide an alternative to low-density suburban development and improve sustainability. As part of the recognition that genuine sustainability is difficult to achieve some cities have shifted their focus towards liveability when promoting urban consolidation.

There are many elements of liveability in urban areas, including the provision of open space. There is concern that increases in dwelling density might require changes in open space policy to ensure that liveability does not deteriorate in denser environments. Increasing dwelling densities may see declines in private open space, without any compensating change in public open space policy. The policies that deal with matters relating to public and private open space are often created in isolation and not linked.

A mixed methods approach was adopted to investigate sample areas undergoing urban consolidation within three local government areas in the greater Perth region[1], Western Australia. Perth was seen as an exemplar for low density cities across Australia, North America and parts of Europe that have relatively generous open space provision, but are adopting densification policies that have not explicitly considered the impact on open space, and in turn liveability. A combination of semi-structured interviews with officers at the chosen local governments, spatial analysis of open space provision and content analysis of key open space planning documents were utilised. Open space provision was examined, problems related to open space in areas undergoing urban consolidation were identified and potential solutions to open space planning and management in light of densification were investigated.

The research revealed that although there were concerns around open space provision in areas where urban consolidation was undertaken, there were many other problems that were considered more important, including but not limited to; pressure to provide open space for sport, responding to climate change and the cost of open space maintenance. There was a willingness to explore alternative solutions to under provision of open spaces, but within the bounds of cost and efficiency. There was significant hesitation by local governments in involving all stakeholders in deeper engagement in open space policy and processes.

The research was carried out through the lens of liveability[2] and governance. Decisions regarding open space were often based on presumed liveability; assumptions were made by local governments regarding what was best for residents of areas undergoing urban consolidation. Simultaneously governance was centred around regulation and "governance by government," although there had been limited community involvement in open space planning and management. The combination of top-down urban managerialism, underpinned by neoliberal ideology, with an emphasis on cost containment and financial viability, and the propensity for divided responsibilities over aspects of open space, together with the distinction between private and public open spaces has created fragmented governance within local government, and between other government agencies. This fragmented governance jeopardises elements of liveability, and impedes the prospect of more holistic approaches to open space planning and management within higher density urban environments.

The research points to the challenges linked to quantitative "one size fits all" standards for open space provision in areas undergoing urban consolidation and the need for further cross-cultural and situational qualitative studies to better understand the lived experiences of residents of suburbs being densified. The study highlights that urban planning still has a role to play in investigating urban environments undergoing change and problems that emerge from these changes.

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List of Abbreviations and Acronyms

1. Australian Bureau of Statistics (ABS)
2. *Canning Bridge Activity Centre Plan (CBACP)*
3. Central Business District (CBD)
4. City of Cockburn (CoC)
5. City of Mandurah (CoM)
6. City of South Perth (CoSP)
7. Department of Education (DoE)
8. Department of Planning (DoP)
9. Department of Sport and Recreation (DSR)
10. *Development Control Policy 2.3: Public Open Space in Residential Areas (DC2.3)*
11. *Directions 2031 and Beyond (D2031*)
12. *Inner Mandurah Precinct Plan (IMPP)*
13. *Liveable Neighbourhoods (LN)*
14. Local government area (LGA)
15. Local planning policy (LPP)
16. Local Planning Scheme (LPS)
17. *Mandurah City Centre Precinct Plan (MCCPP)*
18. *Mandurah Junction Structure Plan (MJSP)*
19. *Mandurah Ocean Marina Outline Development Plan (MOMODP)*
20. *Mandurah Terrace Precinct Plan (MTPP)*
21. Metropolitan Region Improvement Tax (MRIT)
22. *Metropolitan Region Scheme (MRS)*
23. *Perth and Peel@3.5Million (P&P@3.5M)*
24. Public open space (POS)
25. Regional open space (ROS)
26. *State Planning Policy 3.1 Residential Design Codes (R-Codes)*
27. *Stephenson Hepburn Plan (SH Plan)*
28. United Kingdom (UK)
29. United States of America (USA)
30. Urban green space (UGS)
31. Western Australia (WA)
32. Western Australian Planning Commission (WAPC)

Chapter 1 Introduction

Urbanisation, or the increasing proportion of people residing in urban centres compared to non-urban areas, is a process that has been occurring since ancient times (Fooks 1946; Girardet 2008; Burdett and Rode 2011; Fiedler 2014). It accelerated over the twentieth and early twenty-first century and by 2016 over 50 per cent of the world's population lived in urban areas. By 2030 it is forecast that this will increase to 60 per cent (Burdett and Rode 2011; United Nations 2016a).

The growth of cities has produced many benefits, but also created significant problems. Cities provided employment for residents, and a market for products. They also allowed people and goods to travel to destinations more quickly (Girardet 2008; Fiedler 2014). By nature, the process of urbanisation saw cities become denser over time and many problems have emerged in these denser urban centres including ageing infrastructure, crowding and pollution (Pacione 2003).

Low-density residential suburbs have been a feature of cities in many developed nations during much of the twentieth century, although the suburbanisation of the urban population accelerated after World War Two. Developed nations like the United States of America (US) and Australia housed returning servicemen and their families in new suburbs on the fringes of existing cities at the same time as the emergence of the global long boom allowed many families to escape the negative characteristics of older, inner cities including congestion and pollution. This model of development underpinned the idea of the "American Dream" which was replicated in Australia as the "Great Australian Dream" (Freestone 1982). Housing typically consisted of detached single storey dwellings located in low-density residential suburbs. The key features of this form of suburbia included generous backyards, large dwelling setbacks and wide streets and verges. This promoted a sense of spaciousness that was seen to characterise "highly liveable environments" (Weller 2009).

Liveability[3] was the key attraction for those people choosing to move to these suburbs. However, there were many complicating factors. Employment, retail, and commercial areas were located significant distances from homes and people came to rely on cars for the vital link between home and work. Car dependency was integrated into the fabric and culture of suburban life (Freestone 2010; Hedgcock and Brunner 2015).

This form of low-density suburban development became known as “urban sprawl” which carried both positive and negative connotations. Galster et al (2001, 685) characterised it as urbanisation with ‘‘low levels of some combination of density, continuity, concentration, clustering, centrality, nuclearity, mixed uses and proximity’’. Alternatively, Peiser (2001, 278) described it as “gluttonous use of land, uninterrupted monotonous development, leapfrog discontinuous development and inefficient use of land’’.

While suburbanisation was promoted on the basis of liveability there were increasing questions about its long-term sustainability. Urban development at low dwelling densities consumed farmland and environmentally sensitive areas (Weller 2009). Governments and business became concerned with the cost of providing services and infrastructure to dispersed cities (Orchard 1999). Greater distances forced people to become increasingly car dependent with far reaching consequences including air pollution, traffic congestion, lengthier commutes, declining productivity, as well as the depletion of non-renewable resources. Walking and cycling became impractical and unsafe in car dominated road environments (Dantzig and Saaty 1973).

Urban consolidation or policies and practices that increased the dwelling and population densities of urban areas (Newton and Glackin 2014) was seen as a solution to some of these problems. The policy has a long history, with many cities around the world implementing urban consolidation strategies. Supporters claim that there were significant sustainability benefits (Newman and Kenworthy 1989; Collie 1990; Jenks, Burton and Williams 1996; Newman 2014; Cervero, Guerra and Al 2017; Crommelin et al 2017; Ewing 2017). Conversely opponents believe that the benefits were overstated, and significant sacrifices had to be made by residents in areas undergoing densification (Stretton 1989; Troy 1996: Newton et al 2014).

A governance challenge also emerged as policymakers attempted to improve sustainability outcomes while simultaneously maintaining liveability. In many cases this brought residents of lower density areas into conflict with planning authorities and this has played out in the political debates circulating at all levels of urban governance (Ruming, Houston and Amati 2011). This has emerged in parallel to the growing urgency for urban areas to accommodate further increases in dwelling and population densities and the increasing pressure being felt on a wide range of facilities and services that have underpinned the concept of liveability.

The loss of open space in areas undergoing consolidation has been the touchstone of much of the community's concerns as areas of both private and public open space have disappeared to accommodate planned increases in housing density (Hall 2007; Brunner and Cozens 2010; Searle 2011; Lin et al 2015). Not only has this seen the perception of the spaciousness of suburban being threatened it has removed large swathes of landscaped spaces from public view and use (Hall 2007; Brunner and Cozens 2010; Searle 2011; Lin et al 2015).

While the loss of open space has dominated community concerns it has also been projected into political debates around the built and natural form outcomes that are commensurate with higher residential densities. Within this debate has been issues regarding the extent and type of private open space provided in newly developed residential units, (Hall 2007; Brunner and Cozens 2012;) as well as the broader concerns surrounding the accommodation of public recreation demands that are emerging from the changing community structures that have followed the densification process (Dahman et al 2010; Searle 2011). This has been characterised as a considerable challenge to the suburban liveability mantra (Searle 2011; McCrae and Walters 2012).

Urban planning both creates and protects open space through regulatory and policy means (interventions) such as subdivision and development controls and land use zoning. Urban planners and managers working in the field of urban consolidation are now caught between the competing forces of liveability, sustainability and the density targets that are being promoted by city governments (Newton and Glackin 2014; Hedgcock and Brunner 2015). Planners are required to function as mediators between development interests, city governments and residents living in densifying areas, as well as ensuring the interests of those wanting more affordable and sustainable housing close to employment, recreation and commercial opportunities can be provided.

There is the potential that as cities grow larger spatial inequality between areas that are being densified might emerge. More affluent areas may be insulated from the changes that are being imposed on areas of cities with less favourable socio-economic criteria. Areas with wealth and influence may be able to slow densification, limit its implementation or impose requirements on the development process that ensure that less liveable environments are not created where densification is undertaken.

1.1 Research Question

Given this background the research question being posed by this thesis is as follows;

"How does the changing nature of urban form, with a focus on urban consolidation and densification, impact on the planning and management of open space in urban areas?"

To pursue the dimensions of this question the following research objectives will be researched;

1. Locate the research on urban consolidation and open space planning and management within liveability and governance frameworks.
2. Investigate how governance frameworks have adapted to denser urban environments.
3. Examine how urban planning has responded to open space planning and management under policies of urban consolidation.
4. Assess the potential effectiveness of governance frameworks in providing open space in denser urban environments.

1.2 Significance of the Research

The significance of the research can be framed around three key propositions.

1. Liveability has considerable importance in debates around the present and future qualities of urban environments.
2. Governance has an important role to play in planning and managing change in urban environments.
3. The planning and management of open space is a considered a critical element in changing urban environments particularly in those areas that are undergoing increases in dwelling and population densities as a result of urban consolidation strategies.

Liveability was chosen as a concept to investigate because it is now widely used by governments across the globe as a goal of urban policy. It is regularly mentioned by the media when liveability indices are released and city strengths and weaknesses are highlighted, and it is increasingly used by organisations, including governments, when they promote urban consolidation (Forster 2002; McCrea and Walters 2012; Lloyd, Fullagar and Reid 2016). It is also a contested concept with significant disagreement about its dimensions and qualities which presents an enormous challenge in operationalising it as a policy objective.

Yet liveability has become an increasingly prominent feature of planning documents and discussion throughout the developed world. Recent research by Parker and Simpson (2018) highlighted that there is considerable interest in the link between liveability and parks, open space, and other urban green infrastructure and that a considerable amount of this

research is concentrated in Australia, the United Kingdom (UK) and the US. It is in these countries that increasing concern is being shown towards the relationship between liveability and open space in cities because of changes in urban form, including urban consolidation.

The Australian planning system has inherited many ideas from overseas countries but particularly from the Anglo-Western sphere. Historically, there is a tradition of adopting British and American urban planning ideas including those centred on urban consolidation, open space, and liveability (Freestone 2010).

By way of example the Western Australian government has adopted a policy document *Liveable Neighbourhoods (LN)* that provides considerable planning guidance for residential development in WA (Department of Planning 2015a). The document positions liveability as the key guiding principle that drives design outcomes for new urban development in Western Australia (WA). The document includes specific guidelines relating to the provision, and design of open space to ensure the creation of liveable residential suburbs.

There have been significant debates over the years regarding the function of planning. As part of these debates the way planners and managers interact with residents and communities has generated increasing interest in governance processes that include not only traditional government roles, but also recognises the role of the broader community in decision-making (Taylor 1998).

In this thesis questions are asked about the role of open space in urban areas that are undergoing increases in dwelling and population density and whether sufficient effort has been made altering the approach to open space planning and management in light of the pursuit of urban consolidation and its possible impacts on liveability.

In parallel to this has been changes occurring in the scope of urban planning. Although most planners are still working in strategic and statutory planning of development there has been the emergence of planners that engage in place making, place activation and recreational planning. Although engineering and parks and gardens departments within local government are central to the ongoing planning and management of open spaces planners are increasingly becoming important stakeholders to ensure that issues around liveability are considered when planning urban development (McCrea and Walters 2012).

Open space is a field where planning can and does have influence beyond private development decisions. Public open space (POS) has been founded in the public realm

within a framework of public interest obligations and requires ongoing planning involvement as the culture around facility provision and management becomes increasingly contested.

There are close links between liveability, open space, and governance. The liveability of urban environments can, in part, be determined by the location, quantity and quality of open space. Although open space alone will not determine liveability it does have an important influence as recognised by the many government policy documents which reference open space as a component of the concept (WAPC 2010a; Department of Infrastructure and Transport 2011; WAPC 2015a; Department of Planning 2015a), as well as the considerable research which has been carried out in the area (Parker and Simpson 2018).

The research revealed that there is significant focus on large cities with extremely high population densities and low open space provision. Perth is an exemplar for other similar cities across North America, Europe and Australia that have relatively generous open space provision and relatively low population densities. These cities have a long history of suburbanisation (low density urban development across large areas with clearly delineated suburbs predominantly with residential zoning) but are promoting densification to address environmental and economic concerns. This shift in urban planning policy has the potential to create significant issues in terms of liveability and there is concern that the current deliberations around open space are not keeping pace with the rate of urban consolidation. Cities such as Melbourne and Sydney in Australia are seeing concerns raised about urban consolidation policies. In the promotion of higher densities some argue that the liveability impacts of higher density have been ignored and the possible mitigating influence of open space is only considered as an afterthought, rather than being integral to the urban consolidation process. Toronto in Canada and European cities such as Paris, Lyon, London, and Stockholm are all promoting densification, and although they have much higher populations and densities there is the potential for Perth to provide lessons to areas within the cities that are being impacted by urban consolidation.

1.3 Key Definitions

There are several key terms that will be used in the thesis that need to be defined. An introductory definition is included here and will be expanded upon in subsequent chapters. These terms include the following;

- Liveability

- Governance
- Open space
- Planning interventions
- Urban consolidation

There are many definitions and characteristics of liveability, however, Gough (2015, 147) provides a valuable definition that is utilised in this thesis when considering the concept; "the sum of the physical and social characteristics experienced in places including the natural environment and a walkable and mixed use built environment, economic potential near diverse housing options, and access to a broad range of services, facilities and amenities that add up to a community's quality of life". It is recognised there are many elements of the urban environment that can influence liveability and the perspective of those assessing or measuring liveability affects the value of the concept. The definition includes natural and man-made features in the urban environment through which people experience the environment in which they live. This definition is seen as most appropriate for use in this thesis. Further discussion of liveability is undertaken in Chapter 3.

In this thesis the definition by Khan, George and Brunner (2015) is utilised. Governance refers not only to the institutions and processes of formal government, but also formal and informal groups and organisations that participate in provision of goods and services previously provided only by government (Khan, George and Brunner 2015). This definition is chosen because it is broad and includes both the state and local governments, as well as volunteer and community groups and individuals that are part of the community that either participate in the planning and management of open space or can become involved in such processes. The concept of governance is examined in Chapter 4.

A broad definition of open space is utilised throughout this thesis. Open space is equated to public open space (POS), urban green space (UGS), urban open space, parks, and green space. Generally, it is part of the public realm and under the control of local or state government and has been set aside for a variety of functions including formal and informal recreation, socialisation, climate regulation, urban agriculture and drainage and typically does not include commercial or residential development. (The definition does not preclude commercial functions that may compliment the use of the open space. This contrasts with private open space which is owned or managed by private stakeholders.) It may include verges and other surplus land that has been overlooked as open space. The definition utilised is wider than the definition used in many local and state government documents

because legally defined open spaces may not be the only areas that can serve open space functions. Additionally, individuals and organisations are increasingly more willing to view open space as a flexible space that has multiple functions and can be provided by government or private interests. Further discussion of the definition of open space occurs in Chapter 5.

Planning interventions can include a range of measures taken by the governing authorities of urban areas to regulate and manage planning and development within towns and cities. Intervention can be by way of legislation and policy that imposes requirements on the landowners and developers to achieve certain outcomes. In some cases, intervention may be in the form of increased regulation and penalties for failure to comply, economic stimuli, marketing of urban planning ideas, or alternatively reduced levels of regulation and the removal of planning constraints. Planning interventions as a concept is used widely throughout this thesis as actions undertaken by planners and other officers within various levels of government to change urban environments. It is seen as a fundamental role of urban planners and other officers working within government in the field of open space.

Urban consolidation describes policies and practices that increase the dwelling and population densities of existing urban areas (Newton and Glackin 2014). The terms densification, urban redevelopment, smart growth, compact cities, infill, or urban growth containment are used interchangeably with urban consolidation (Gordon and Richardson 1997; Grant 2009; Ziegler 2009; Blair and Wellman 2011; Bunker 2014; Newton and Glackin 2014; McCrae et al 2015). This definition was chosen because it explains the primary focus of the policy of urban consolidation, that is to increase dwelling and population densities. Further discussion of the definition will be undertaken in Chapter 2.

1.4 Thesis Outline

Chapter 2 discusses the rise of urban consolidation as a means to increase dwelling and population densities in low-density urban environments. The many forms of urban consolidation, as well as the costs and benefits of such policy actions are considered.

Chapter 3 has a specific focus on theoretical frameworks surrounding liveability and how open spaces can have an impact on liveability.

Chapter 4 focusses on the emergence of governance as a concept that provides an alternative to the traditional role of government.

Chapter 5 examines the origins of open space, the emergence of open space standards, the role of open space, and whether there is a nexus between open space and dwelling and population densities. Global examples of open space where its provision is constrained are highlighted.

Chapter 6 covers the methodological approach undertaken in this research. Details are provided of the reasons for utilising semi-structured interviews, content analysis and urban spatial analysis.

Chapter 7 examines the historical development of open space in Perth, including the implementation of the *Stephenson Hepburn Plan (SH Plan)* and the open space standards that were laid down in the 1950s for WA and have remained relatively unchanged. The Great Australian Dream with its emphasis on low-density suburbia is discussed along with the adoption of strategic plans that promoted urban consolidation targets for Perth and considered sustainability and liveability. The effect of higher densities and reduced private open space, as well as the role of key policies on the establishment and maintenance of POS are discussed.

Chapter 8 provides a background to the case study locations of the local governments of South Perth, Cockburn, and Mandurah, as well as details of open space provision in each of the chosen suburbs within the local government areas (LGA).

Chapter 9 details the findings of the interviews that were carried out as part of the research, including the problems identified by interview participants, as well as possible responses to these challenges.

Chapter 10 is a discussion of the research findings including a detailed examination of the problems that were highlighted by the interviews, spatial analysis and document analysis and possible ramifications of failure to act on these findings. The findings are viewed through the lens of liveability and governance.

Chapter 11 concludes the thesis with a summary of the research findings. Several recommendations are made regarding open space planning and management in areas where dwelling and population densities increase because of urban consolidation, as well as possible avenues for further research.

1.5 Conclusion

This chapter began with a brief outline of the emergence of low-density suburbia as a dominant form of urban development in many post war Western cities. This was partly in

response to the crowded and polluted inner cities that were providing less liveable urban environments for their resident populations. However, more recently concerns around sustainability have led to a push for urban densification which is now changing the form of cities. Urban consolidation is supported by a wide range of stakeholders and can produce genuine benefits for urban environments and the people that live within them. However, like any plan or policy, if it is not re-examined at a later time to consider changing social, economic, political, and environmental circumstances, then outcomes may be less than optimal. Existing research has shown that there have not been significant changes in the approach to the planning and management of open space in areas undergoing densification and this may have an impact on liveability and require governance processes to respond to a new climate of both opinion and knowledge.

The next chapter discusses urban consolidation. Ideas that supporters and opponents of urban consolidation utilise to promote their favoured position on the topic are examined, as well as examples of the types of urban consolidation that have been utilised by those involved with urban development. Urban consolidation has become a key driver of strategic planning across many cities and is one of the key topics that this thesis revolves around. It is changing the form of many cities and causing changes in urban environments that may require urban planning responses, although it has as many detractors as supporters.

Chapter 2 Urban Consolidation

2.1 Introduction

Urban consolidation describes policies and practices that increase the dwelling and population densities of urban areas (Newton and Glackin 2014). The terms densification, urban redevelopment, smart growth, compact cities, infill, or urban growth containment are used interchangeably with urban consolidation (Gordon and Richardson 1997; Grant 2009; Ziegler 2009; Blair and Wellman 2011; Bunker 2014; Newton and Glackin 2014; McCrae et al 2015). Urban consolidation policies have been adopted across many cities in response to the detrimental effects of low-density urban development. It is not a new concept and has been discussed by many writers including Unwin (1912), Keeble (1969), and McLoughlin (1991).

Urban consolidation is considered a critical topic to examine as it is an integral part of the initial research question and the key research objectives. The emphasis on urban consolidation or densification has become a dominant urban planning paradigm in many cities around the world where arguments for and against the process have become part of contested professional and political dialogues with open space planning and management being central to much of this debate. It will be shown that in the push to densify cities principles such as liveability have been sacrificed to achieve government targets of higher dwelling and population densities.

Prior to the emergence of urban planning cities often grew organically and there were few controls over building construction, dwelling densities, or zoning. Cities often had extremely high dwelling and population densities. Problems such as crime, disease and poverty emerged which early planners, architects and reform minded individuals aimed to design out of cities through regulation enacted by governments (Hall 2002; Freestone 2010). In many cases it saw the creation of new suburbs and towns that were less dense than inner cities and provided opportunities for the creation of improved urban environments (Hall 2002; Freestone 2010).

There had been numerous movements that emerged over time that attempted to improve urban environments through the addition of parks and green space and counter the problems linked to urban consolidation. Not only was regulation introduced that imposed certain standards and minimum requirements in relation to residential dwellings, but the provision of parks and green space also became compulsory. In the UK parks were originally private landholdings and often for the recreational benefit of the landowners and

associates. Over time these were opened to the general public as the benefits were increasingly recognised; relief from the built environment, pollution-free air, exposure to nature, informal recreation, and organised sports. In the UK, US, and Europe parks were designed into old and new cities. Movements such as City Beautiful, Garden Cities, Active Recreation Movement, and the Environmentalism and Sustainability Movement all played a role in promoting open spaces that would address the key problems identified by the relevant movements (see Chapter 5).

In some cases, problems faced by denser parts of cities could be erased through building demolition programs. Slum clearance programs and the creation of lower density housing in the suburbs was seen as the solution to the ills of the dense city in the early 1900s in Australia and in the late 1960s and 1970s across the UK, US, and other parts of Europe. In places like Australia a Royal Commission was held in Sydney in the early twentieth century to investigate such matters (Butler-Bowdon and Pickett 2007). It led to a view being perpetuated that density (as represented by high-density slums) was bad. They were incubators of socio-economic problems. Spaciousness (as illustrated by low-density spacious suburbs) was a positive virtue for residential environments (Weller 2009). However, the urban planning response often failed to recognise new complications that were created. Concerns emerged from the late 1960s that low-density urban environments were not sustainable (particularly from an environmental viewpoint) and less liveable than previously thought. Allowing urban areas to continuously grow outwards and consume swathes of land irrespective of the resources required, or the environments that were destroyed was increasingly viewed as unsustainable. It was argued that by containing cities and promoting higher dwelling densities, more sustainable and liveable cities would be created (Newman 1999). At the same time critics countered that the significant costs, and the benefits were exaggerated (Stretton 1989; Troy 1996; Newton and Glackin 2014).

2.2 How is urban consolidation promoted?

There are numerous means to promote urban consolidation and in turn increase dwelling and population density. There can be a focus on the type of housing and lot arrangements where single sites are chosen or alternatively multiples sites and locations grouped together are targeted for densification. Urban growth boundaries can be imposed, and greenbelts created to limit to the size of towns and cities and force the existing urban area to be utilised more intensively.

Certain locations can be chosen for higher density development including brownfields, greyfields or greenfields locations. Allowing land uses to be changed such that disused

industrial or commercial sites, so-called brownfield sites, are rezoned so either new residential dwellings are constructed on the site or the existing buildings are adapted for re-use has been adopted widely in many cities. In many cases the sustainability and liveability merits of such proposals are widely advertised by the promoters and governments have also supported such developments for a range of political, economic, and social reasons.

The approach that has been widely used across Australia has been so-called greyfields development. An existing established suburb has older dwellings with large backyards redeveloped such that the original dwelling is retained, and additional dwellings are constructed in the backyard or alternatively existing dwellings on the large lot are demolished and additional dwelling units are constructed in its place (Newton and Glackin 2014).

Demolishing older buildings and developing new dwellings at higher densities is one of the most common forms of urban consolidation. For example, a lot with a single dwelling could be subdivided such that two or more individual dwellings are constructed on the same lot either in the front or rear yard thereby increasing the dwelling density and the potential population density. In Australia battle-axe lot arrangements where a new dwelling is constructed in the rear yard and the existing dwelling at the front of the lot is retained is a widespread practice in many cities. Alternatively, the existing dwelling is demolished, and the lot is split with two side by side dwellings constructed or multiple dwelling units are built on the site.

Allowing additional dwellings to be constructed on existing lots that already have buildings without changing the lot boundaries or title arrangements for the property is a common means to promote urban consolidation. Existing dwellings may be reconfigured to increase the number of dwelling units or ancillary dwellings like granny flats may be constructed on the same lot. The additional dwellings are constructed without making significant changes to the surrounding residential area and potentially satisfy extended families living together, ageing in place strategies and what may be perceived as lower impact urban consolidation strategies.

By increasing the allowable height of buildings, it becomes possible to increase the number of dwelling units that can be constructed on a site. There can be considerable variation in the size and height of such structures; from two or three storey walk up apartments that may have four to six dwelling units through to apartments that extend kilometres into the sky and have hundreds of individual dwelling units (Butler-Bowdon and Pickett 2007).

A range of other housing types beyond the traditional single residential dwelling can be constructed including lodging houses, community housing, townhouses and tiny houses that allows land to be used more intensively. Cluster development can also promote higher dwelling and population densities by setting minimum housing units per land parcel and this can prevent the need for an urban area to expand beyond existing boundaries (United Nations 2016b).

Allowing a mixture of land uses to be co-located together is another means to promote urban consolidation. Increasingly urban planners have reconsidered a move away from exclusionary land use zoning that dominated low-density residential areas across many cities. In some areas mixing residential and commercial land uses is being promoted to raise population densities. This option has been adopted in some high street shopping areas where commercial activity has declined. It can be used to boost the viability of shopping areas by ensuring that there is a consumer market in close proximity. Likewise, it is being undertaken at transport hubs in the form of transit-oriented development (City of Cockburn 2002; City of Cockburn 2007; City of Mandurah 2013d; Canning Bridge Structure Plan Project Working Group. 2015).

2.3 Arguments Supporting Urban Consolidation

Urban consolidation has the potential to achieve more sustainable economic, social, and environmental outcomes than low-density suburban growth providing complex issues surrounding higher density development are addressed (Hedgcock and Brunner 2015). It has been claimed by advocates of urban consolidation that increased dwelling and population density will produce far reaching benefits (Newman and Kenworthy 1989).

As a result of urban consolidation there will be reduced car dependency, reduced energy consumption, reduced air pollution, existing infrastructure will be more intensely utilised and urban areas become more vibrant and economically viable. Businesses can achieve greater returns from their investment and government does not have to extend services such as policing, transport and infrastructure across larger areas and distances. Compact development reduces reliance on cars as the main source of transportation, and allows walking, cycling and public transport to be promoted and the benefits of concentrating dwellings and populations together ensures that essential urban services and infrastructure can be delivered in a cost effective and economically efficient manner without creating additional environmental problems (United Nations 2016b).

Over time other arguments have emerged to promote urban consolidation. It would reverse population decline in existing urban areas. It also allows for an increase in the diversity of housing types available to consumers in a housing market that is dominated by detached homes on large lots suitable for large families, but less well suited to single and double person households, and those who do not want a larger home or garden. It is possible that low income earners and disadvantaged can find affordable accommodation because of the increased housing choice available. There is increased potential for established areas to be revitalised and for new economic and employment opportunities to emerge. Travel times and distance are reduced because less energy and materials are required for urban infrastructure (Chen et al 2008). Urban lifestyles become more attractive because vibrancy is restored to those areas that have higher populations (Collie 1990).

In the 1960s it was feared that Melbourne would suffer the same fate as larger cities in the UK (such as London and Manchester) and the US (like Detroit and St Louis). In these cities, there was a flight from the denser city centres to the spacious outer suburbs by the affluent and educated (McLoughlin 1991). It was argued that people were escaping problems that faced the inner-city areas including lack of open space, deteriorating infrastructure, crime, and property taxes. In Melbourne, the view was taken that the Central Business District (CBD) should continue as the dominant node in the greater Melbourne region to ensure that the inner-city did not decline like overseas cities. Higher dwelling and population densities were promoted in established areas and growth at the urban fringe was limited (McLoughlin 1991). The suburbs were seen to be more liveable than inner-city areas (McLoughlin 1991; Hall 2002).

The idea is promoted on the basis that density is good for sustainability and liveability and all the leading planning and strategic documents repeatedly frame urban consolidation in these terms. Certainly, the clear beneficiary is state government if it means that infrastructure and supporting services that would normally be required on the urban periphery do not need to be created and existing infrastructure and government services can provide for the growing population's needs (WAPC 2010a; WAPC 2015a). In a time when financial and economic considerations are at the front and centre of many government policies and budgetary ramifications are the leading driver of policy ahead of social and environmental concerns then the government does not have to budget for new services on the periphery and can absorb expenditure into existing services. It could be argued that the mode of densification that is being promoted by government is highly

supportive of the development industry as it does not force the land development industry to only build on brownfields sites, but rather it gives them greater options for development. The urban fringe and beyond is still being subdivided for suburbia, but there are increasing examples of pockets of higher density (still at lower densities than global cities). Changes in the WA *State Planning Policy 3.1 Residential Design Codes or R-Codes* (for example allowing a nine hundred square metres lot to be subdivided rather than forcing the lot to be one thousand square metres, and permitting ancillary dwellings, so called granny flats) have given the green light to smaller lots and dwellings to provide more affordable housing (Department of Planning 2015b).

2.4 Arguments Against Urban Consolidation

There has been significant criticism of urban consolidation. It has been claimed that urban sprawl and the benefits of living in the suburbs on larger blocks of land has been demonised by the proponents of urban consolidation. At the same the benefits of urban consolidation have been grossly exaggerated by its supporters.

Gray, Gleeson and Burke (2010) claimed that urban consolidation strategies in Melbourne are being achieved in a dispersed manner, not necessarily adjacent to activity centres or transport hubs where the greatest benefits can be realised. Densities are rising in areas that are significant distances from employment centres, forcing those that live in higher density suburbia to commute large distances.

A form of socio-economic inequity is built into the urban consolidation process. In higher socio-economic areas, a single dwelling will often be replaced by another single dwelling, whereas in lower socio-economic areas a larger number of dwellings are constructed on development sites that previously had a single dwelling. High-rise apartments are often constructed on brownfield sites in higher socio-economic areas while the quality of apartments in lower socio-economic areas may be inferior to those in higher income areas (Newton and Glackin 2014).

The claimed environmental benefits are not always being achieved. The form of housing constructed in place of low-density housing is not necessarily energy efficient due to the size, design and features offered within developments. Many high-rise apartments have higher levels of embodied energy in the building materials and features like air conditioning, pools and lifts which consume vast amounts of energy and water and produce higher greenhouse gas emissions (Myors et al 2005; Rickwood et al 2007; Perkins et al 2009).

There is the potential for increased pressure to be placed on existing infrastructure. If there is no additional capacity within utilities networks (like power and sewerage) to connect new dwellings, then this may require additional expenditure by service providers and see users suffer from service interruptions (Hedgcock and Brunner 2015). Troy (1996) argued that it may force more people to pay more for less in terms of the size and quality of housing, while Stretton (1989) believed that it was attacking the egalitarian nature of Australian cities. Densification does not guarantee improved sustainability or liveability. As Stretton (1989) maintained the lives of the wealthy and influential in higher density urban centres did not necessarily have more fulfilling lives than people that lived in the low-density outer suburbs.

Searle (2004) argued that there are limits to urban consolidation due to infrastructure and social constraints while Randolph (2006) observed that the location of some higher density dwellings may be less than optimal. Locations adjacent to major roads, shopping centres and transport hubs are often busy and noisy and do not engender socially friendly environments. Liveability is questionable in such environments.

It has also been found that a higher proportion of the apartments were rented and were typically smaller in surface area. A high number of properties owned for investment purposes means that planners will need to be aware of this when making planning decisions; the needs of renters and investors is potentially different to residential homeowners and may have an impact on the form of urban development where urban consolidation is promoted and this is combined with high numbers of renters rather than resident owners (Randolph 2006).

There has been significant opposition to urban consolidation in established suburbs with over fifty percent of residents in capital cities opposed to population increases from urban consolidation for many reasons including increased traffic, more noise, loss of amenity, changes in sunlight levels and changes in the demographics of an area (Newton and Glackin 2014).

Liveability may well decline as dwelling densities rise in existing suburbs. Policies that aim to promote the principles of the compact city need to be matched to the suburbs that have the most to gain from urban consolidation. As McCrea and Walters (2012) found there are residents in areas undergoing consolidation that are apprehensive about its impact on liveability. A salient point is made in their research that urban consolidation at the cost of urban liveability is a poor result for urban planning. Plans for urban consolidation need to

consider existing residents and the potential that urban consolidation may reduce liveability by increasing traffic congestion and parking problems, loss of privacy, loss of green spaces, loss of heritage, reduce housing affordability and the promotion of gentrification which forces existing residents out of an area. They discuss the concept of overloading and point to the need to be aware of the possibility that some areas may be unsuited to urban consolidation.

There are many weaknesses to urban consolidation that have been widely recognised including planning regulations that limit the ability to achieve higher dwelling densities and government policies and practices that emphasise other priorities. It is recognised that if compact development is supported then it must do so in a way that overdevelopment does not occur, and a range of problems created by the push for higher densities are prevented. Denser areas are often the subject of cost of living pressures which promote gentrification, the relocation of lower socioeconomic population groups and the formation of localities that have insufficient resources and infrastructure including open space. Holman et al (2015) examined communities in London that had undergone densification in London. They believed that the costs of higher dwelling densities were often ignored while the benefits were emphasised. There was a need for a more critical examination of urban consolidation policies at a local level (Holman et al 2015) and consideration given to better understanding the other issues that were driving the policy besides environmental benefits (Charmes and Keil 2015).

It is not uniformly supported by researchers that urban consolidation policies and plans advocated by the governments and planning authorities have resulted in the claimed benefits. There is evidence that urban consolidation policies do not adequately deal with the intricacies of modern life in the suburbs (Forster 2006). Tomlinson (2012) claimed that urban consolidation will be like many planning ideas that have been imposed on urban centres; there will be unintended consequences that may require significant time, effort, and money to overcome. Rectification may be physically possible, but financially impossible.

Australian cities typically have lower dwelling and population densities, have more detached housing, and cover greater surface areas than comparable cities elsewhere in the world and have been like this since the late nineteenth century (Skinner 2006). Urban consolidation reduces demand for greenfield land on the urban fringe, although

McLoughlin (1991) argued that land saved is negligible because certain uses consume land irrespective of the dwelling or population density.

Searle (2004) concluded that there are limits to the ability of urban consolidation to solve urban problems and an unwillingness to consider constraints to urban consolidation will mean that high quality urban redevelopment may not occur. It is relatively easy to create a framework to promote higher density development across a metropolitan area, but more difficult to plan and provide the essential infrastructure and simultaneously guarantee that amenity is maintained. In the case of open space many higher density inner-city neighbourhoods require new open space, but local government favours upgrading existing open spaces. Open space allocation policies often do not differentiate between areas with lower and higher dwelling densities and there may be a need for more open space in areas where there are higher population densities.

It could be argued that open space may need to be dealt with on a site by site basis; this may become problematic if there are multiple landowners rather than a single landowner.

Searle (2011) found that greater consideration needs to be given to open space provision in areas of Sydney where significant levels of urban consolidation are undertaken. There were increased pressures on existing open spaces and increased pressure on local government to advance urban consolidation, while simultaneously providing more open space. Many councils believed land costs made land purchases specifically for open space an unviable consideration. In some cases, outer suburban local governments were buying land for open space to protect environmentally valuable areas. There is an opportunity cost associated with the purchase of land where other uses are restricted because of the environmental sensitivity of the land.

There has been resistance to increases in dwelling density in certain suburbs and cities. Increases in density in any Australian city would probably not achieve the dwelling or population density levels of many global cities unless proposed developments are mimicking the high-rise of these global cities. In many cases the proposals for densification are at relatively modest levels compared to New York, Shanghai, or London. In certain suburbs across Australia there have been protests against densification by residents who argue that the character of the suburb, and the lifestyle that they bought into was being damaged by government plans to promote urban consolidation (Ruming et al 2012). In Perth, the push to increase density has seen elected members of Councils who actively supported density increases lose local government elections. In some cases, opponents of

urban consolidation were elected, but the newly installed councils have then had to accept increases in density when they are faced with the threat of being over-ruled by the state government (Hamlyn and Piesse 2019). Anti-density activism in cities like Perth and Melbourne has often been driven by self-interest. As housing prices rose across the largest Australian cities and affordability declined for the average income earner some opponents' attitudes changed. Some families found themselves having to help their children purchase a home by subdividing land occupied by the existing family home to enable the construction of an additional dwelling.

The dislike of higher density apartments is not unique to WA or even Australia. Punter (2010) highlighted that there has been hostility towards high-density apartment development in the UK. While densities have risen from twenty-five dwellings per hectare to forty-four dwellings per hectare in the areas studied, apartments have been criticised for poor design and quality, and there have been concerns that density and housing affordability were prioritised over liveability and amenity (Punter 2010). Not in my backyard (NIMBY) opposition to higher density developments and social housing is a common obstacle to proposed densification (Punter 2010; Ruming et al 2012).

Table 2.1 Benefits and Costs of Urban Consolidation

Source; Adapted from Collie (1990); McLoughlin (1991); Hall (2002); Searle (2004); McCrea and Walters (2012); Newton and Glackin (2014)

Benefits	**Costs**
Reduced need to travel large distances in fossil fuel powered vehicles	Housing may be smaller and less attractive in areas undergoing urban consolidation
Increased viability of existing public transport services	Cars are not catered for in areas undergoing urban consolidation
Reduced demand for land on urban periphery	Government and service providers may have to spend more time and money on expanding services in existing areas
Less pressure on government and services providers to expand services and infrastructure in areas on urban fringe	Infrastructure networks may be at capacity
Increased utilisation of existing infrastructure	Low-density development allows for larger backyards and street verges which adds to the levels of spaciousness in the urban environment
Ecosystem collapse is averted or slowed	No guarantee that the higher density urban environments will be more efficient in terms of resource use
Reduced travel time because all required services are close to residents	Significant change in the lifestyle of residents in low-density environments that are being densified
Land on periphery is preserved for land uses other than urban	A range of features of the urban environment are subject to higher demand and may become constrained including car parking and open space
Less demand for valuable resources to feed urban growth	Increased congestion on local roads due to increased cars if there is not a shift to public transport and active travel
Reduced travel times (assuming there is employment and services located nearby)	

2.5 Examples of Urban Consolidation

In the UK London's spatial plan has identified areas that could increase dwelling and population density subject to adequate levels of infrastructure and services for the growing population (Mayor of London 2016). In addition, fourteen cities have green belts which are areas that cannot be developed and must be retained as land for recreation, conservation, forestry, or farming (Amati 2008). These greenbelts act as urban containment boundaries which limit the size and increase the intensity of use of urban areas (Amati 2008).

Across the US there are many city governments that are actively promoting the reinvigoration of urban areas by promoting new development that increases dwelling and population densities. The archetypal low-density city of Los Angeles has moved to increase the proportion of higher density apartments and has become the densest city in America (Demographia 2016). The cities of Portland and Denver, Baltimore County in Maryland and Marin County near San Francisco have adopted green belts to limit urban growth and promote higher densities inside the green belt (Amati 2008). Smart growth strategies have also been utilised in some American cities that offer incentives to businesses to locate in areas that are targeted for higher dwelling densities. Such policies help to combat urban sprawl, improve the quality of life in the areas that are the focus of such strategies and rejuvenate degraded urban areas (Newman 2014).

In Delhi (India) an urban growth boundary was created that utilised a dense forest on the edge of the city that promoted more compact development and reduced the tendency for sprawl, while at the same time allowing the population to capitalise on proximity to open space (Amati 2008).

The promotion of urban consolidation is now widespread across Australia. All the states have strategic plans for their capital cities that require increases in dwelling density and a reversal of the low-density urban form that has been a dominant aspect of Australian cities since the late nineteenth century (Freestone 2010; Tomlinson 2012). The various strategic plans call for between 30 per cent and 70 per cent of new housing to be constructed within existing urban areas (WAPC 2010a; WAPC 2015a; Southern Tasmania Regional Councils Authority 2011; New South Wales Planning and Environment 2014; Department of Planning, Transport and Infrastructure 2016; Department of Environment, Land, Water and Planning 2016). "Containment, redevelopment and centres" has become an accepted mantra of urban planning in Australia (Forster 2006, 173).

In WA, *Directions 2031 and Beyond (D2031)* and the subsequent *Perth and Peel@3.5Million (P&P@ 3.5 M)* stated that a minimum of 47 per cent of housing had to come from existing residential areas (WAPC 2010a, WAPC 2015a). The *R-Codes* were changed so the allowable minimum and average area of lots within certain density codes was reduced to increase the opportunity for subdivision in areas that may have not been able to be subdivided previously (Department of Planning 2015b). The state government was effectively bypassing resistance to densification including those who used the minimum and average lot sizes to limit the amount of consolidation that could occur in certain areas. Some local governments in Perth responsible for more affluent suburbs have not been fully supportive of the state government's urban consolidation plans and have resisted densification (Carmody 2015; Hamlyn and Piesse 2019).

2.6 Conclusion

There has been a split in thinking between those that accept development on the periphery and those that believe urban consolidation should be promoted. Authorities and the urban development industry can continue to accept the outwards development of urban areas with all the associated costs and benefits, or they may attempt to stop or limit development on the periphery of urban areas. In Australia there was an acceptance of the inexorable growth of urban areas, but there has been a paradigm shift that has seen planning authorities across the country adopt policies that refocus urban development onto existing urban areas to increase dwelling and population densities and slow the outwards growth of cities. In many cities across the globe opportunities are sought to increase dwelling and population densities to help achieve multiple goals, including a revitalisation of city economies, improved environmental sustainability and refurbishment of degraded urban environments.

It has not necessarily seen a complete redesign and reconstruction of existing urban areas and the effects of such changes have not been immediate or necessarily as beneficial as claimed by advocates. Although urban consolidation policies are promoted across cities, they do not affect all regions within the city in the same manner. Chhetri et al (2013) explained that urban consolidation does not always involve high-density monocentric development at the urban core. It may see densification occurring at differing rates and qualities from one area to the next.

Alongside widening divides within urban populations according to income, education, and health there may be a widening spatial divide created by urban consolidation policies that

impact on liveability and governance in densified environments. The promotion of urban consolidation has given rise to concerns around whether the higher density environments are more liveable and whether governance arrangements have been able to adapt to these new environments. There is the possibility that the marginalised within society and those less able to insulate themselves from the changes because of income, education or health may find themselves forced to live in denser urban environments that are possibly less liveable. The role of the planner in helping to solve some of the key urban problems is being tested. Whether or not people are accepting of the change in urban environments may go some way in explaining the response and perceptions that people have of their urban environment. Davison (1997) believed that dense city centre living may be highly attractive for the educated and intellectuals, but not for those who have little interest in the attractions and pastimes that are found in denser urban environments. The real concern is that while urban consolidation orthodoxy talks of sustainability and liveability, the sustainability that is achieved is orientated around economic outcomes while liveability declines. Chapter 7 will further address these issues through the lens of the impact of the adoption of urban consolidation policies on Perth's changing urban form and the open space planning and management implications.

While the literature on urban consolidation points to the fact that there are sharply divided schools of thought on the meaning, processes, and outcomes of urban consolidation there are areas of commonality in the debate that focus on the values and character of the lived experience in suburban settings. The next chapter will pursue this ground by examining the theoretical issues that frame this consideration and in particular track the emergence of the concept that now dominates the vocabulary, policy, and aspirations of an emerging planning credo; liveability.

Chapter 3 Liveability

3.1 Introduction

A broad discussion of the literature surrounding liveability is undertaken in this chapter; the many definitions and characteristics of liveability, selected frameworks through which liveability can be examined, and a discussion of the links between liveability, sustainability, open space, population density and government will be addressed.

The literature on liveability provides a normative basis for understanding cities as appropriate habitats for humans.

There are many elements of liveability that are beyond the ambit of urban planning, nonetheless, it is essential to recognise that urban planning, through a variety of governance tools and processes, can influence liveability. It is not unreasonable to suggest that unliveable urban environments need to be addressed, as part of the role of urban planning, in alignment with the original premise of the profession (Yiftachel 2001). Features of the urban environment, including open space, and the amenity that is derived from these spaces is critical to the production of liveable cities. For this reason, liveability is an essential theoretical framework to examine as part of the thesis.

It is contended that open space is one of the most important areas of discussion as it often involves land that is within the public realm and normally under the control of the government. It is in the public interest to know how government can intervene to improve the planning and management of open space which has the potential to improve liveability.

3.2 What is Liveability?

Liveability is a relatively new concept. Nonetheless its focus has changed over time and has been reformulated to suit those with particular interests. There has been a shift from a citizen or resident focussed idea to a concept emphasised by government and business. Liveability was referred to widely in Europe and North America in the 1960s and early 1970s. It was used by urban activists in the cities of Rotterdam and Vancouver who believed that economic development was being promoted at the expense of people. Liveability was linked to the social and environmental qualities of urban areas that people felt should be promoted, rather than sacrificed as part of the development process (Kaal 2011).

By the 1970s there were many people who believed that European cities were more liveable than American cities and this coincided with the view that car-centric cities with low-density suburban development were increasingly unsustainable (Wheeler 2015). European cities with dense, inner cores, were considered to be highly liveable because they

were built on a human scale, walkable and had better public transport systems (Wheeler 2015). It should be noted however, that the focus on inner-city areas ignored the newer, outer suburbs of many European cities which displayed many characteristics and problems like American cities, including the possibility of poor liveability (Wheeler 2015).

From the 1980s there was a noticeable shift in the focus of liveability. Whereas it was originally a tool utilised to highlight the positive features of urban environments, it was increasingly seen as a means for government and business to achieve their goals of promoting economic growth within a liveability framework (Lloyd, Fullagar and Reid 2016). As Forster (2002) noted, cities like Melbourne, Vancouver and Vienna were consistently ranked as the most liveable cities in the 1990s and early 2000s and this paralleled government ambitions to market each city to the world. Liveability was increasingly a selling point for business and government. Ironically, residents in many of these "liveable" cities believed that their experiences of life in dense urban centres did not reflect these findings. Residents were increasingly aware of aspects of "highly liveable" cities that appeared to be deteriorating including traffic congestion, air pollution and crowding (Forster 2002; McCrea and Walters 2012).

From 2010 liveability received increasing attention at many conferences including "State of Australian Cities" (2010), "Transportation, Livability and Economic Development in a Changing World" (2011), "Making Cities Liveable" (2012).

There are multiple definitions of liveability. They often focus on objective (and tangible) characteristics of the urban environment or the subjective (and intangible) perceptions people have of the urban environment or a combination of both. There are times when it overlaps, or is used as a substitute for well-being, quality of life and even sustainability, although some writers argue that this substitution should be avoided (Pacione 2003). As highlighted by Lloyd, Fullagar and Reid (2016) the meanings are shaped by various groups.

Lloyd Fullagar and Reid (2016) created a typology of liveability divided into three perspectives: liveability from the point of view of academics, policymakers, and private interests. In alignment with this approach this thesis has examined all three types of liveability recognising that they have different components, orientation, and outcomes.

The academic approach is concerned with individuals and groups, subjective and objective features, theoretical and practical components, and the meaning and experiences of liveability. The policymakers are more concerned with the governance of liveability, how

policy can be developed to achieve liveability and how it can be used to manage sustainability. Private interests that utilise liveability are typically interested in using objective indicators of liveability and sharing the findings from one city or country to the next to encourage investment or population growth.

The multitude of definitions and the vagueness of the features that definitively guarantee that an urban environment will be more liveable suggests that liveability is like sustainability. It has many definitions and there is little general agreement on the definition or characteristics from differing groups.

It is suggested that the different groups that argue about the meaning and features of liveability operate in parallel. The definitions can co-exist for the different groups, but it is only when the groups collaborate that a common meaning becomes important. It is argued that there is the potential for policy to fail to achieve improvements in liveability if planners and managers within local government for example do not understand how residents interpret liveability and how they believe it might be improved. There is the potential for policies and processes around open space to be implemented that do not consider residents views, particularly if they have not been consulted. This can result in time, effort and resources being wasted or misdirected. Open space might be enhanced or changed in a manner that fails to improve liveability for residents of areas undergoing urban consolidation. There may be complications; how do planners know what people want if they have not lived in an area for sufficient time to ascertain the characteristics that enhance liveability.

Although criticised for being a vague and highly flexible concept by some academics (Massey 2005), liveability is increasingly seen by government and business as a pragmatic and achievable goal and a favourable priority for policymakers (Gough 2015).

Pacione (1990) stated that liveability is not a feature naturally inherent in the environment, but a result of the interaction between environmental features and personal characteristics. De Chazal (2010) believed that liveability is reflected in the personal desires of people and achieved via elements within the physical environment. Buys et al (2013) suggested that a liveable urban area will be determined by the personal views of people, where they reside and their perceptions of such an environment. Vine (2012) refers to liveability as a concept linked to everyday life which pays attention to the features that create functional social spaces. Lowe et al (2013, 11) conceptualized liveable and healthy urban environments as “safe, attractive, socially cohesive and inclusive, and

environmentally sustainable; with affordable and diverse housing linked to employment, education, open space, local shops, health and community services, and leisure and cultural opportunities; via convenient public transport, walking and cycling infrastructure". According to Ruth and Franklin (2014) liveable cities are based on characteristics "good" cities display and whether the city has the infrastructure and ecosystems that allow residents' needs and wants to be provided. Giles-Corti et al (2014) listed numerous characteristics of liveable communities. They had to be safe, attractive, affordable, sustainable, and cohesive, with accessible open space, providing employment and educational opportunities, with effective public transport and adequate walking and cycling infrastructure. Gough (2015, 147) defined liveability as "the sum of the physical and social characteristics experienced in places including the natural environment and a walkable and mixed-use built environment, economic potential near diverse housing options, and access to a broad range of services, facilities and amenities that add up to a community's quality of life".

Cities considered to have high degrees of liveability tend to have high levels of accessible amenity including open space and recreational facilities. Higher amenity places are often in greater demand and this is reflected in higher property values and rents. (Crompton 2001; CABE Space 2004a; 2007). Walton, Murray and Thomas (2008) found that consumers of housing are aware of the costs and benefits of living in different locations and make trade-offs in the levels of liveability when choosing one location over another. More expensive housing in more desirable locations could be viewed as a proxy measure of liveability.

According to Yuen (2011) there are several characteristics of urban environments that enable liveability. These include affordable housing, proximity to shops and schools, accessible, clean, and natural open spaces and low traffic, low speed roads. A link was also made between liveability and residential housing satisfaction. Urban environments were more liveable if there were higher levels of satisfaction with home environments (including physical spaces inside and outside the home, and relationships with neighbours) (Yuen 2011).

Ultimately, it must be recognised that the many features of the urban environment influence whether people want to spend time in those spaces. There are elements within the physical environment that can contribute to the well-being of people and how they feel about the liveability of an area including dwelling and population density, amount of nature in the surrounding area, noise, safety, lifestyle opportunities and proximity to services. If an

urban environment satisfies the requirements of people utilising the space at a specific time, then the urban environment could be deemed to be liveable. Those judging liveability may change their views as the expectations and concerns of people within society change. Indeed, a person's perceptions of liveability does not guarantee a liveable neighbourhood. De Haan et al (2014) argued that ensuring the needs of society are met does not necessarily mean that individuals' needs are met. Conversely, scaling up the requirements of individuals does not mean that society's requirements are met. This has direct application to urban environments in which dwelling and population densities are increasing. Existing open spaces in a lower density environment may have been suitable for the population at a specific time, but as the population increased the open spaces may come under more pressure or be less appropriate for residents.

Spatial and non-spatial characteristics determine liveability. Urban planners typically have greater expertise and influence over spatial characteristics (like the location and amount of open space, nature, and housing). Non-spatial characteristics (like the provision of education, health and social welfare and the promotion of social cohesion) may predict the liveability of an area, however, urban planners often have little control over such characteristics. It is necessary to focus on spatial characteristics that can be influenced by planners and which may affect non-spatial features (Badland et al 2014).

According to van Dorst (2012) there are three types of liveability: perceived liveability, apparent liveability, and presumed liveability. Perceived liveability is highly subjective and deals with individuals' understanding of the environment that they live in. Apparent liveability is the fit between species and habitat. Presumed liveability is the extent to which the living environments match the inferred conditions for liveability. It is the latter type of liveability; presumed liveability that is the concern of local governments and other authorities that make decisions around open space and is of interest to urban planners. Everyday decisions are made based on interpretations of what they believe is the correct solution to urban problems linked to liveability.

Van Dorst (2012) described characteristics that make cities liveable. It was stated that cities needed to be healthy and safe, promote community interaction, but also allow people to have privacy and access to green, sustainable spaces. It was recognised that contradictory outcomes might be achieved because of a push for greater liveability. For example, to improve the health of the population within an urban area high-rise can be constructed that improves sanitation, but simultaneously forces individuals to live in apartments that

reduce social interaction. People also need to be able to seek privacy at certain times. If there is an overemphasis on communal spaces, rather than private spaces, people are not able to control their social interactions. There is also a need for people to have access to nature in the built environment where this is lacking. Ensuring that there are sufficient green spaces within urban environments contributes to liveability, but efforts to increase biodiversity by having more natural spaces may reduce the availability of sports fields which has an impact on liveability for sporting participants (Van den Berg et al 2007). It also demonstrates the highly personal nature of liveability (van Dorst 2012).

3.3 Amenity and Liveability

Amenity has been a term used widely in urban planning from the time that planning emerged as a profession in Anglocentric nations in the nineteenth century and there are many similarities to liveability. Planning aimed to improve amenity, but like liveability it has become a contested idea in terms of what it is, how it is measured and achieved and whether it can be imposed through regulation.

According to Rutland (2015) it refers to the way spaces are used and developed and the positive feelings that emanate from the surrounding populations from those spatial characteristics. Features that anchor amenity include well designed architecture, lush, spacious streetscapes, and the lack of negative elements like noise and air pollution. Brown and Sherrard (1969) wrote that amenity could be maintained through the exclusion of noise, emissions and activities normally associated with commercial and industrial interests that could impact on the peace and enjoyment of life. Smith (1974) stated that it included environmental health, pleasantness and civic beauty and was a response to the squalor and blight produced by post-industrial sites.

Amenity is relatively easy for politicians and residents to understand and is more embedded in local government and ratepayer thinking than biodiversity protection or ecological loss.

There are a number of ways that amenity can be preserved in residential areas including; the adoption of exclusionary zoning where noisy and polluting industries are confined to certain areas away from residential areas, building design controls that limit height, building bulk, and dwelling density to prevent overcrowding and the (supposed resultant) decline in amenity, restrictions on development that reduce views or degrade the aesthetics of a landscape and restrictions may be placed on existing land uses that affect the amenity of residents (Brown and Sherrard 1969).

As with liveability there is the possibility that the regulations that are imposed may have contradictory outcomes. An example of this is the introduction of multiple storey apartments in an area with single storey detached residential housing on large lots may be seen as an attack on the amenity of the local area because there are more people, increased road traffic and more competition for car parking and space at local parks. On the other hand, it increases the viability of local businesses and increases the possibility that services that improve amenity may be able to operate in denser environments.

There appears to be significant overlap with amenity and liveability, however, liveability appears to be a more broadly applicable concept that goes beyond tangible features of the local environment. In some cases, liveability and amenity were equated as the same concept.

3.4 Chosen Frameworks of Liveability

A number of models have been created that attempt to frame liveability. They have included;

1. Newman's extended metabolism model of human settlement (Newman 1999) which combines sustainability and liveability.
2. Shafer, Lee and Turner's model which demonstrates the links between the traditional elements of sustainability (society, economy, and environment), quality of life, liveability, and accessibility (Shafer, Lee and Turner 2000).
3. Godschalk's Liveability Prism that demonstrates the tensions between sustainability and liveability and highlights the conflict that can occur when attempts are made to balance elements of sustainability and liveability (Godschalk 2004).

Newman (1999) linked liveability to sustainability and argued that liveability is about the human environment and links to individual and community well-being. It cannot be isolated from the natural environment. "Sustainability for a city is not only about the reduction in metabolic flows (resource inputs and waste outputs), but also about increasing human liveability (social amenity and health)" (Newman 1999, 222). The extended metabolism model of human settlement as seen in Figure 3.1 positions the city as a biological system where a reduction in the consumption of resources and production of waste combined with amenity improvements will create higher levels of liveability (Newman 1999). Although urban metabolism models have been criticised by scientists concerned that cities are not living things and without a metabolism, the use of an input-output model such as this does represent an analogy of how physical inputs and socio-economic priorities can be varied to

improve the liveability of cities. Many social scientists see such models as a means to promote increased interdisciplinary research (Golubiewski 2012).

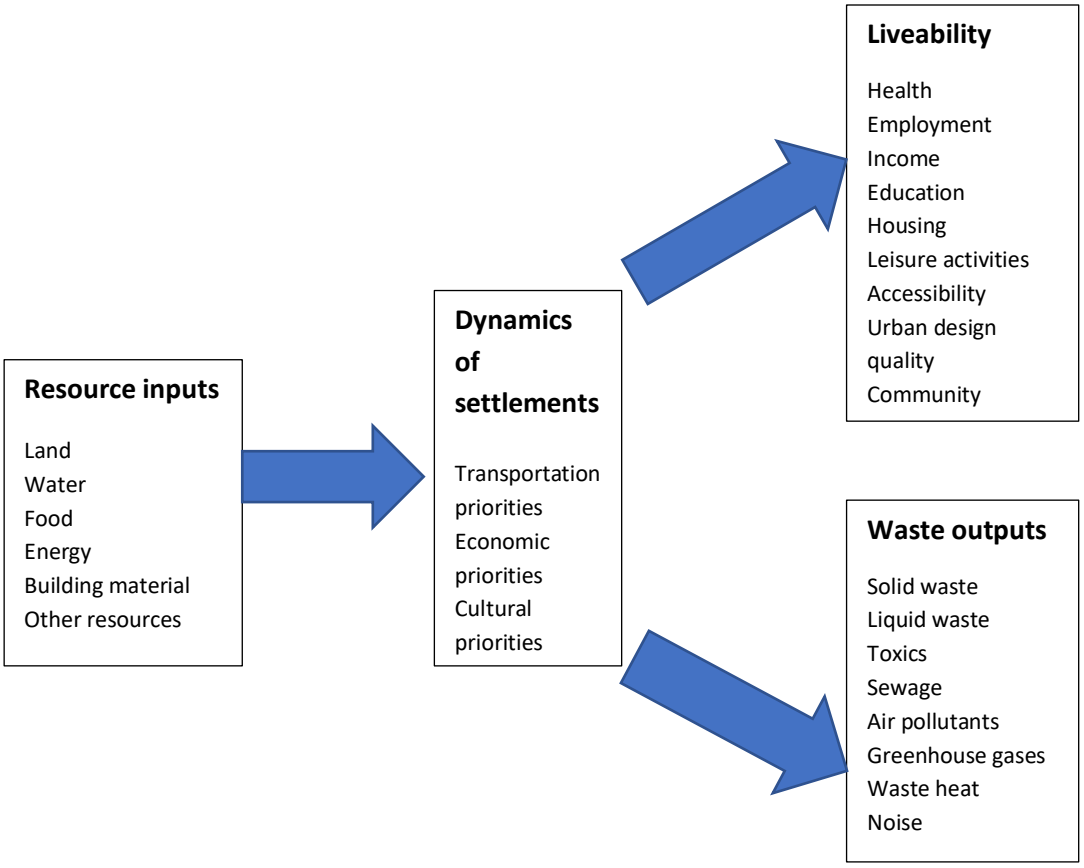


Figure 3.1 Extended Metabolism Model of Human Settlements
Source: Adapted from Newman (1999, 220)

Shafer, Lee and Turner (2000) created a model that had parallels with the sustainability model, although there was emphasis on the interactions between the key elements of economy, community (or society) and environment as seen in Figure 3.2. The diagram demonstrates the interrelationships between the key elements of sustainability, as defined by the Bruntland Commission, however there are some key differences.

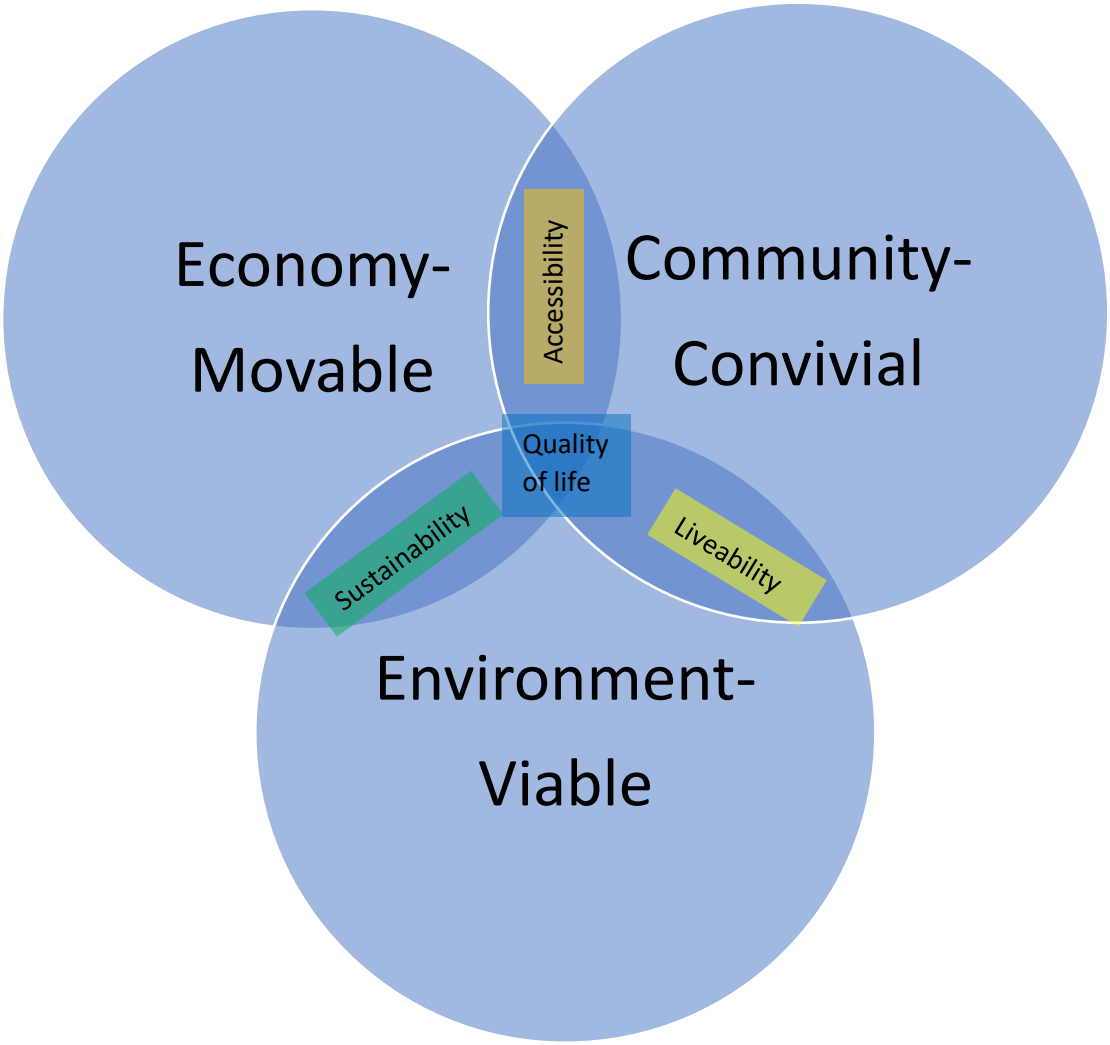


Figure 3.2 Relationship between Sustainability, Liveability, Accessibility and Quality of Life
Source: Adapted from Shafer, Lee and Turner (2000, 166)

Quality of life is represented by the intersection of the three key concepts of community, economy, and environment. Liveability is where community and environment overlap, while the intersection of community and economics is accessibility, and the intersection of environment and economics is sustainability. They argue that each concept is dynamic because of human presence within a socio-ecological system. Humans are dependent on the environment that surrounds them to satisfy their needs and wants and often modify this environment. However, there are also feedback processes that transform the environment. For a form of equilibrium to be achieved and liveability to be maintained human intervention in the urban environment must ensure that the community remains convivial, and the environment is viable (Shafer, Lee and Turner 2000). Such a model points to the tensions that exist between different facets of the urban environment, and if emphasis is placed on one element of sustainability over others, then there will be impacts

on sustainability, accessibility, liveability, and quality of life. Adjustments to each of the elements of sustainability ultimately affects sustainability, liveability, quality of life and accessibility.

Godschalk (2004) proposed the sustainability liveability prism (see Figure 3.3) that combined liveability and sustainability to highlight the conflicts that emerged between the elements of sustainability (economic, ecology (the environment) and social equity) and liveability. Godschalk's model points to the inherent difficulties in achieving solutions to problems linked to sustainability and liveability. In attempting to promote economic growth it may cause friction between those who advocate for economic growth and those who argue for a maintenance of existing levels of liveability (the growth management conflict). Alternatively, promotion of greater social equity at the expense of liveability may lead to what Godschalk called the gentrification conflict. Promoting improved ecological or environmental outcomes over liveability leads to the green cities conflict (Godschalk 2004, 6, 9). Godschalk highlighted problems that may be intractable; in solving one problem another may be exacerbated. Urban planning must resolve the differences between sustainability and liveability.

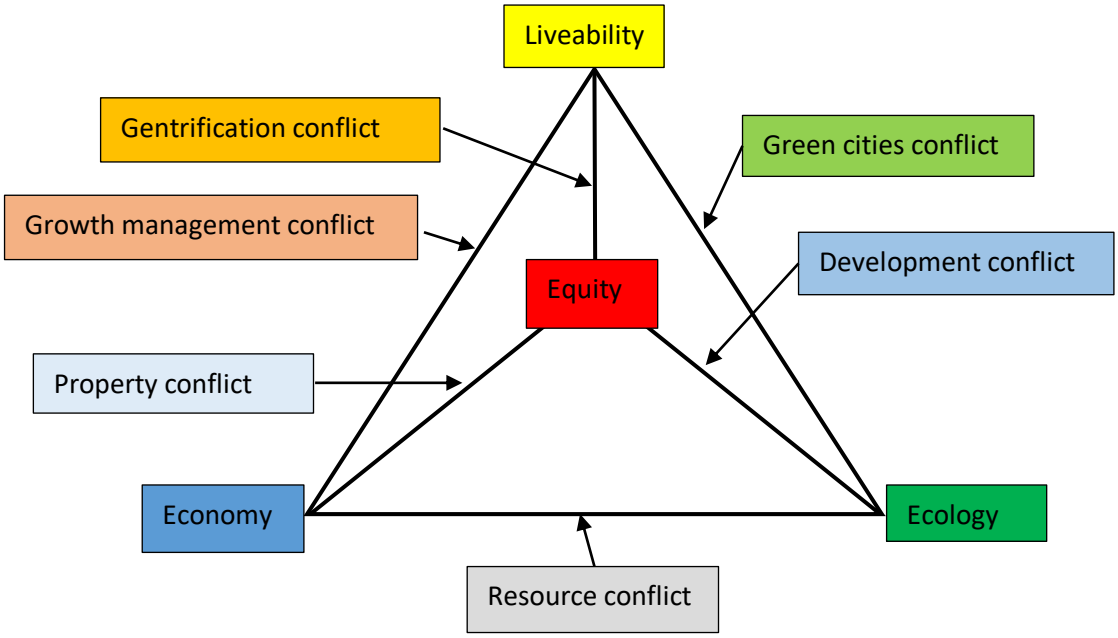


Figure 3.3 Godschalk's Sustainability-Liveability Prism
Source: Adapted from Godschalk (2004, 9)

There are some who argue that liveability has been hijacked by business and political interests to promote economic growth within cities, although there are others who see it as means to promote democratic ideals and consider natural ecosystems within the urban environment (Kaal 2011). As part of globalisation there is increased competition for skilled

workers, investment funds and foreign tourists. This has prompted governments and business to use liveability performance to market cities globally in a form of urban boosterism (Lloyd, Fullagar and Reid 2016). For example, Singapore's government has pursued the liveability agenda to market the city state to a global audience (often multinational companies and investors) and appease foreign expatriates living in the city (Teo 2014). In the process of promoting policies that improve liveability for certain sections of the population it has created a two-tiered city, comprised of well remunerated employees from foreign corporations, and those that have local lives and aspirations, and have little to do with the global sectors of society (Teo 2014). Such differences point to the tensions that exist within cities promoting liveability. The promotion of liveability may not generate improvements in liveability for everyone and outcomes may be inequitable.

Lloyd, Fullagar and Reid (2016) argued that the social aspect of liveability is often ignored in policy and emphasis is placed on the physical elements of a city. As a result, attempts to improve liveability of an urban area (through expenditure on tangible features that are thought to improve liveability) may fail to improve liveability for people with less attachment to place. This decline in place-based community has been weakened by hypermobility, modern telecommunications and expanded choices in residential location and education (Lloyd, Fullagar and Reid 2016).

3.5 Liveability and Sustainability

Liveability does not equate to sustainability, but it is recognised that there are close links between the two concepts. The elements of sustainability can have an impact on liveability, and liveability may have an impact on sustainability. Liveability has a more anthropocentric focus than sustainability which often emphasises economic and environmental goals over social outcomes.

In some jurisdictions, liveability has supplanted sustainability as a priority, or there are attempts to draw on the synergies between liveability and sustainability (Gough 2015). Some jurisdictions have attempted to achieve sustainability goals by targeting liveability criteria, while other cities have pursued sustainability programs to achieve higher levels of liveability (Portney 2005). However, the pursuit of higher liveability may deliver unsustainable outcomes (Massey 2005) and it has been suggested that sustainable liveability may favour economic and environmental policies over social policies (Gough 2015). Badland et al (2014) stated that there is an alignment between liveability and healthy urban environments, while Lowe et al (2015) argued that liveable and healthy

urban areas promote long-term environmental sustainability. As mentioned earlier Newman (1999) stated that a more sustainable urban environment would be a more liveable environment (see Figure 3.1) and the two outcomes operate simultaneously.

Unlike sustainability which is focussed on ensuring that the requirements of current generations do not sacrifice future generations requirements, Holden and Scerri (2013) maintained that liveability was about meeting the needs of present generations of people, rather than focussing on future generations' requirements. They theorised that there were three groups living in cities. There were those experiencing liveability and satisfied, those not experiencing liveability and disadvantaged, and those caught between both. To address inequality and the lack of liveability, social justice questions must be addressed (Holden and Scerri 2013). Such views point to the pragmatic nature of liveability. Attempts to achieve sustainability are continually compromised by the immediacy of the political process. Liveability has a timeframe that emphasises current problems that must be dealt with, whereas sustainability is future focussed and a long-term aspiration which is difficult to implement (van Dorst 2012; Ruth and Franklin 2014).

Liveability can be implemented and experienced on a local scale, whereas sustainability may be implemented on a local scale with global effects. Liveability is far easier to operationalise and measure and policymakers and planners can be made accountable for achievement of many liveability standards. Sustainability is too abstract for many people to comprehend and often cannot be demonstrated within short time periods, whereas liveability is easier to explain and achieve. Features of the urban environment that can directly contribute to the liveability of an area (including decisions relating to open space) can be readily implemented by government and demonstrated to residents.

The models that have attempted to demonstrate the nexus between liveability and sustainability also show that there are many similarities and differences between the concepts.

Newman's extended metabolism model (1999) positions improved liveability as a parallel process to improved sustainability. If there are reductions in the output of waste products from urban environments, then sustainability would be improved. It would be expected that liveability would be improved simultaneously. However, there are many examples where improvements in liveability are not always accompanied by increases in sustainability. As pointed out by van den Berg et al (2007) the creation of open spaces that

emphasise conservation values may sacrifice socially valuable spaces utilised for activities that promote liveability (like sport).

Shafer, Lee and Turner (2000) utilise the same three elements of sustainability as proposed by the Bruntland Commission. The intersection of economy, society and environment determine quality of life. The overlap between the environment and society is liveability and the overlap between the economy and the environment is sustainability. This model separates sustainability and liveability in that the common element of the environment can have an impact on liveability or sustainability, but the economy does not influence liveability and society has no influence over sustainability. However, the economy does influence liveability. During periods of higher economic growth taxation revenue increases and local governments have more money to spend on community infrastructure, including parks. These parks have a direct impact on liveability. Likewise, by promoting the economy and improving environmental outcomes at the expense of social outcomes there is the possibility that liveability will decline. If liveability policy is pursued at the expense of sustainability, it may be because of economic and environmental policy being favoured over social policy (Gough 2015).

Godschalk (2004) and the liveability prism clearly demonstrated that tensions exist between liveability and sustainability. Liveability is a broad concept, but is narrowed down to a single element within this model. This simplification does not consider the many aspects of liveability that influence urban residents. It fails to properly account for the tensions that exist between the components of both liveability and sustainability.

There has been considerable criticism of sustainability as a concept not least because of the long-term nature of achieving key outcomes related to the concept. Liveability is seen as a more pragmatic concept because it addresses immediate problems. The political environment and the electoral cycles of different governments sees liveability dealt with as a matter of urgency and the results can be observed more quickly, whereas the long-term nature of sustainability means that it becomes an abstract concept beyond the understanding of many people. If a change is made in a certain policy, then benefits might only be experienced in the future, possibly beyond the life of people that are required to make sacrifices to ensure success of the policy. The key to successful urban consolidation may be to find measures that simultaneously promote higher sustainability and liveability (McCrae and Walters 2012).

Liveability potentially declines as population density increases. This may not always be true and may be mitigated by measures that counter negative views of urban consolidation, including the development of well-designed higher density dwellings with adequate accessible and functional public and private open spaces. The push to increase dwelling and population density for reasons linked to sustainability may reduce liveability for those unaccustomed to higher densities or unwilling to accept changing urban environments.

3.6 Measurement of Liveability

One of the many difficulties associated with liveability is the measurement of the concept by policymakers. Policymakers and government officers often make anecdotal and subjective assessments of the performance of their policies. Unless the concept of liveability and the criteria by which it is measured is clearly set out in policy documents it is unlikely to be systematically and objectively measured.

There are many criteria that can be used to measure liveability. Some measures of liveability are more focussed on economic criteria, while others utilise socio-economic and environmental data (Pacione 2003). Although there are no unique criteria that denote liveability, many organisations including the Economist Intelligence Unit and Mercer International have established liveability indices. These objectively "mark" cities for the presence of features that promote liveability including parks and opportunities for recreation.

Mercer Consulting produces the Quality of Living Survey which is primarily utilised by corporations to provide justification for executive remuneration. Liveability is measured utilising ten topics including political, socio-cultural, and natural environment, as well as recreation and housing. Scores are allocated to each area of the survey and weighted based on importance of the topic (from expatriate workers' points of view) (Mercer Consulting 2016).

The Economist Intelligence Unit produces the Global Liveability Ranking which sees the performance of cities measured across five categories including infrastructure and environment. The most liveable cities tend to be mid-sized cites with lower population densities that have a range of recreational activities, lower crime levels and infrastructure that is not stretched to capacity (Economist Intelligence Unit 2016). Australian cities are often considered highly liveable cities according to the list. In 2016 Melbourne was ranked first, Sydney was ranked seventh and Perth was ranked eighth, while global cities like

Tokyo, London and New York failed to reach the top ten liveable cities (Economist Intelligence Unit 2016).

Both indices have been criticised because they are geared towards providing information to corporate interests. Increasingly both government and media take note of the surveys and use them to target improvements in policy or promote a city based on survey results. It points to the expropriation of the concept of liveability by business interests and government and what Harvey (1989) referred to as the need to create physical and social imagery of cities suited to business and competitive functions.

It is recognised that many liveability indices provide generalisations and do not give fine-grained feedback about the cities (Lowe et al 2015). According to Lloyd, Fullagar and Reid (2016) policymakers should adopt comprehensive liveability measures like the Canadian Index of Wellbeing or the Australian National Development Index which integrates objective and subjective socio-economic and environmental indicators.

Badland et al (2014) identified eleven key domains of liveability and 233 measures linked to the domains which potentially affected liveability. The vast number of domains and measures pointed to the difficulty of relying on a single measure to determine liveability and highlighted that there was no simple means to measure liveability.

Arup prepared a framework on liveability for Sydney for the Department of Planning and Environment (NSW). It stated that liveability is about cities being “safe, attractive, affordable and sustainable” and was comprised of nine elements including community engagement, social infrastructure, housing choice and environmental quality (Arup 2017 4). It is recognised that there are many overlaps with the United Nations Sustainable Development Goals including health and well-being, employment and economic growth, reduced inequality and sustainable cities and communities. It argued that liveability should be people centred and delivered in a manner that emphasises equity, inclusion, and shared benefit. It recognised that it is a “dynamic process constantly evolving” (Arup 2017 4). The document could be viewed as an action plan about how to achieve greater liveability and has the potential to be applied to other urban centres. However, it must be recognised that the report was prepared by a private consultancy that acted on the instructions of its client (the New South Wales government) and as such it could be seen as a political document whose views aligned with the government.

One of the key issues around the measurement of liveability is the macro or whole of society approach over the micro or lived experience of individuals in certain sections of an urban centre. Many of the key government documents adopt a whole of society approach that often ignores contextual differences between suburbs within a city. This may be exacerbated when an area undergoes densification. It may be argued that liveability within the whole urban area improves as density increases, however, if there are not urban planning responses that counter the negative consequences of higher dwelling and population densities in specific densified locations then liveability declines in these areas may emerge.

3.7 Liveability, Population Density and Open Space

Urban consolidation is seen as a favoured means to improve the sustainability of existing towns and cities particularly those with relatively low dwelling and population densities. At the same time there are questions as to whether the increased dwelling and population densities will result in changes in the liveability of urban areas. There is often a presumption within strategic planning documents that promote higher dwelling densities that sustainability and liveability will automatically rise. However, neither is inevitable and it is argued that failure to address liveability in terms of the planning and management of open spaces in areas undergoing urban consolidation will create unliveable urban areas. Yang (2008) argued that there is little evidence to show that higher density enhances liveability. Indeed, there is no guarantee that there will be increased sustainability through improvements in liveability (van Dorst 2012)

There are indications that rising densities do not affect everyone equally and there are some who feel that urban consolidation has caused declining liveability (McCrea and Walters 2012). Haarhoff, Beattie and Dupuis (2016) utilised housing satisfaction as a proxy for liveability and found that the provision of higher levels of amenity and public transport contributed significantly to the perception that higher density suburbs were highly liveable. However, they found that people would consider lower density housing in the future (if they had a choice). Policies promoting urban consolidation increasingly made it difficult to find detached homes on larger lots, and high home prices relative to incomes (and low housing affordability) forced many home buyers to consider alternatives to low-density housing (Haarhoff, Beattie and Dupuis 2016).

Walter (1978) believed that the Singapore government's housing program implemented from the 1970s caused a deterioration in liveability. Apartments were constructed that did not have communal living spaces so interactions between residents were limited.

Newman (1973) argued using his defensible space theory that the design of multiple storey apartments can create opportunities for crime in unsupervised spaces within buildings. There have been numerous examples of high-density apartments that have been demolished because they became sites of significant anti-social and criminal behaviour. The buildings provided minimal opportunities for passive surveillance or friendly interaction between inhabitants. When this was combined with poverty, highly unliveable urban environments were created (Lawson 2010; Hall 2002).

Views of nature appear to improve the quality of life and levels of satisfaction of dwelling residents (Ulrich 1981; Kaplan 2001). Burdett et al (2004) found that parks were highly valued by residents of high-density environments like London and were a significant influence over perceived quality of life.

High-rise and high-density are often treated as the same issue. There are often negative connotations attached to high-rise as expressed in Helleman and Wassenberg (2004, 3); "High-rise estates are associated with problematic living conditions, deprived areas, isolated locations, a poor population, a negative image, social isolation, pollution and crime."

Yeh and Yuen (2011) found that people change their attitude to high-density apartments over time as more are built and they house an increasing proportion of residents. People who are accustomed to denser environments are more accepting of high-rise residential apartments (Yeh and Yuen 2011).

If someone lives in a spacious environment, then it will be difficult, and possibly traumatic, to live in a crowded environment. Alternatively, if someone lives in a dense, crowded environment, then it will be a vastly different experience to move into more spacious surroundings (Yeh and Yuen 2011).

It has been argued that different cultures have different levels of tolerance to crowded environments. Anderson (1972) and Schmidt, Goldman and Feimer (1976) stated that Asian populations appeared to have higher tolerance for crowded environments, although as pointed out by Loo and Ong (1984) this may be the result of socio-economic disadvantage and housing choices imposed by government.

Homogeneous groups with similar sociocultural values, age and gender roles can potentially tolerate higher densities more than heterogeneous groups. If people from outside a social group arrive in an area and are viewed as strangers, then it may lead to perceptions that

density is higher. Likewise, changes in the environment which increased interactions between people who are not accustomed to it may lead to perceptions that density has risen (Rapoport 1975).

Rapoport (1975, 134) examined the relationship between density and crowding and the "negative subjective experiences" associated with higher densities. The perceived level of density and actual crowding is decoded by people based on cues. If someone is accustomed to higher levels of density and crowding, then higher density living, or a crowded park may not be so confronting (Rapoport 1975). In some cases, higher densities are unavoidable. At a sporting match or public event crowding is inevitable and an indicator of the success of an event (Rapoport 1975). However, if people are only familiar with low dwelling and population densities and there is an increase in dwelling densities and site coverage by buildings, then the cues indicating higher affective density (perceived crowding or isolation) amplify the feelings of increased density and crowding (Rapoport 1975).

It may be possible for urban planners to manipulate perceived densities to reduce the feeling of crowding through better design, and in turn improve the perceptions of liveability. Coley, Kuo and Sullivan (1997) believed that residual land should be allowed to grow over and be covered with greenery to contribute to perceptions that crowding is not occurring. Kearney (2006) suggested that views of natural spaces should be maximised to make higher density developments more palatable to opponents of such developments.

Pincetl and Gearin (2005) found that residents in suburbs of Los Angeles that were being densified wanted urban parks that would improve quality of life without necessarily becoming recreation destinations. They wanted urban environments including paths landscaped with trees that could be enjoyed while walking. They were more accessible than traditional parks and could provide residents with multiple socio-environmental benefits including access to nature (Pincetl and Gearin 2005).

Density is seen as a solution to urban problems linked to sustainability and has the potential to improve liveability of urban areas, provided there are improvements in amenity, including open space.

Open space is an important feature of urban environments and can create more liveable environments for urban populations. In areas where dwelling and population densities are rising there is the potential for declining liveability and POS is one means of countering this decline.

Badland et al (2014) identified seventeen POS indicators (both objective and subjective) including availability, accessibility, and quality of open space that influence liveability. Although not the only feature that creates liveable environments it is a feature that can be changed by planners and managers of urban spaces. The Highline Park in New York has become a symbol of the potential of redeveloped areas to provide UGS in a densely built and populated area that had limited open space opportunities. It has rejuvenated a blighted area and increased liveability for many people (Lang and Rothenberg 2016).

3.8 Liveability and Government

The ideas behind liveability theory have found their way into government policy at multiple levels. Traditionally local governments have been involved in urban planning throughout the Western world, although there has been significant influence by state and territory governments in Australia and the national government in the UK. The provision, management and maintenance of open space has typically been a local government responsibility across many countries. However, there has been increasing pressure to allow greater involvement from individuals and groups external to government, as part of shift that has occurred away from government towards governance.

According to Massey (2005) the British government adopted a liveability program in the late 1990s focussed on rejuvenating inner-city areas by removing graffiti, deterring antisocial behaviour, and reducing urban blight. Policies that often overlapped with sustainability, but utilised liveability in their aims, were promoted including active transport, mixed land use zoning and the activation of open space (Massey 2005). An approach that was adopted in the UK to improve residential liveability was the incorporation of home zones into suburban streets to slow traffic and create shared spaces along suburban roads. Spaces were created that allowed children to play, cars could be parked, traffic would be slowed, perceptions of safety would rise, and the aesthetics of the street was improved (Clayden, Mckoy and Wild 2006).

There have been periods since the early 1970s that Australian Federal governments have adopted a more interventionist approach in urban planning to influence liveability outcomes. According to the Australian Constitution town planning, is not a Federal government responsibility, however, due to its Constitutional strength around taxation and expenditure it has at times intervened to ensure certain policy goals are achieved including endeavours to improve liveability.

There have been multiple interventionist Labor governments that were inclined to become involved in urban affairs and address liveability. The Whitlam Labor Government (1972-1975) established the Department of Urban and Regional Development (DURD) which combined traditional urban planning with a range of economic and social goals, including liveability.

The Hawke and Keating Labor governments (1983-1996) promoted urban consolidation as part of the Building Better Cities Program. There was an attempt to address several criteria including economic growth, microeconomic reform, social justice, ecological sustainability, and liveability (Neilson 2008). The Federal government partnered with state and territory governments to remove obstacles to the redevelopment of inner-city areas which had infrastructure constraints and attempted to improve urban environments.

In "*Our Cities Our Future"* the Rudd and Gillard Labor governments (2007-2013) recognised the importance of liveability (Department of Infrastructure and Transport 2011). It stated, "Liveable cities offer a high quality of life and support the health and wellbeing of people" and "Liveable cities are equitable, socially inclusive, accessible, healthy, safe and resilient. They have attractive built and natural environments and provide a diversity of choices and opportunities" (Department of Infrastructure and Transport 2011, 7).

Liberal-National Party Coalition governments have been less inclined to intervene in urban planning, although they have been strong advocates of greater funding for road infrastructure to promote employment and economic growth. They have tended to support the mantra that the market should make many decisions relating to urban planning. Liveability is seen as a matter of personal choice by consumers when interacting with the producers of urban environments.

Their approach to liveability saw the Howard government (1996-2007) reverse many policies implemented by the Hawke and Keating governments. Likewise, the Abbot government (2013-2015) removed references to liveability and sustainability in policies introduced by the Rudd and Gillard governments as it did not fit with its ideological stance that was supportive of fossil fuel industries and lack of belief in climate change. In more recent years, the Turnbull government (2015-2018) appointed a Minister for Cities and Built Environment, however this role was short-lived due to political and ideological issues. Former Prime Minister Malcolm Turnbull regularly referred to the idea that more liveable and sustainable cities allowed residents to travel for no more than half an hour to the jobs

and activities they participated (Dodson 2015a; Dodson 2015b). In 2018 the Morrison government announced the appointment of a Cities, Urban Infrastructure and Population Minister who was given the responsibility of reducing road congestion which was seen to be hampering economic productivity. There was no reference to liveability (ABC 2018).

Dodson (2015b) argued that greater coordination between the different levels of government was necessary to improve outcomes where density was having a detrimental impact on amenity. There has been a history of state governments working independently of federal governments on urban policy, including liveability.

The State governments within Australia have the power to implement policies that influence liveability. As stated in Chapter 1, in WA, the Department of Planning (DoP) introduced *LN* to provide guidance to stakeholders in creating liveable residential communities. One of the principle objectives of the document is to "Provide POS that meets the recreational, social and health needs of existing and future communities" (Department of Planning 2015a, 5). There is a connection made between liveability and the provision of open space that meets residents' requirements in new urban areas. Although the effectiveness of such policies as *LN* to achieve improved liveability was questioned in Falconer et al (2010). There may be intent on the part of the government to achieve improved liveability outcomes. However, there are many elements of liveability and many variables at play. It may be a more difficult task to achieve than suggested by policy or political or advertising slogans.

The City of Charles Sturt in South Australia points to how liveability goals may be incorporated into open space policy (City of Charles Sturt 2012). The city created an open space strategy with the aim of "enhancing quality of life through open space." It stated that by strengthening the quality, function, and amenity of open space the character of the City will be enhanced, the diversity of activity opportunities will be increased and people's quality of life and wellbeing will be improved (City of Charles Sturt 2012). It appears that quality of life and well-being are treated as a proxy for liveability. Local governments responsible for the planning and management of open space are attempting to operationalise concepts such as liveability, quality of life and well-being through open space policies. Liveability is not addressed in a single specific measure, but rather a suite of measures included in the open space strategy.

3.9 Conclusion

There are a broad range of definitions, characteristics, means of implementation and measurement of liveability that have been derived from both academic and non-academic sources including academic researchers, government, and private businesses. These differences mean that there is no definitive means to achieve higher liveability.

It is clear from the academic literature that the perceptions of liveability for urban residents is highly varied so much so that for governments to achieve higher liveability may involve a suite of policy responses; not every response is going to satisfy every resident in terms of achieving higher levels of liveability. Residents in areas where urban consolidation is occurring will have widely differing viewpoints as to how liveable the urban environment is. Perceptions of liveability will vary for a variety of reasons including age, income, gender, and residential location. This is extremely difficult to overcome.

The responses by government to the question of liveability have been heavily influenced by the ideological and political backgrounds of the governments in power. Although national governments in Australia have included liveability as a broad aim in policy documents it has not often been followed up with key actions that can achieve improved liveability. In some cases, the governments have been ready to dispense with the concept. Progressive and left-leaning governments have tended to be supportive of the concept of liveability while conservative, right leaning governments have been opposed to the inclusion of liveability in policy preferring to let the market make the decisions.

While state and local governments increasingly reference liveability in key planning documents, translating such policy into recognisable changes in urban environments is proving to be a more challenging task. There seems to be a conspicuous lack of performance measures to support the intent and characteristics of liveability that are expressed in government policy documents. Included in these omissions is an absence of considerations around the role that open space might play in the operationalisation of this concept.

The next chapter will discuss the emergence of the concept of governance as a bridge between the operation of traditional regulatory government functions and the contemporary expectation of urban citizens to be heard and respected in debates impacting on their urban experience. It will be shown that the functions of government and other actors within the urban environment are growing increasingly fluid as traditional boundaries between private and government interests have become less well defined. The

literature to be reviewed will elucidate this growing political space and go on to identify the potential for new approaches to open space planning and management that can more effectively embrace the challenges of urban consolidation.

Chapter 4 Governance

4.1 Introduction

This chapter discusses the change in the mode of governance in many countries; from one in which government was the main influence to one in which government is less important, and non-government actors are increasingly important to the proper functioning of cities. Numerous examples are provided of the shift in focus from government to governance.

According to Hendriks (2014, 554) governance is all "arrangements that shape productive and corrective capacities in dealing with urban issues involving multiple governmental and non-governmental actors". Healy (1997, 206) utilised the definition; "processes through which collective affairs are organised". In this landscape there are many participants (including government) and various means by which decisions are made and actions taken relating to urban areas (Gleeson, Darbas and Lawson 2004). In the realm of urban planning, governance refers not only to the institutions and processes of formal government, but also formal and informal groups and organisations that participate in provision of goods and services previously provided only by government (Khan, George and Brunner 2015). The latter definition is one that is utilised in this thesis.

The literature on governance is critical in gaining an understanding of how decisions are made within the often contested frameworks of local politics and regulatory authority where decisions about open space are promulgated.

In the context of the research question it is important to appreciate that the primary role of traditional government in planning and managing open space across the world is declining. There is increasing recognition that non-government organisations and individuals (whether they are formally or informally organised) are asserting themselves in driving debates around the future of public open space.

4.2 The Rise of Governance

The Industrial Revolution, which began in the mid-1700s, promoted dramatic growth in the size of cities across Europe and North America. Large numbers of poor and uneducated people travelled from rural areas to cities in search of employment in newly emerging industries. They often settled in inner-city slums that paid little attention to liveability. Buildings were barely habitable with extremely high population densities[4]. Economic forces that drove the Industrial Revolution created unliveable cities. The situation was exacerbated by the laissez-faire approach to economic and social policy by governments in

industrialising countries. Governments played a small role in the provision of social welfare and community services, while the market economy dominated society (Hall 2002).

By the 1800s there were rising concerns about the liveability of these urban environments and new ideas were emerging about the structure and organisation of cities and the role that government should take in society and the economy (Hall 2002; Reeder 2006). Liveability and governance had not been recognised as formal concepts, although early reformers recognised that there were characteristics of cities that could be modified to improve human living conditions in dense urban environments (Hall 2002; Reeder 2006). There were calls by progressive groups for the creation of parks, protection of urban commons and the introduction of government regulations to improve the built environment for city residents (Hall 2002; Reeder 2006).

From the late nineteenth and early twentieth centuries, the role of urban planning was formalised and integrated into government operations to create policy and enforce regulations surrounding the design of cities that would generate improvements in liveability. Governments had grown significantly and created bureaucracies that utilised rational, technical processes to solve urban problems. Problems were identified, solutions to these problems were evaluated and policies were implemented. Decisions made by urban planners, who saw themselves as neutral participants in the urban planning process, made decisions based on "scientific truth," including the implementation of standards relating to the production of open spaces that would improve the liveability of cities. Paternalistic attitudes towards citizens were adopted by the bureaucracy that maintained that it was acting in the public interest. However, by the 1960s, the concept of the public interest was increasingly questioned by a range of stakeholders in many spheres of government activity, including urban planning (Heywood 1990; Hedgcock, Hillier and Wood 1991; Iveson and Fincher 2014).

Towards the end of the 1960s there was increasing disillusionment with the ability of government bureaucracies to solve many urban problems. There was an increasing number of people across the Western world who questioned the government's understanding of the public interest. Bureaucracies formulated plans and policies that often did not reflect city residents' desires, and imposed redevelopment plans on established neighbourhoods with little community consultation. Jacobs (1992) critique of the New York government and city planners epitomised the situation. There was an emphasis on the need to follow plans that had been created by professionals within the bureaucracy, with little input from the

community. Planning failed to recognise the nuances of inner-city areas. By the 1970s this modernist approach to urban planning was increasingly discredited for its tendency to ignore democratic, participatory practices and environmental values (Jacobs 1992; Hall 2002).

Simultaneously the emergence of serious economic, environmental, and social problems in many Western nations that traditional approaches were unable to solve meant that governments turned to alternative policies for the administration of government services[5].

From the 1970s smaller and less interventionist government with an emphasis on market-based solutions became a guiding principle for those wanting to promote economic growth, productivity, and more efficient government. Deregulation of markets, privatisation of government services and competitive tendering for the provision of services became fashionable in many countries (Woodward 2002; Evers and de Vries 2013). These economic changes accelerated with the collapse of Communism in Eastern Europe in the early 1990s, the rise of globalisation, as well as the emergence of the internet (Woodward 2002; Feidler 2014). In what has been described as a "hollowing out of the state" governments across the Western world introduced new public management practices which saw reduced public sector involvement in a range of areas, and allowed non-government interests to provide goods and services (including public and merit goods[6]) that had previously been the responsibility of government (Thompson 2008; Desmarais-Tremblay 2017).

The urban managerialism of the 1960s and 1970s has become the rational managerialism of neoliberalism (Forrest and Wissink 2017). There are a greater number and more diverse range of gatekeepers (managers and decision-makers) in the modern urban environment including assets controlled by local government managers (Williams 1978; Forrest and Wissink 2017). There are also gatekeepers that work for businesses that serve a similar role, but act on behalf of private interests not in the public interest (Williams 1978; Forrest and Wissink 2017). At the same time there are government officers that must adhere to the new public management mantras which emphasise efficiency and financial accountability (which have both positive and negative connotations), and sometimes outsourcing and privatisation (Forrest and Wissink 2017). There is an unwillingness to let go of the many features of the urban environment that government departments still control.

There are many resources available in the city which are controlled by the gatekeepers. It is these resources that are the means for residents to achieve some form of liveability. An allocation system decides who can access these resources including open spaces. Open

space allocation systems potentially create inequalities between those that do have the resource and those that do not.

An extension of this is elite theory which focuses on groups of people within society that can influence the decisions that are made by governments and institutions within society that ultimately benefit members of that group (Higley and Pakulski 2012; Lopez 2013). It could be related to economic or political power and can be seen to occur at the city level or at higher levels of government, in both stable democracies and corrupt, undemocratic nation states (Higley and Pakulski 2012; Lopez 2013). The existence of such networks of powerbrokers within urban environments can ensure that liveability outcomes for members of such groups are protected or enhanced while those outside the elite groupings suffer from declines in liveability.

It could be argued that these elites control resources within the urban environment that ultimately protect the interests of property owners. It was Lefebvre (1996) that argued that it was necessary for the inhabitants of urban spaces to exercise their right to the city and if necessary appropriate spaces irrespective of whether they are in public or private ownership. Lefebvre (1996) argued for a new type of revolution that would see citizens gain control of spaces within the urban environment to improve the experience for those that live in the spaces (Purcell 2002; 2012). The "revolution" did not have to be violent and may have been in the form of spontaneous or alternative governance processes that saw residents engage in guerrilla gardening or spontaneous community activities that improved the local urban environment (Talen 2015). This contrasts with the traditional neoliberal approach towards treatment of private assets like land; the property owner decides who utilises urban spaces.

4.3 Frameworks of Governance

Three models of governance are drawn on to demonstrate the fluidity of the concept. It is a concept that sees governments operating further from their traditional roles. There is increasing involvement from external actors who participate in or influence decision-making and actions.

Arnouts, Van der Zouwen and Arts (2012) proposed a continuum of styles of governance depending on the level of involvement by different participants, their level of influence over the system and their relationship with rules, resources, and discourses (see Figure 4.1). Potentially governance could vary from significant government intervention through to complete self-governance by actors outside government, with varying levels of

collaboration by government and non-government parties between the two extremes of the governance spectrum[7].

Governance by government		*Collaborative governance*	*Governance without government*
Regulation	**Closed co-governance**	**Open co-governance**	**Self- governance**
Closest to traditional government, government is dominant and at top of hierarchy of control, government sets policy	Government acts as a partner to other groups, clear boundaries of responsibility, network with limited access by actors outside established participants	Many actors, government in supporting role, mutual learning processes	Self-regulation by actors, decision-making by participants, government has minimal or no role to play

Figure 4.1 An Overview of Types of Governance
Source: Adapted from Arnouts, Van der Zouwen and Arts (2012, 45-47)

Hendriks (2014) created a model (see Figure 4.2) divided into quadrants based on who made decisions in the urban environment and how those decisions were arrived at. Within the urban environment decisions could be made by "real decision-makers" (the elites) or alternatively by ordinary citizens. Decisions could be arrived at by analysing alternatives in a collective manner or because of competitive processes (Hendriks 2014). In Quadrant I (the urban regime) political and economic elites make decisions quickly with little reference to democratic ideals or transparency in the decision-making process (Hendriks 2014). In Quadrant II citizens are consumers operating in an urban market making choices about the goods and services that they demand. "Voting" for their preferences through the purchase of goods and services drives decision-making in this quadrant (Hendriks 2014). Quadrant III sees the decision-makers act as trustees for a variety of interested parties and to arrive at final decisions utilising communicative, deliberative, and inclusive procedures (Hendriks 2014). Citizens trust the decision-makers to act on their behalf and make decisions that match their views. In Quadrant IV, the urban platform, all individuals express their views and final decisions are comprehensive and collective (Hendriks 2014). Considerable resources and time are spent arriving at decisions.

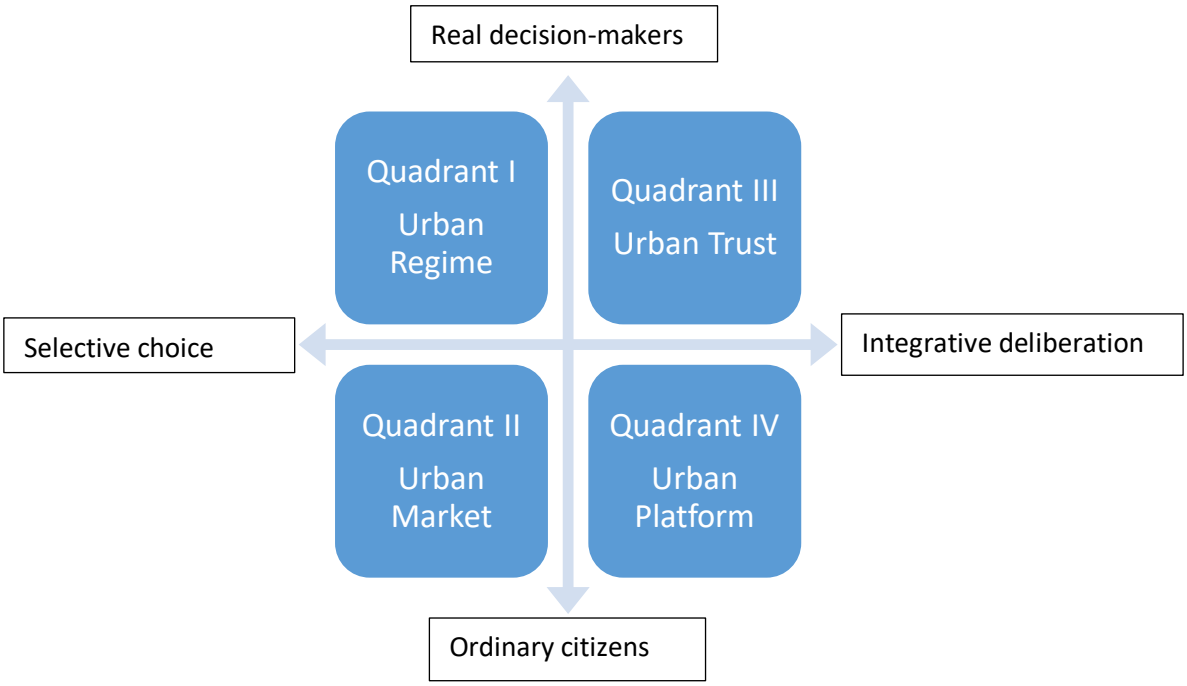


Figure 4.2 Quadrants of Governance
Source: Adapted from Hendriks (2014, 558)

According to Buizer et al (2015) (see Figure 2.7) the actions of participants in the governance of open space can be focussed on a variety of physical or political activities including;

1. The outsourcing of responsibilities to external bodies.
2. Formal consultation between the authorities and the community on plans.
3. Strategic participation in the decision-making process.
4. Cooperative modes of management.
5. Informal and spontaneous activities within open spaces.
6. Informal and spontaneous attempts to influence decisions and practices regarding open space.

The first does not involve any attempt at democratic processes, but rather is a measure designed to have external organisations complete tasks to reduce financial expenditure by government bodies. There is no direct involvement by the external body in political decisions. The second involves presenting proposals to the public with varying levels of involvement, drawing from the ladder of participation created by Arnstein (1969). The third form goes beyond simple consultation. It allows individuals or bodies external to government to have significant influence over final decisions. They may have powers delegated to them as part of the process. Cooperative modes of management include projects initiated by the government where non-government parties share control and

benefits of the project, or where projects are started by non-government actors, and implementation is supported by government. The fifth activity involves community members either supporting or opposing policy and procedures dealing with open space and may include rallies and direct communication with government. The final form involves ad hoc participation in activities within open spaces that are not formally organised by the government including informal community gardens and guerrilla gardening activities. Some of the activities may be formalised over time (Buizer et al 2015).

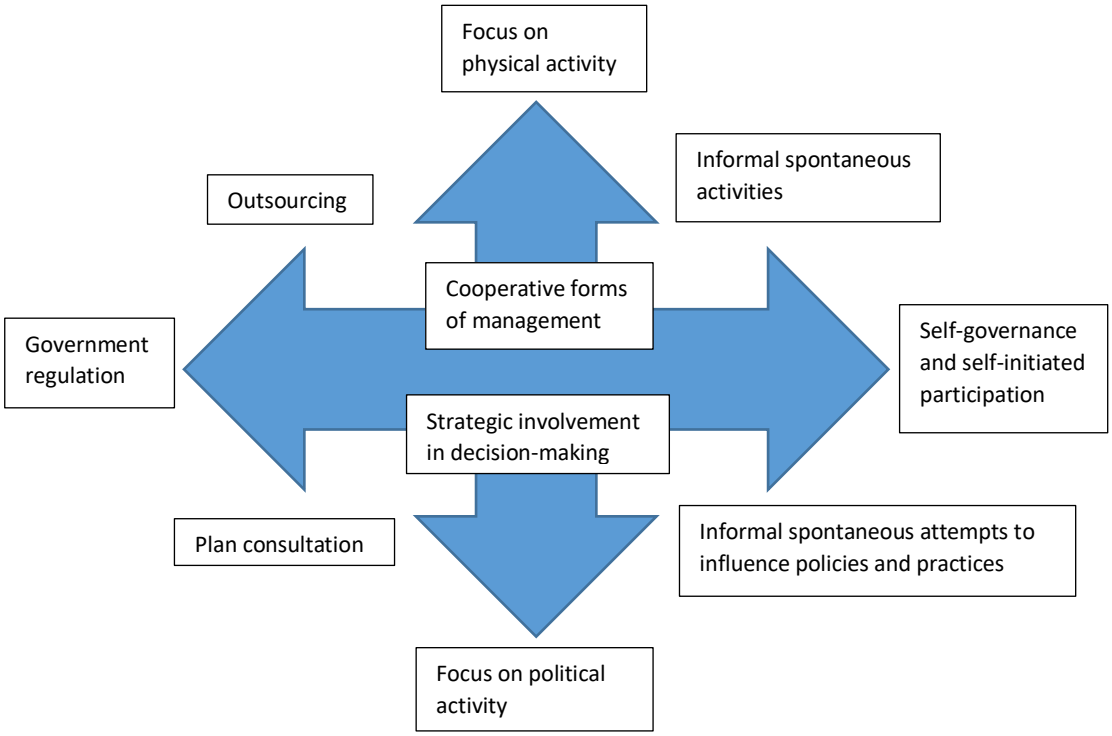


Figure 4.3 Types of Governance
Source: Adapted from Buizer et al (2015, 30)

In both models created by Buizer et al (2015) and Hendriks (2014) there is significant fluidity of participants within the respective models; organisations are not located in a single position at all times, rather as the organisations change they can occupy a different position in the model; governments can adopt less bureaucratic procedures and impose less regulation and accept greater involvement from community groups and in so doing shift from the left hand side of the model by Buizer et al (2015) towards the right hand side where there is greater levels of self-governance and self-initiated participation in activities. Likewise, in Hendriks (2014) model there can be movements from one quadrant to another. For example, there could be a shift from quadrant II (Urban Trust) where people leave decisions and management of public spaces in the hands of officials they trust to Quadrant III where decisions are made as a result of consumption; if people consume certain goods

and services in the urban market (like open space) then it is a vote in support of such goods and services) and the market effectively makes decisions in relation to such features as open space.

4.4 Application of Governance to Open Space

This state of planning and managing open spaces increasingly became a standard approach across many jurisdictions in the USA, Europe and to a lesser extent Australia. There was a significant increase in the involvement of community groups in the management and maintenance functions of open space and their importance has increased since the global financial crisis (from 2007 onwards), as local governments struggled to finance these activities (Mathers, Dempsey and Molin 2015). Such an arrangement aligned with neoliberal philosophy in terms of reducing the influence of government and changing the mind-set within society that government should (and does) control a vast array of areas within society and challenges the orthodoxy that government leadership and expenditure is automatically available within urban environments. The adoption of governance processes that reduced the role of government and increased the participation of community groups was often couched in terms that supported the empowerment of communities and the promotion of greater involvement by community groups in open space management and maintenance. It was argued that smaller government would increase economic efficiency and increase the tendency for citizens to become engaged in their local communities. Greater fiscal responsibility would be imposed on local government and community groups as to how they spent government funds. In accordance with social choice theory people would make choices about how much or little should be spent on social welfare and infrastructure services (Dowling and Harvie 2014). More traditional bureaucratic principles were relegated behind economic priorities, as local government became a contract administrator. Urban planning was geared towards the facilitation of economic goals and the promotion of urban development. The public interest was increasingly framed in economic terms and social or environmental outcomes were ignored (Gleeson, Darbas and Lawson 2004).

From 1979 British governments (initially led by Margaret Thatcher) undertook a range of reforms which saw many functions of local governments contracted out to private businesses via competitive tendering of services. Firms would often be awarded contracts if they charged lower prices than their competitors. Policy failure sometimes occurred which saw service quality decline. In 2009 then British Prime Minister, David Cameron, promoted the idea of a “Big Society”. It was argued that Britain was burdened by big government and

the solution was to devolve power away from government towards communities that would be given the authority to make decisions and deliver a range of services that had previously been delivered by government. It aimed to reduce reliance on the state to solve urban problems and simultaneously reduce government expenditure. According to Dowling and Harvie (2014) it was a response to the global financial crisis (declining economic growth and rising unemployment), the government's budgetary constraints (falling taxation revenue and rising government expenditure) and the crisis of social reproduction (the need to ensure that labour productivity was maintained through education, employability, and well-being).

The pressure to reform local government in the UK was according to regulation theorists the direct result of the crisis that emerged regularly with capitalism. Each crisis presented an opportunity to push the economy towards a new stage of capital accumulation. Targets set for local government were all part of the process of ensuring that capital accumulation would continue (Painter 1991). Ultimately decisions were taken by the government to maintain the predominance of business and financial interests.

When faced with political antagonism towards involvement in their traditional activities, and significant financial constraints local governments drew on community groups and unpaid volunteers to participate in the planning, maintenance, and management of urban open spaces (Mathers, Dempsey and Molin 2015).

4.5 Effects of the Shift to Governance

Mathers, Dempsey and Molin (2015) found that there were problems with voluntary groups being established to manage POS in the UK, as part of the push by the government for greater community involvement in local affairs. The powers of local authorities were devolved to some of these groups, but despite an increase in the number of groups working in the field, there were often significant capacity constraints. There was a decline in the membership, expertise, and representativeness of many community groups. There was a deskilling of local government as operations were transferred to private contractors. The community groups also required support from local government (which was sometimes not forthcoming) so they could maintain or manage local parks (Mathers, Dempsey and Molin 2015).

Linked to governance was the concept of the civil society or neo-communitarianism, which described individuals and groups that attempted to challenge the existing approach of government. They often demanded changes to government policy and regulation to fight

injustice and inequality and pushed to make policy more responsive to the needs of the marginalised within society (Khan, George and Brunner 2015). Some of these groups took an active role in providing services that were previously carried out by government. Proponents of less interventionist government also advocated the concept of a civil society. Just like liveability the governance narrative was increasingly promoted by advocates of the small government agenda and supporters of neoliberal socioeconomic policies (Fyfe 2005).

Although the promotion of governance had the potential to democratise the decision-making process, there were concerns that it allowed the government to retreat from its responsibilities. Private organisations would carry out the work previously completed by government relying heavily on volunteers. There was the potential for volunteers to be exploited and for private interests to usurp the public interest.

In some cases, the move to governance may not be genuine. Holden and Scerri (2013) asserted that tokenistic public consultation processes were utilised by some local governments in Melbourne. Businesses were treated preferentially, and lack of transparency led to some citizens becoming disengaged from the planning process. They noted that Vancouver had encouraged greater citizen participation in many planning projects that had a direct impact on liveability. Broad consultation with stakeholders and the maintenance of transparency helped democratise the planning process and promoted the benefits of improved governance processes (Holden and Scerri 2013).

In New York, the Highline Park demonstrated that it was possible to utilise volunteer and private businesses to operate and maintain a park outside the traditional park governance processes (Lang and Rothenberg 2016). Although criticised for promoting gentrification, speculation, and the marginalisation of lower socio-economic groups, it enabled the redevelopment of disused railway lines into an iconic park (Lang and Rothenberg 2016). The governance framework allowed one element of liveability to be improved, in an area that would not have had this improvement, without the change in approach to park governance.

Van der Jagt et al (2016) noted that many trends emerged in Europe around open space planning and management. Increasingly cities engaged local people in decisions regarding green spaces. This had multiple benefits including the promotion of social cohesion and local food production. It was argued that there were mutual benefits from outsourcing development, management, and maintenance to different stakeholders. There was the potential for better decision-making and innovation. It was recognised that greater citizen involvement required greater formalisation of this involvement and informal arrangements

could not be relied upon as community participation increased (Van der Jagt et al 2016). Likewise, Mathers, Dempsey and Molin (2015) found that local authorities needed to support community groups that were involved in UGS management. It had to be accepted that greater participation by the community in open spaces took time and effort from local government.

According to Forsa et al (2015) it was unclear whether community group participation in the provision and maintenance of UGS improved the spaces. It was suggested that greater community participation benefitted users of green spaces that were involved in the governance processes which agreed with Dennis and James (2016) who found that community group participation in UGS management provided health and resilience benefits to members of the community group.

Kabisch et al (2016) found that there were significant pressures on UGS across Europe, because of financial constraints and moves to develop cities at higher densities. Kabisch (2015) highlighted that Berlin was suffering problems with regards to the management of open space, including development pressure, financial constraints, and a weak understanding of the benefits of UGS exacerbated by poor communication between different actors.

Matijssen et al (2017) found that local governments in cities such as Berlin, Amsterdam and Milan permitted community groups to maintain open spaces. There are tensions between the groups and authorities due to the threat of land rezoning and redevelopment. Nonetheless the spaces served a valuable role in providing recreation spaces and promoting more cohesive communities. It was recognised that bureaucratic processes hindered park activities. The creation of long-term agreements could guarantee security of tenure over the spaces. Communication between the groups, local authorities, and surrounding community was necessary to prevent conflict arising between stakeholders, as well as encourage community members to become involved and provide valuable social capital. Burn-out and lack of volunteers was cited as an ongoing problem for many groups (Matijssen et al 2017).

Kronenberg et al (2015) found that there were adequate amounts of open space in Polish cities, but there were problems with governance. UGS were seen as peripheral to other matters that governments dealt with, but it was believed that there was room for greater collaboration between groups involved in UGS governance to overcome silos between stakeholders.

Krajter Ostoi´c et al (2017) also examined UGS in Polish cities and found respondents were concerned with the quality of the spaces, as well as management and maintenance. There was support for education programs and enforcement of regulations linked to UGS. It was stated that following the transition to a market economy in Poland there had been a decline in "good" management of open spaces and government decision-making was increasingly driven by economic and political priorities.

Gleeson, Darbas and Lawson (2004) argued that governance provides government with the ability to achieve better outcomes across various government agencies and policy areas by overcoming organisational silos. The creation of partnerships between government and non-government organisations empowered citizens and improved open space management and provision (Fyfe 2005).

4.6 The Australian Experience

Australia has stood on the side-lines to many of these developments. The majority of open spaces are still managed by local governments. There is often community consultation when proposals for development of POS are submitted. However, this is frequently limited to the public making comment on plans for which significant decisions have already been made by the local authority and only minimal changes to plans are possible.

This situation has been brought about partly through the formal structure of government in Australia. There is a vertically coordinated hierarchy of governments across the country. Australia has a federal system of government with a constitution that prescribes the powers of the Federal government, gives State government residual powers, but remains silent on the powers of local government. The state and territory governments have the power to introduce laws and policies in relation to urban planning which is expected to be followed by local government and this has been criticised as not being conducive to better urban planning (Fenna 2004). In the case of WA, the State government has created the *Planning and Development Act (2005)* which give planning authorities the power to create policies, plans and regulations. Local governments follow these with slight variations subject to Western Australian Planning Commission (WAPC) approval. There has been a tendency towards centralisation of power in policy areas that affect liveability. Power is concentrated in the hands of state or Federal government, rather than local government (Silver 2010).

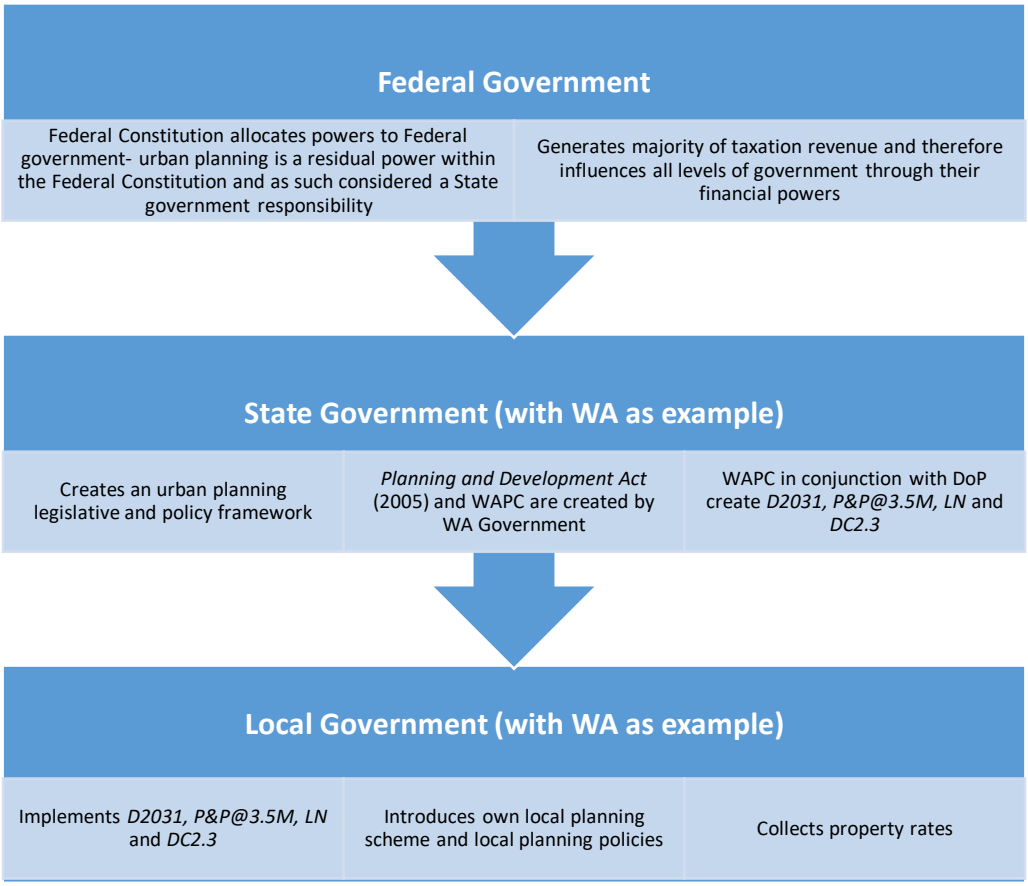


Figure 4.4 The Vertical Coordination of Planning in Australia

There has been significant expansion in the responsibilities of government in Australia since the 1940s. Local governments have moved beyond the "roads, rates and rubbish" paradigm. They have become increasingly involved in community welfare functions and the provision of recreation infrastructure (Dollery, Crase and Johnson 2006; PricewaterhouseCoopers 2006). Since the late 1980s the push for greater economic efficiency has seen the Federal, state and territory governments adopt policies that emphasise economic outcomes aligned with neoliberal ideology (so-called economic rationalism according to Fenna (2004)) and local government has not been exempt from these pressures (Fenna 2004; Dollery, Kortt and de Souza 2015; Council of Australian Government 2016; National Competition Council 2016). In addition, there is the ongoing problems associated with incrementalism and organisational silos.

The vertical fiscal imbalance that exists in Australia means that local government has few revenue raising powers beyond Council rates and financial grants issued by state and Federal government (Fenna 2004; Tomlinson 2012)[8]. Local governments are often pushed into carrying out functions with insufficient financial resources[9] and provide expensive

infrastructure, while relying on grants from higher levels of government in a form of cost shifting (Dollery, Crase and Johnson 2006; Dollery, Kortt and de Souza 2015). Simultaneously, State and Federal government vary grants depending on political or economic imperatives, and State government limit the ability of local government to borrow money or increase property rates beyond State government mandated levels. (Dollery, Crase and Johnson 2006). Local governments govern at the behest of state and territory governments with the threat of suspension, or their powers being limited by legislative change (Fenna 2004; Dollery, Crase and Johnson 2006).

There have been considerable changes to planning processes in WA to remove obstacles to development. These changes that have been imposed by State government have weakened local government authority but supposedly increased the level of certainty, the speed with which development proposals are dealt with and profitability for developers as part of a broader objective to promote economic growth. There have been changes to the *R-Codes* to make it easier to get smaller lot developments approved and to ensure only the smallest lots and apartment style developments require direct planning approval. The decision-making related to high worth development has been removed from local government, and put into the hands of expert assessment panels, known as development assessment panels (DAP) (Maginn and Foley 2014).

The broadening of local government responsibilities has meant that a degree of horizontal coordination is necessary. Local governments are comprised of numerous departments that are responsible for a variety of portfolios including local roads, open spaces, recreation centres, development approvals, zoning and waste management and the provision of critical urban infrastructure. These departments can operate like silos, independent or isolated from the decisions made by other departments. Failure to communicate and act together to achieve legislative and policy outcomes can result in infrastructure not being matched to the requirements of residents or being provided in an unsustainable manner. Ultimately failure to achieve horizontal coordination can result in a decline in the liveability of the urban environment.

There are elements of what Lindblom (1979) called “muddling through” or incrementalism with regards to finding solutions to urban problems linked to open space and densification (Lindblom 1979). Policy changes are achieved via small steps regardless of how those decisions are achieved. There is a tendency towards decisions that are only marginally different from the status quo, a tendency to solve immediate problems, rather than

address ultimate goals and for participants to address their part of the problem domain (Maddison and Denniss 2013).

4.7 Conclusion

This chapter has examined the literature on governance including definitions and characteristics of the concept. The shift from government to governance was also considered with a brief history outlining predominantly Western governments' moves to allow individuals and groups outside government to participate in policy areas traditionally the responsibility of government in response to budgetary pressures and for ideological reasons. The rise of governance emerged in parallel to the adoption of neoliberal economic and social policy driving an array of government activities in the USA, Australia, and the UK. Interestingly there has a been less tendency for Australian state governments to reduce local governments' role in open space planning and management and allow it to be substituted with community and volunteer groups[10].

Some writers have noted the benefits of such arrangements for open space planning and management, although there appears to be mixed results with such arrangements. It is recognised that improvements in liveability may be achieved through better governance processes dealing with open spaces, although the governance arrangements are diverse.

It has been shown that allowing greater community involvement in open space planning and management could reap many benefits for local governments. However, one of the biggest issues for government was the resistance to loosening traditional command and control approaches approach to planning and managing open space. Application of the three models of governance referred to in this chapter will be reviewed in Chapter 10 where the case study local governments will be examined and critiqued within this theoretical framework.

The next chapter discusses the role and history of open space highlighting that adequate open space provision is essential if liveability is to be maintained in urban areas that are undergoing urban consolidation.

Chapter 5 Open Space

5.1 Introduction

In this chapter a brief history of open space is provided along with a discussion relating to the changing role of open space and its varied definitions. However, the primary role of this chapter is to investigate how cities with high population and dwelling densities – compared to Australian cities - have responded to changing demand for open spaces in an environment where provision is often constrained. This discussion will highlight the relationship between urban planning and open space provision and in particular focus on the high levels of intervention and investment required to achieve improved outcomes for the community. Consideration is given to the emergence of more holistic and innovative approaches to open space planning and management that increases the emphasis on liveability and recognises the shift from government to governance as a decision-making framework within which choices are formed and implemented. These perspectives will be vital in contributing to the achievement of the research objectives 1 & 3 respectively:

- Locate the research on urban consolidation and open space planning and management within liveability and governance frameworks, and
- Examine how urban planning has responded to open space planning and management under policies of urban consolidation and ultimately assist in answering the research question.

5.2 History of Open Space

Open spaces have both spatial and temporal qualities with change being a consistent theme. The form and function changed according to the characteristics of the space, the passage of time and the evolution of society. Changes followed the trends and the ideologies adopted by the creators and owners of the open spaces. They were initially private spaces and were used for a variety of purposes including utilitarian, aesthetic, spiritual, recreational, and social purposes. In more recent times open spaces have been deliberately utilised for ecological and drainage purposes and to mitigate the effects of climate change and environmental degradation. Some were left in a natural state, while others had landscapes that were modified by the owners. Some had higher levels of public access and ownership than others, and there were shifts towards regulating for minimum provision levels in urban areas. The concept of public and private open spaces was formalised as Western society increasingly protected privately owned assets (including the physical land) utilising the political, economic, and legal frameworks of cities.

Open spaces were often the preserve of the wealthy and powerful within society, although there have been examples of public and quasi-public open spaces since ancient times. The wealthy came into possession of land through force, or were granted land by the rulers of parts of Europe and the Middle East. Private ownership of land allowed the owner to exclude the public from using the space and ensure the space served their own purposes (Jones and Wills 2005).

Many ancient civilisations had open space that served multiple purposes. The Hanging Gardens of Babylon created after 604BC for the Queen of Mesopotamia were an irrigated and terraced oasis in the desert (Wilkinson 1988). The Gardens moderated the high temperatures and provided aesthetic relief from the desert, as well as acting as recreation space for the ruling classes and military training grounds (Wilkinson 1988; Jones and Wills 2005).

Greek civic spaces, so-called agora, allowed many functions including organised and informal recreation, aesthetics, and education (Wilkinson 1988). Wealthier Greeks created fenced, private parks that had plants, statues and fountains added to create formal outdoor spaces (Jones and Wills 2005).

The Romans developed parks for hunting and recreation, built recreation centres like the Coliseum and modified existing Greek agora. They felt that overcrowding could lead to degradation of the environment, so green spaces in the cities were created near civic buildings with features like modern parks, including walking trails, art, and water features (Jones and Wills 2005).

During the Middle Ages, numerous monarchs across Europe created private parks. By 1300 it was thought that there were three thousand two hundred private parks across England owned by the wealthy and influential. These parks consisted of forest, pasture, and wetlands, up to eighty hectares in size, and served aesthetic and utilitarian roles, including hunting, fishing, and farming. (Jones and Wills 2005). Areas around castles across Europe also became parks because of site constraints like steep location, and the physical barriers created by moats and walls (Wilkinson 1988). Publicly accessible urban open spaces like market squares and streets served civic and market functions (Wilkinson 1988).

During the 1600s the French King Louis XIV had a chateau at Versailles renovated and the surrounding farmland transformed. A private park exceeding six thousand hectares, with formal gardens that included fountains and sculptures became the centre of government in France and a symbol of the power of the monarch. (Jones and Wills 2005).

Ownership of a park in England was granted by royalty and a status symbol. Social competition between wealthy landowners saw landscape designers like Lancelot "Capability" Brown and Humphrey Repton employed to create stylised private parks. Ideas were borrowed from Greek and Roman mythology, and Christian religion to create aesthetically pleasing landscapes that provided clean air, recreation, and food (Wilkinson 1988). Peasants utilised the parks to gather food and firewood, but risked severe punishment if caught trespassing on private land (Jones and Wills 2005).

By the mid-1700s there were many from the aristocracy that turned to other forms of entertainment besides the private park. Some fell into disrepair, while others were subdivided and sold. By the end of the eighteenth century over four thousand private parks in England were in existence (Jones and Wills 2005).

As the Industrial Revolution proceeded during the 1700s, cities across the UK grew quickly and haphazardly with minimal attention to human wellbeing or urban liveability. Liveability was a concept enjoyed by the wealthy who could escape to their private parks outside the cities. Industrial cities were bleak places with high population densities, significant pollution, poor sanitation, and high death rates (Wilkinson 1988). Factory workers spent most their lives within the industrial cities and informal open spaces like riverbanks and town commons were used for recreation and socialisation. These were sometimes swallowed up by the expansion of housing and factories (Jones and Wills 2005).

Social reformers increasingly recognised the need for green spaces in the denser urban areas to offset some of the negative outcomes of the Industrial Revolution. Parks would expose city residents to fresh air, sunshine and nature, as well as allow them to socialise. The wealthy, upper classes could mingle with the lower classes and model their "superior" morality and behaviour to the poor and working-classes (Reeder 2006).

Simultaneously, a range of pressures including urban development at city fringes, promotion of democratic ideals and inheritance taxes saw many rural estates on the edge of large cities converted to public parks when estates were sold by their owners.

After 1800, many private parks owned by the aristocracy in Western Europe became public parks, although obstacles were often imposed on users, including regulations relating to dress and behaviour. Hyde Park in London was opened to the public in 1827 followed by Regent's Park in 1834 (Wilkinson 1988).

The link between human health and parks was emphasised when epidemics like cholera swept across England in the 1830s. It was thought that the clean air from parks, the so-called “lungs of the city”, was beneficial for park users and a means to escape the “miasma”; the (mistaken) belief that dirty air spread illness across the city. In 1833 a British parliamentary committee recommended that all towns create public parks to improve the health of urban populations (Jones and Wills 2005).

The first publicly funded park was Birkenhead Park. Opened in 1847 near Liverpool, England the 75 hectare park aimed to improve the lives of nearby working-class residents. The chief designer, Joseph Paxton, incorporated numerous features including trees, walking paths, and sporting fields. It displaced “undesirable activities” like gambling and dog fighting and sought the “improvement” of swampy wasteland (Jones and Willis 2005; Eisenman 2013; Hedgcock 2015).

In London, the Royal Hunting Grounds (established for Henry VIII in 1536) were opened as public parks with the introduction of the Crown Lands Act 1851. Almost 2,000 hectares of publicly accessible parkland was added for the benefit of all. There was a distinct shift from private to public ownership of land and a move away from the private more aristocratic uses such as hunting to passive and more active recreational pursuits.

Ideas about representative democracy, social welfare, trade unions and mass education were emerging in nations like Britain and Australia as a means of improving society. So too was the ideal of public parks as a means of providing an outlet for physical recreation, and connection to nature, while at the same time creating a free, relatively undeveloped space for all within cities; all concepts that could be linked to liveability.

In New York, a range of interests including newspapers and politicians called for the provision of open space in the city to improve the lives of urban residents. Frederick Law Olmstead and Calvert Vaux were set the task of designing Central Park. Olmstead gained inspiration for the creation of a public park from a personal visit to Birkenhead Park in Liverpool. He believed illness could be remedied by exposure to the natural environment, and social cohesion and democratic ideals could be promoted by forcing people from different socio-economic backgrounds to meet in public parks (Eisenman 2013). Not surprisingly property interests on the outskirts of the proposed park site were supportive of the creation of Central Park because of the positive effect it would have on amenity and property prices (Eisenman 2013). Olmstead repeated the success of Central Park by

designing the Emerald Necklace in Boston which saw a polluted wasteland converted into a park that served a range of environmental and social functions (Eisenman 2013).

In many cities across the UK and the USA, commons emerged as open spaces that served multiple roles, although they often suffered from the “tragedy of the commons”; neglect and degradation caused by the failure of people and institutions to undertake maintenance and protection of the space, due to the lack of clear ownership or responsibility. In many cases the commons became grazing pasture for livestock, a place to hunt wildlife, collect firewood and for local people to socialise and recreate (Hardin 1968; Manning 2007).

There was increasing concern in the late 1800s about the uneven distribution of open spaces. There were calls for some private gardens in denser areas to be opened to the public with little result. Public campaigns were waged in the 1860s to protect the commons within London from enclosure. There were many private and government interests that viewed commons as land ripe for development, standing in the way of economic progress and a hiding place for criminals. The anti-enclosure groups’ efforts led to the Commons Act (1876) which protected and regulated the commons within London. Many of these spaces became popular parks (Reeder 2006).

As cities grew in area the countryside was an increasing distance from inner city populations and people often had to rely on incidental open spaces like cemeteries to provide open space where they were in short supply. Cities were becoming so big that it led to the development of park systems. Eisenman (2013, 299) stated that “Olmsted viewed a physically linked system of vegetated spaces and corridors- green infrastructure- as essential in shaping urban expansion across time and space”. Parks represented the hubs and tree lined streets were the spokes of these park systems (Hiles and Schipper 2008; Eisenman 2013).

Advocates of the Garden City movement Ebenezer Howard and Raymond Unwin took the view that residents of urban areas should be able to escape the ills of the industrial city through the incorporation of parkland and wide tree lined streets within urban areas. Open spaces were increasingly seen as spaces not only for passive recreation, but also aesthetic relief from the built environment and the mental and physical well-being of urban populations. Howard promoted the idea of greenbelts encircling urban areas and the use of allotments that would allow industrial workers to use their garden as an activity that relieved them of the stresses of life (Howard 2007). These open spaces were integrated into urban areas from the beginning of the design process rather than being an afterthought.

In Australia, there were numerous city parks that were created that mimicked Victorian era parks that were commonplace in the UK. Expansive, centrally located parks like King's Park in Perth and the Melbourne Domain provided space for recreation, socialising, promenading and relief from crowded, inner city housing (Hedgcock 2015).

As in England, the authorities in Australia often attempted to regulate behaviour within these parks. Some activities like "passive recreation and orderly transit" were permitted (Hoskins 2003, 13). Park keepers were given the authority to impose penalties on those that broke park regulations. Fences and gates were often installed to control use of the park and prevent the homeless, prostitutes and inappropriately dressed from entering parks (Hoskins 2003). Educational lectures and the construction of bandstands where classical music was played set the tone for expected behaviour of users (Hoskins 2003).

Parks and recreation took a turn towards nationalistic and militaristic purposes after World War One (1914-1918) which coincided with the everyday recreation requirements of city residents. Densification had diminished in importance and the focus shifted to providing open space for growing populations in new suburbs. Politicians in nations like Britain and Australia promoted parks as a tool to improve the health of their populations and to be better prepared for war. There were concerns that the working-class population had to be kept busy through organised sports and recreation. Both the British and Australian governments introduced legislation in 1937 and 1941 respectively that made physical education a compulsory subject in schools. It was argued that physically fit men would be better prepared for service in the armed forces. The parks that were provided as part of this move to keep the population busy were often turf covered playing fields, suited to sports like cricket and various football codes. Environmental values were lesser considerations and POS like this would become the quintessential form of open space in Australia up to the 1980s (Hedgcock 2015).

Concerns around the impact of urban development being favoured over the natural environment in the late 1960s and 1970s saw the emergence of individuals and groups that fought to protect the environment. Increasingly there were urban planners and landscape architects like Ian McHarg (1969) that argued that although urban growth consumed open space landscape design should be utilised to ensure that cities did not completely sacrifice the natural environment. Better designed landscapes could improve the fit between man and environment (Herrington 2010). Work undertaken by people like McHarg was the

precursor to urban design that increasingly addressed environmental and sustainability concerns.

From the 1990s open spaces were increasingly seen as a means of incorporating sustainability practices into the urban environment. It was recognised that many urban areas could be improved by reintroducing nature to the city. According to Cranz and Boland (2004) cities could be made more sustainable and liveable by providing green infrastructure in the form of open spaces that preserved features of the natural environment.

However, the move towards sustainable open space was slow. Local governments adopted different park forms in master planned suburbs on the urban periphery where landscape designers, planners and architects had a fresh canvas with little natural environment left from land clearing. Traditional park practises and routines and the business as usual mantra were often continued in existing urban areas.

It has been recognised for a long period of time that open spaces have had multiple uses, and are extremely valuable for the user populations. It has evolved away from more utilitarian purposes in ancient times (military training and food gathering) to recreational uses, and later environmental functions in contemporary periods. Recreational open space is still the dominant function of many urban open spaces today and this is fundamentally determined by the needs of nearby urban populations and the authorities that plan and manage these spaces. Due to the fact that recreational open spaces often have few built structures and large areas that can handle large crowds gives it the flexibility to be used for a range of recreational, cultural, economic and political purposes. It is the tension between the authorities managing the spaces and identifying past and possible future uses that sometimes do not align with the users views of the purposes of the spaces that can lead to conflict between the two groups. Over time there is change in the way they are used but these changes are slow due to a number of factors including finance, legal frameworks, and stakeholder commitment and involvement in the planning and management of the open spaces.

This diverse and complex evolution of urban open spaces can still be clearly seen in current patterns of provision as historic parks and places have proved to be remarkably resilient in maintaining their character and disposition, despite the radical changes in the nature of urbanisation and urban society surrounding them. This has provided contemporary planners with a significant resource base to inform the allocation and design of new spaces, as well as a basis for adapting old spaces to current needs.

Open space planning is not a new science, but an evolving project based on a rich tradition of injecting public utility and amenity into a moving target of changing urban pressures and demands. Despite the global dimensions of this issue there are of course significant national and regional distinctions that need to be understood to appreciate the challenges facing the Australian planning system in confronting the emerging challenges associated with policies designed to densify the future urban experience. In addition, such comparative analysis can reveal the both the potential and pitfalls that other jurisdictions have faced in their earlier attempts to reconcile the often conflicting imperatives behind increasing residential density and protecting and enhancing valuable open space traditions.

5.3 Definitions of Open Space

There are a wide variety of definitions used to describe open space; from highly legalistic, publicly owned, and managed green space with a variety of natural and man-made features through to empty or undeveloped urban spaces without man-made structures or vegetation. Green space, urban green space, parks, urban green infrastructure, open space and public open space are expressions used to describe spaces that have many functions including formal and informal recreation, socialisation, visual amenity, drainage and protection of ecological biodiversity and food production. Definitions in the northern hemisphere often utilise the expression urban green space, while in Australia a similar space would be called open space or public open space.

In Byrne, Sipe and Searle (2010, 163) the term green space is utilised which is defined as "parks, sporting fields, bushland, creeks, rivers and bays, plazas, community gardens, bikeways and paths, spaces around libraries and art galleries, as well as attractive and safe streets and green links between these elements." They excluded "private backyards, gardens and balconies and communal space around apartment buildings, cemeteries, rock walls, street verges and median strips, school grounds, rooftop parks and storm water channels, parking lots, open air publicly accessible shopping malls" but recognised that some of these spaces may provide recreational opportunities (Byrne, Sipe and Searle 2010, 163).

Kellett and Rofe (2009) defined open space as areas within the urban environment which are freely accessible regardless of size, features, or functionality. They utilised a broad definition that included parks, rivers, lakes and wetlands, passive and active recreation spaces, sporting grounds, conservation areas, public squares, green corridors, as well as community and rooftop gardens.

London's strategic spatial plan defined open space as; "All land use that is predominantly undeveloped other than by buildings or structures that are ancillary to the open space use. The definition covers the broad range of open space types within London, whether in public or private ownership and whether public access is unrestricted, limited or restricted" (Mayor of London 2016, 418-419).

The plan identified public realm, open space, and green infrastructure. Public realm was defined as "the space between and within buildings that is publicly accessible, including streets, squares, forecourts, parks and open spaces" (Mayor of London 2016, 421). The Plan for London defined green infrastructure as "the multifunctional, interdependent network of open and green spaces and green features (like green roofs). It includes the Blue Ribbon Network (waterways) but excludes the hard-surfaced public realm. This network lies within the urban environment and the urban fringe, connecting to the surrounding countryside. It provides multiple benefits for people and wildlife including flood management; urban cooling; improving physical and mental health; green transport links (walking and cycling routes); ecological connectivity; and food growing. Green and open spaces of all sizes can be part of green infrastructure provided they contribute to the functioning of the network as a whole" (Mayor of London 2016, 413).

The Scottish government defined open space as; "Space within and on the edge of settlements comprising green infrastructure and/or civic areas such as squares, marketplaces and other paved or hard landscaped areas with a civic function" (Scottish Government 2014, 73). Green infrastructure included "green" and "blue" features. Green features included "parks, woodlands, trees, play spaces, allotments, community growing spaces, outdoor sports facilities, churchyards and cemeteries, swales, hedges, verges and gardens" (Scottish Government 2014, 72). Blue features include "rivers, lochs, wetlands, canals, other water courses, ponds, coastal and marine areas including beaches, porous paving and sustainable urban drainage systems" (Scottish Government 2014, 72)

The New York City government defined open space very broadly, such that any publicly accessible open space, other than green streets and malls without seats and sidewalks, is considered open space. It can be in either public or private ownership (New York City 2014).

The City of Boston defined open space as "lands that are not developed for building purposes. The term is synonymous with "green space" and can include parks, natural areas, athletic fields or courts, plazas, waterfront areas, community gardens, and cemeteries" (City of Boston 2014, 3). Boston's open space plan includes "all publicly owned or accessible

parks and green spaces irrespective of ownership, as well as privately owned spaces that are publicly accessible and institutional landholdings that allow public access and have environmental, recreational and visual values" (City of Boston 2014, 3).

There is also the concept of a third place that is neither a place of residence nor a place of work, but part of the public realm (Gehl (1987; 2010). They are spaces that are accessible to the public, may be managed or owned by private or government interests and may not fit into the traditional definition of an outdoor recreation space, but still considered open space. According to Gehl (1987; 2010) it may include street malls and outdoor plazas that can be used for many purposes, other than formal sporting activities.

There is increased willingness to allow less traditional open spaces to complement formal parks and legally recognised POS.

This thesis adopts the position that any open area of land can become open space. It can be open spaces that are legally recognised by government, or alternatively informal spaces that are used temporarily. Green, vegetated open space can also be supplemented with hard surfaces, although hard surfaces should not be the dominant feature of open space for environmental and aesthetic reasons.

5.4 Functions of Open Space

It is recognised that without some form of planning intervention the market would underprovide open space similar to the situation in Europe and the USA in the 1800s. Parks are merit goods, and it is recognised that there are benefits to supplying open space in areas where urban development occurs and where there are higher development densities.

A variety of requirements are placed on open spaces. They must cater for different ages and abilities. Many activities are planned to occur in the space, but there will also be activities undertaken that were never envisaged. The spaces must be accessible to users. Aesthetic and natural features will be retained or removed by those planning and managing the spaces.

Open space has traditionally served many functions as detailed in Table 5.1.

Table 5.1 Functions of Open Space

Trading and commercial space	Political meeting place	Storm water drainage and water storage
Farming space	Emergency meeting place	Carbon sequestration
Firewood collection	Art space	Food production (fruit, vegetables, and herbs)
Food production	Physical health	Clean air
Outdoor gym operated by commercial providers	Mental health	Noise mitigation
Adds value to surrounding properties	Interaction between nature and humans	Aesthetic relief from the built environment
Marketing of newly developed land and housing	Education	Water supply protection
Grazing land for livestock	Quiet space	Sleeping space for homeless
Hunting grounds	Buffer space between conflicting land uses	Senses garden for those suffering from dementia and other medical conditions
Active recreation	Habitat and conservation space for plants and animals	Reach out space for marginalised and homeless
Passive recreation	Create a cooler urban environment by providing fewer hard surfaces and shade	Modelling appropriate social behaviours
Meeting place for socialisation	Reduction in evapotranspiration	Promenading

(*Source:* Hoskins 2003; Cranz and Boland 2004; Jones and Wills 2005; Reeder 2006; Byrne, Sipe and Searle 2010; Eisenman 2013; City of New York Parks and Recreation 2014; Hedgcock 2015; City of Cockburn 2018)

There have been many studies that have made links between human health and the urban environment and it has been argued that open spaces can promote better health and contribute to the liveability of a region (Ball, Timperio and Crawford 2006; Ball et al 2008; Lowe et al 2015). So-called salutogenic environments which encourage positive health behaviours can be implemented more readily and cheaply than traditional health interventions and often utilise existing infrastructure within the community, including open spaces. Proximity to parks increases the likelihood that nearby residents will use the facilities at a park (Ziviani et al 2008; Giles Corti et al 2009, Lachowycz and Jones, 2013). POS may help people to achieve daily physical exercise requirements and reduce the levels of obesity and other illnesses that afflict urban populations (Giles-Corti and Donovan 2002; Badland and Schofield 2005; Ball, Timperio and Crawford 2006; Berke et al 2007; Timperio, Roberts and Crawford 2007; Witten et al 2008; Giles-Corti et al 2009; Coombes, Jones and Hillsdon 2010; Crawford et al 2010; Francis et al 2012).

Urban open spaces have significant restorative effects. Gidlof-Gunnarsson and Ohrstrom (2007) found that access to UGS can offer relief from stress in people's lives by providing a place for rest and quiet. According to Ozguner and Kendle (2006) urban residents appreciated UGS whether it was natural or highly landscaped formal gardens. Improved

psychological health outcomes were observed for people that have access to parks and can interact with nature (Francis et al 2012; Lachowycz and Jones, 2013; Wood et al 2017).

Ikin et al (2013) argued that interconnected open space served a valuable role in ensuring the survival of bird species in urban environments where there are significant increases in dwelling density. They pointed to the need to manage parks collectively across a region to increase their ability to act as ecological reserves to protect birds. However, Esbah, Cook and Ewan (2009) found that while open spaces are important for the natural environment, their ecological integrity deteriorated from the pressures of urbanisation.

Frequent and regular organised activities in designated open spaces activates the site, engages many people, and helps build links between community members, including the less privileged. The provision of POS is one of many factors that contribute to activity friendly neighbourhoods. Loneliness and isolation can be reduced if people can visit spaces where there will be able to interact with others. In addition, the space can be utilised for health promotion purposes or to educate residents about local government problems and policies (Dinnie, Brown and Morris 2013).

Proximity to parks and open space can have a positive effect on the price of higher density housing. Those dwellings located closer to parks tended to achieve higher sale prices (Dehring and Dunse 2006; Henderson and Song 2008). Parks were seen as the proxy backyard for apartments (Dehring and Dunse 2006). Conversely, price rises caused by UGS can promote declines in housing affordability and promote gentrification as found by Alexander and Tomalty (2002) in British Columbia, Canada. Wolch, Byrne and Newell (2014) found that the implementation of strategies to address undersupply of UGS in Chinese and American cities led to gentrification and the displacement of populations that would have benefitted the most from such strategies.

5.5 Open Space Standards

There have been a wide range of standards relating to the allocation of open space. The concept of minimum requirements for the provision of open space was initiated in the latter years of the nineteenth century in the UK by Raymond Unwin (Turner 1992). Various standards were suggested, including the principle that everyone should have recreation space within a quarter of a mile or towns should have five per cent of their area allocated to open space. In the USA, similar standards were proposed during the 1920s including between one twentieth and one tenth of a city's area should be allocated for parks (Veal

2013). Standards were based on quantifiable values that were easier to understand and implement than any social or environmental measure (Maruani and Amit-Cohen 2007).

In the UK, the National Playing Fields Association (NPFA) later called Fields in Trust (FIT) set standards for the provision of open space in the 1940s that were widely adopted following endorsement by the British government (Veal 2012; 2013). A similar organisation the National Recreation and Parks Association (NRPA) set standards in the USA (Veal 2013). Over time, these standards were modified or dropped, as their limitations were increasingly recognised, including the lack of justification for the standards (Byrne, Sipe and Searle 2010).

Variations in the quality and functionality of open spaces, contextual differences (including climatic and other environmental characteristics of sites), society's changing view of the purpose of open space and population growth or decline meant that standards were less important (Veal 2013). The fact that many standards were formulated in earlier times meant they were less relevant to contemporary open space users. Nonetheless, following their implementation governments were often reluctant to alter the policies (Veal 2013). Path dependency and institutional inertia (Newman and Kenworthy 1989; Low, Gleeson and Rush 2005; Low and Astle 2009; Veal 2013) has the potential to become a prominent issue within urban planning and open space planning and management.

Table 5.2 outlines the main types of open space standards.

Table 5.3 demonstrates that there is not a definitive number that is considered an appropriate allocation of open space in a range of jurisdictions. The open space allocations vary between 1.13 hectares per 1000 people (11.3 square metres per person) for Chicago and 4.01 hectares (40.1 square metres per person) in Houston. The former example is well below the recommended allocation made by the American Park and Outdoor Association, while the latter example is well above. In Berlin there is an allocation of six square metres per person while in Ghent and Leipzig there is ten square metres per person. All are well below the London allocation of 16.2 square metres per person.

Veal (2011) studied 82 sets of guidelines related to the planning and provision of leisure and recreation facilities. Eight common approaches were identified including meeting standards, providing opportunity, managing resources, meeting demand, satisfying stakeholder groups, meeting needs, meeting participation targets and providing net benefits. A workable tool for use by local authorities to plan for leisure facilities and services that met all these criteria would be difficult to achieve.

When this is combined with striving to deliver liveability outcomes when promoting urban consolidation developers are left with a situation that they will do what is required of them and follow the path of least resistance when working with local government.

Table 5.2 Types of POS Standards

Standard	Description	Examples
Population ratio	Area allocated to open space varies according to population density	Surface area per 1000 population Surface area per capita
Area percentage	Area allocated to open space based on the percentage of land developed for residential development	10% in WA, 12% in South Australia
Catchment area	Maximum distance or time an open space user would travel to utilise open space	Catchments based on distances of 400m, 500m, 800m or 1km from park location
Facility specifications	Sport specific dimensions and specifications	Size, markings, and infrastructure dependent on sports that open space caters for
Local standards	Requirements match local needs	Often a hybrid of the above standards

Source: Adapted from Veal (2013)

Table 5.3 Comparison of Open Space Allocations

City or Organisation	Open Space Allocation Acres Per 1000 People	Open Space Allocation Hectares Per 1000 People	Open Space Allocation m^2 per person
American Park and Outdoor Art Association (Veal 2013)	4.94	2	20.0
National Playing Fields Association of Britain (Veal 2013)	6.00	2.43	24.3
National Recreation and Parks Association (USA) (Veal 2013)	9.88	4	40.0
Cumberland County Council (regional government in Sydney) 50% active playing fields 50% informal parks (Veal 2013)	6.25	2.43	24.3
City of Melbourne 54% playing fields 46% informal space (Veal 2013)	7.41	3	30
London- July 1945 (Stephenson 1992)	4	1.62	16.2
New York (City of Los Angeles Department of Parks and Recreation 2009)	3.6	1.46	14.6
Boston (City of Los Angeles Department of Parks and Recreation 2009)	7.59	3.07	30.7
Los Angeles (City of Los Angeles Department of Parks and Recreation 2009)	4	1.62	16.2
Houston (City of Los Angeles Department of Parks and Recreation 2009)	9.9	4.01	40.1
Chicago (City of Los Angeles Department of Parks and Recreation 2009)	2.8	1.13	11.3
Perth (1955) 85% playing fields 15% other spaces (Stephenson 1992)	8.30	3.36	33.6
Perth (2017) 10% of subdivisible land, 6.5m^2 per person sport space taken from overall 10% (DoP 2015a)			
Berlin minimum size 5000m^2 within 500m from residents (Kabisch et al 2016)			6.0
Leipzig (Kabisch et al 2016)			10.0
Natural England minimum of 2 hectares within 300m from residents (Kabisch et al 2016)			
Netherlands (Green City Guidelines) all green space should be within 500m of residents (Kabisch et al 2016)			
European Environment Agency green space within 500m (15 minute walk) from residents (Kabisch et al 2016)			
Ghent Belgium within 400m from residents (Kabisch et al 2016)			10.0
USA median green space (Trust for Public Land 2011)			50.2
China median green space (Wang 2009)			6.52

Conversion 1 acre =0.40 Hectares, 1 Hectare = 2.47 acres, 1 Hectare = 10000m^2

Source: Adapted from multiple sources as noted above

Maruani and Amit-Cohen (2007) identified numerous models for the creation of open space based on the simplicity with which they could be applied to open space planning. These models included; opportunistic, standards, master planned, shape based, specific landscape feature, ecological and biosphere. They highlighted that standards-based systems are more easily understood by the public, whereas ecological or landscape protection approaches required planners to seek advice from scientific experts.

Maruani and Amit-Cohen (2007) argued that open space provision can be divided into demand and supply approaches. If open space is provided on the basis of what the user wants, then it is considered a demand side approach. On the other hand, if the provision of open space focusses on the characteristics of the chosen site and decisions made by the providers, then it is a supply side approach. The latter approach is often adopted by local governments in Australia as they provide what they believe is appropriate for the community. This approach aligns with the concept of presumed liveability (van Dorst 2012) as discussed in Chapter 2.

5.6 Challenges Within Open Space Planning and Management

The provision of open space is not the only challenge faced by open space planners and managers when dealing with open space. A number of other problems have emerged over time and been highlighted by the literature including;

- The functionality of the open spaces and whether spaces can serve multiple user groups.
- Conflict between different user groups.
- Opportunities for recreation versus the provision of open space.
- Links between open spaces and the health of humans and nature.
- Changing recreation preferences.
- Varied understandings and possible ignorance of the costs and benefits of open space.

Over time the range of functions that POS serves has increased and the problems and expectations around POS have changed. Urban centres increasingly utilise POS to host festivals and markets that promote regional economies. There is the possibility that open spaces are overwhelmed by visitors and residents' ability to use the spaces is restricted by the crowds. In areas of urban consolidation subsequent population and dwelling density increases may add increased pressures to POS (Dempsey, Brown and Bramley 2012). There may be groups whose use of open space is marginalised if their use of the space conflicts

with other users (Woolley 2006). In areas where the provision of POS is constrained there is the potential for conflict between the users of these spaces.

Dahmann et al (2010) pointed to the need to measure the opportunities for recreation within a community and the facilities available to the public that can complement open spaces, rather than simply measuring the area of open space. In hotter or wetter environments, people may utilise alternative recreation venues besides open space. Wheeler et al (2010) found that many outdoor activities are not carried out within open spaces. Many sports do not require traditional open space for training or competitive purposes, but utilise roads (cycling, running), waterways (swimming, fishing), pools (swimming, water polo), covered areas (basketball, volleyball, and badminton) and gyms (weights training, exercise classes). Changes in the popularity and accessibility of sports often have an impact on open space use as well.

Not all open spaces are viewed equally. The purpose and value of open spaces may vary according to city size, socio-economic factors, and cultural context (Madureira et al 2015). Contact with nature and improvements to human physical and mental health appear to be a common view of the role of open space, although features like noise mitigation and temperature mitigation are less well known (Sanesi and Chiarello 2006; Tyrvainen et al 2007; Lo and Jim 2012; Jim and Shan 2013; Peckham, Duinker and Ordóñez 2013).

Multifunctionality is a widely accepted role of open space (Madureira et al 2015). However, some spaces are better suited to certain roles, while others are limited due to their size, physical characteristics, or the changing popularity of functions over time.

Certain roles like urban biodiversity are accepted more readily in some communities, but there is the risk of conflict if widespread consultation is not undertaken when there are plans to utilise open spaces for specific roles that are not accepted by certain stakeholders (Konijnendijk 2000; Eriksson et al 2012).

There may be significant variation in the amount of nature found in open space depending on the location and function (Maruani and Amit-Cohen 2007). Typically, open space in urban areas has natural features removed, unless these are retained for heritage or environmental reasons.

The size and facilities at parks have come under scrutiny (Loukaitou-Sideris and Stieglitz 2002; Bedimo-Rung, Mowen and Cohen 2005; Saelens et al 2006; Crawford et al 2008). In some places that there is inequity with the provision of POS (Gilliland et al 2006, Veitch et al

2013). In Perth, for example, older, wealthier suburbs around the core have more active POS, whereas outer suburbs have open spaces more distant from the user population and better suited for non-sporting functions (Middle, Tye and Middle 2010; 2013). Conversely across Melbourne, Timperio et al (2007) found that there was no significant difference between the facilities at open spaces.

Hendry (1993) studied Canberra's open space system and made it clear that large areas dedicated to open space did not guarantee quality spaces. The expansive open spaces in Canberra require significant resources and considered a liability by the city's government. Quality and accessibility of open space are increasingly emphasised over quantity (Hendry 1993).

There is increasing evidence that people enjoy a range of landscapes, and governments should provide a "portfolio of places" to open space users (Swanwick 2009, 73). People's preferences change over time so a variety of landscapes should be supported within park systems. Swanwick (2009, 73) believed that there may be a need to educate people about the benefits of nature, as many people increasingly suffer from "nature deficit disorder."

There are close links between open spaces and urban forests. There has been a significant increase in interest in urban forests to gain the benefits that can be derived from tree planting in urban settings (Tyrvainen et al 2005). Urban forest policies are a means to promote increased tree coverage in urban areas where lack of trees is a problem (Bell et al 2005). Many city governments including Melbourne have created urban forest strategies to protect trees and promote tree planting programs. The strategies can promote liveability by protecting trees in the public realm and finding opportunities to expand POS in places like Melbourne (Shears 2015). Wang and Merrick (2013) detailed the variety of plans and strategies that have been adopted across Sydney to protect trees and areas where there are large concentrations of vegetation including road and utility corridors, water storage areas, highlands, and national parks, as well as traditional parks. Alternatively, some local governments like Stonnington in Melbourne (Victoria) and Claremont in Perth (WA) have proposed tree bonds or taxes that force builders and developers to pay a financial penalty if trees on development sites are damaged or destroyed by building works (Emery 2018; Hurley et al 2018). In each case there has been an attempt at retaining trees. Policies can either be focussed on protecting trees alone or more holistic by ensuring that open space promotes liveability, and possibly sustainability.

5.7 The North American Experience

Whereas local and state governments in Australia have tended to guarantee minimum rates of open space provision within urban areas in the United States and Canada the situation is more diverse. In many cases there are not guaranteed levels of open space provision. Planning of the open spaces is often done on a local government by local government basis with significant involvement from community groups and park boards that are either independent or semi-autonomous of the local government in the area they have jurisdiction over. Several examples will be discussed in this section to highlight the variations between cities and the possible models for reorganisation of planning and maintenance of open space.

It is noted that comparisons of open space planning and management across multiple countries is a valuable exercise. By utilising examples of open space planning and management from North American cities an understanding of the processes and potential solutions to open space problems can be gained. There are similarities between the Australian and North American urban environments in terms of the shift that has occurred from low density greenfields urban development towards the promotion of urban consolidation, but also having to face problems around improving liveability in denser city environments. Different cultural and regulatory systems result in solutions to open space problems being generated in a different manner; some of the processes and solutions may be worthy of adoption in other jurisdictions including Australia.

In New York City there are no guaranteed levels of open space provision despite high dwelling and population densities. Studies have identified the underprovision of open space in areas with higher population growth rates and higher population densities and also serious issues with poor maintenance and declining funding for parks (Surico 2018). The city is targeting these areas to direct more funding to these areas for better park and recreation facilities. In the majority of cases there is no additional land for open space so the emphasis is on improving existing spaces. For social justice reasons there may be justification for city governments to change their focus such that lower socio-economic areas receive additional resources to create new or refurbished open spaces. In New York, neighbourhoods with population densities above one hundred and ten people per acre, annual population growth rates of more than 25 per cent and above average poverty levels were given priority for park maintenance and provision. Rather than focussing on larger iconic parks, smaller parks within a ten minute walk of users were chosen for increased expenditure (City of New York Parks and Recreation 2014). There is extensive reliance on partnerships between the

city government and private community advocacy groups in relation to local government controlled parks. Private and independent groups have been established to oversee fund raising, build a user constituency and promote park renewal over time (Osman 2017). These groups work with the government to improve outcomes for individual parks. Traditional park maintenance is still undertaken by the local government (Osman 2017).

At one stage the New York City government transferred ownership of many parks across to the Federal government's National Parks Service (NPS). This was done to reduce New York City's expenditure on park planning, provision, and maintenance (Osman 2017). There is concern that there is a greater disconnect between users and the NPS because of the transfer of control (Osman 2017).

In the case of Los Angeles again there has been an emphasis on the use of public private partnerships for the provision and maintenance of park spaces. In many cases these partnerships have seen local governments donate surplus land with the private sector building and managing the parks created under such schemes. There are many examples of the local governments setting aside surplus land for use as a park or allowing spaces dominated by cars like carparks becoming shared spaces that can be used for "park" space at certain times. In some cases, the local governments have utilised bond sales to finance park maintenance. There are considerable concerns that this is creating significant environmental and social equity problems. In areas where there is a lack of social or economic capital (often in already marginalised communities) it is difficult to establish such public private partnerships (Hise and Deverell 2001; Wolch, Wilson and Fehrenbach 2005).

The city of Seattle was lucky enough to have John Olmstead (nephew and adopted son of Frederick Law Olmstead) establish a plan for a park system in the late 1800s. Although the city did not follow through with the plan exactly as Olmstead envisioned, and there have been periods where planning and provision of parks has taken a backseat to urban infrastructure, highway construction, as well as economic constraints it did provide a solid network of open spaces for the city. Since the late 1960s there has been increased promotion of community involvement in park planning and identifying alternative models to finance park provision and maintenance. From the mid-1990s there has been increased focus on park creation and local government funding of parks. There has also been emerging housing affordability issues and this has seen political fights between advocates of parks and supporters of affordable housing. There have been numerous "friends of parks" established across the city in response to concerns about park planning, provision

and maintenance. To help attract foreign labour to global companies in Seattle increasingly parks have been used as a marketing tool to these potential residents. This has meant that more finance has had to be dedicated to parks to provide the facilities and maintain the spaces to a standard that visitors expect (Dooling, Simon and Docom 2006).

It has been recognised that in parts of Canada there has been a decline in the quality of the public realm, including parks and no clear plan for the provision of additional open spaces or public parks. In response to this a few cities like Ottawa and Toronto have set out plans to establish green infrastructure across their respective local government areas, but like the United States there are significant obstacles including funding limitations and availability of land in areas where urban development has already been undertaken. In cities like Toronto the local governments have been identifying surplus school and military sites as possible new parks and there have been some innovative open spaces created including the Bentway where an extended series of open spaces with multiple uses has been created under a 1.75km section of an elevated freeway (Novakovic 2019).

A shining light in the provision of parks in Canada has been the city of Vancouver. Public parks across the city are managed by a board that is independent of the city government although it works closely with the government to achieve its goals. Board members are elected. It has set targets for the provision of increased and improved parks within the city recognising that existing parks will come under significant pressures moving into the future. In 2017 it had 2.102 hectares of park for every 1000 people in a city with a population density of 5491 people per square kilometre (Vancouver Board of Parks and Recreation 2018). The population density is expected to increase significantly over the next few decades and provision of open space is expected to come under significant pressure. Land is being identified across the city and considered for conversion to open space by the board. Increasingly there is an attempt to prevent issues around lack of open space in affordable, high density housing by linking development approval to the provision of additional park space nearby (Takyi and Seidel 2017; Vancouver Board of Parks and Recreation 2018).

A summary of the treatment of POS in sample cities in North America is shown in Table 5.4.

Table 5.4 Summary of Sample North American Cities Approach to POS

City	Management	Funding	POS Allocation	Community Involvement	Outcomes
New York	City parks departments	Declining public funding and increased reliance on private sector funding	No guaranteed amount – targets	Yes	Reports by authorities and private sector groups identifying issues Increased focus on areas with high population growth and maintenance issues
Los Angeles	Local government parks departments or private sector	Declining public funding and increased reliance on private sector funding	No guaranteed amount - targets	Yes	Significant social and economic equity issues with open space provision Increased provision in areas with social and economic capital
Seattle	Local government parks department	Declining public funding and increased reliance on private sector funding	No guaranteed amount – targets	Yes	Increased expenditure on parks Open space used as a marketing tool to encourage global labour
Vancouver	Board of Parks and Recreation – independent of city government	New development required to provide additional open space	No guaranteed amount - targets	Yes	Plans to increase park provision over the next few decades
Toronto	Local government parks departments	Significant financial pressures on parks departments to provide more with less	No guaranteed amount	In some local governments	Innovative open space solutions including the Bentway, surplus school and military sites being identified as possible open space opportunities

Sources: Hise and Deverell 2001; Wolch, Wilson and Fehrenbach 2005; Osman Dooling, Simon and Docom 2006; City of New York Parks and Recreation 2014; Takyi and Seidel 2017; Surico 2018; Vancouver Board of Parks and Recreation 2018; Novakovic 2019

One of the drivers of many changes to a system which actively promotes the involvement of community, advocacy and public interest groups in park planning, provision and

maintenance has been the tendency for local governments to strive to limit tax increases and simultaneously reduce funding of park provision and maintenance programs across North America. North American cities appear to have accepted and promoted communities and advocacy groups from becoming more heavily involved in the planning and protection of open space. In Australia there appears to still be reticence following a similar path. Australian local governments have been extremely protective of their control over planning, provision and maintenance of open spaces and there has only been limited engagement with such practises. In Western Australia this may be exacerbated by the planning system being more centralised than other jurisdictions. This will be further discussed in Chapter 10 and 11.

5.8 International POS Responses to Higher Dwelling and Population Densities

There are many examples of innovative solutions to the provision of open space in areas where residential dwelling and population densities are rising, and open spaces are constrained or underprovided and would help to improve liveability in these places. There are many strategies that could be adopted including enhancing existing open spaces, using underutilised spaces that are not designated open space, adopting needs based, rather than quantitative standards for open space provision and providing alternative opportunities in private and government facilities. The examples that are utilised demonstrate that a one size fits all approach is not always appropriate and solutions can be divided between a physical or substantiative response (expanding the quality and quantity of urban open space) and a political or procedural response (removing obstacles to the implementation of alternative types of open space).

Haaland and van den Bosch (2015) found that publicly accessible open space is rarely created to offset the loss of private open space when urban consolidation occurs, while Dahmann et al (2010) pointed to the need to consider other features of the urban environment that could provide alternative opportunities for recreation.

Roads are an additional area of open space in many countries, either temporarily or permanently. In Bogota, the capital city of Colombia, over one hundred and forty kilometres of main roads are closed to vehicle traffic every Sunday as part of the Cyclovia program. The roads are opened to cyclists and pedestrians, and areas are set aside for a range of activities, including fitness classes and religious gatherings. In a city that has significant open space shortages, particularly within poorer neighbourhoods, it has increased the recreational and socialising opportunities for residents. (Rhinehart 2009). The Cyclovia program has since been introduced to many other cities around the globe in varied

formats (Montgomery 2013). Such programs have shown that roads become valuable, additional areas of open space with significant flexibility. They can be used during off-peak periods, without significant financial outlay by city governments.

The capital city of South Korea, Seoul has a population of ten million people, population density of seventeen thousand people per square kilometre and chronic shortages of open space. Two projects have seen freeways converted into parks. The first involved the freeway that covered the Cheonggyecheon River being dismantled and the river being restored to create a six-kilometre greenway. A recreation space was created that reduced the heat island effect, provided better protection against flooding, and improved the amenity and property prices of the surrounding area (Lee and Anderson 2013).

The second project, the Seoul 7017 Skygarden saw the conversion of a disused, elevated 1970s freeway into a one hectare publicly accessible park with vegetation located in mobile planters along reclaimed road surface. It has provided valuable open space in an area with extremely high population densities utilising existing infrastructure (Moore 2017; MVRDV 2017). Although both projects were expensive, they pointed to the possibility of deconstructing and reformatting existing urban infrastructure into new types of open space.

Children often view outdoor spaces including street verges, vacant lots, and roads as play space (Tranter and Sharpe 2008). This points to the need for planners dealing with open space to adopt thinking more in keeping with Gehl's approach regarding "spaces between buildings" (Gehl 1987). It points to the possibility of utilising spaces beyond traditional open space definitions and boundaries to alleviate open space shortages or inequitable provision. Kamvasinou (2011) argued that land with redevelopment obstacles can become open space that served recreational or conservation functions and Harnik (2009) demonstrated that parks can be located within constrained and highly contested areas.

There is the potential of utilising quieter suburban roads and adjoining verges to create home zones (UK) or woonerfs (Netherlands) to alleviate open space shortages by providing recreation and socialising space near homes. Suburban roads are redesigned to slow traffic and highlight to drivers that the space is for cars and people (Ben-Joseph 1995; Biddulph 2010).

The threat of litigation by users of open spaces should not be used as an excuse for inaction in developing alternative open spaces (Dalziel et al 2007).

Spaces that are underutilised can be converted into additional open space. In the USA and Europe, green alleys have been created along pedestrian paths that were previously dominated by concrete and bitumen surfaces. The spaces are already present in many urban areas and with the addition of vegetation can create linear parks that can become active travel routes and increase vegetation cover without having to acquire additional land (Newell et al 2013).

In Singapore additional open space was created through the establishment of greenways along drainage canals and disused railway lines and the reclamation of land from the sea (Tan 2006; Soh and Yuen 2011; Henderson 2012; Tan, Wang and Sia 2013).

Following the reunification of West and East Germany, the demolition of the Berlin Wall created a significant area of land through the middle of Berlin that was converted into parkland (Amati 2008). Despite increased development and rising population densities, Berlin was able to expand UGS provision to approximately 30 per cent of its surface area (Kabisch 2015). Underutilised or derelict land has become publicly accessible open space where the purchase of land for new parks would be cost prohibitive.

Sometimes cities have utilised technical solutions for open space shortages and have been willing to change existing paradigms. Min et al (2011) suggested the use of rooftop gardens and vertical gardens to expand green space within cities like Macau which has extremely high population densities and crowded open spaces. City governments could also plan for private open spaces to complement existing POS subject to landowners permitting public access of private open space (Grobelsek 2012).

Other possible responses to under provision of open spaces include better use of verges for green space. Saumel, Weber and Kowarik (2016) believed that vegetation grown on verges was particularly useful for promoting liveable and healthy urban environments. The adoption of minimum maintenance levels would ensure spaces remained safe, while providing a variety of environmental and social services. They emphasised the need for a range of stakeholders to come together to prevent the dominance of a silo mentality among the different disciplines that deal with verges. It was contended that participatory processes that involved community members could communicate the aims of strategies around greening verges and reduce the chance of conflicting demands causing the failure of such strategies (Saumel, Weber and Kowarik 2016). Steelman and Hess (2009) highlighted that building relationships between stakeholders is more important in protecting parks than aesthetically pleasing plans on paper.

Boston which has a generous open space allocation of 7.59 acres per thousand population and relatively low population density (21.3 people per acre) argued for greater collaboration with private interests and called for the silos between different stakeholders in open space development and management to be broken down. Such responses to open space underprovision are critical, particularly in areas where population densities are high, and affordable land is scarce (City of Boston 2015). Sanches Pellegrino and Renato (2016) found that there were few publicly accessible green spaces in Sao Paulo. Like Boston they argued that shortfalls could be addressed by engaging with stakeholders and identifying disused or underutilised sites that could be converted into publicly accessible open spaces.

Rotterdam has paid considerable attention to expanding the quality and accessibility of UGS to improve residents' quality of life. Both a green infrastructure strategy and densification plan were created simultaneously, and challenges were treated as opportunities to create new UGS in areas where population densities were expected to rise. A railway yard was redeveloped into a shopping mall with a rooftop park. Residents were encouraged to provide ideas during the planning phase and participate in the management of the park in conjunction with the local authority (Tillie and van der Heijden 2016).

In many European countries like the UK, Sweden and Germany garden allotments are found in many older towns and cities, while in nations like Australia and the USA community gardens have emerged as a popular activity within POS (Middle et al 2014). They utilise open space for food production as well as encourage socialisation, community engagement and education. Such gardens are well suited to suburbs with high dwelling and population densities that have limited private open space with few gardening opportunities (Middle et al 2014). These spaces move away from the traditional use and governance process of parks.

Gehl (1987; 2010), Carr and Dinonisio (2017) and Bolleter (2018) demonstrated that alternative and flexible spaces between buildings, in underutilised public realm and within roads and car parks can provide valuable open space in dense urban environments that in turn promote liveability.

5.9 Conclusion

This chapter discussed the reason for the introduction of open spaces in cities across the world and how the spaces have evolved over time. Australia has often followed the examples set by overseas nations and implemented policies related to open space which improved the liveability of urban areas. Given that the form of Australian cities is changing

with increasing emphasis on urban consolidation there is the possibility that increased attention to alternative open spaces planning and management policies and processes may be a means to improve the liveability of denser urban areas.

A broad range of definitions and roles of open space were uncovered. As the physical and social context has changed, the interpretation of open space by private and public interests has continued to evolve. It cannot be overstated that the tendency for institutions to attempt to create rigorous definitions and measures creates challenges, as many measures and indexes of open space are relative and comparative, rather than absolute.

Emerging trends such as community gardens in open spaces, with an emphasis on urban food production in areas being densified, as well as the integration of residential, commercial, and industrial land uses overturn the traditional segregated land-use approach to urban planning. It poses challenges to policymakers reliant on comprehensive definitions and traditional roles of open space.

The divide between the public and private realm has become less definitive and fuzzier as public organisations push for the protection of vegetation on private land and the greening of urban corridors, as well as the use of open spaces for a range of tourism, entertainment and hospitality purposes that simultaneously erode or commercialise POS.

From a liveability perspective there is a suggestion that failure to consider alternative types of open spaces in areas undergoing densification away from more traditional open spaces may result in lost opportunities to create more liveable built environments. Although liveability was not explicitly at the forefront of the how open spaces in its various forms are understood, an implicit understanding of the benefits of open space has underpinned policies in the area.

In terms of governance (as discussed in Chapter 4) the failure to draw on the experiences and expectations of local communities results in responses that maintain the status quo; organisational functions and procedures remain unchanged and open space policy does not respond to higher density urban environments. This reinforces standards-based responses that may be less than optimal for local populations in urban environments that are undergoing densification and it may compromise the production of liveable environments. There is no doubt that traditional approaches to percentage and population ratio standards that are utilised to allocate open space in areas being densified can lead to an under allocation as population densities rise. Alternative means of allocating open space have been identified that may inform future allocation methods and approaches. The means by

which open spaces are governed may be a useful tool to help overcome funding pressures and give communities an opportunity to provide input into the planning and provision of open spaces as has happened in many cities across North America.

Chapter 6 Research Methodology

6.1 Introduction

This chapter describes the processes that have been undertaken by the author to carry out the research in this thesis. The research utilised mixed methods that have been widely utilised within urban planning research. Three local governments were utilised as case studies. Semi-structured interviews were undertaken with local government officers in the case study areas of Mandurah, Cockburn, and South Perth. Additional interviews were held with officers that worked with the State government on open space related matters. An analysis of key planning documents utilised by planners at the state and local level in WA was also carried out. Intramaps, a Geographic Information System (GIS) utilised by numerous local governments in WA and a variety of plans and strategies created by the specific local governments were used to collect open space spatial data, as well as identify the differences in urban form in the case study areas.

6.2 Research Paradigm

The research paradigm that this thesis encompasses is constructivist-interpretative. A constructivist ontology was adopted. The data and the subsequent analysis and findings presented by the researcher is one of many realities that could be created from the primary data collected for this research (Denzin and Lincoln 1994; Guba and Lincoln 2008). Given that semi-structured interviews were a key source of primary data for the research it is possible to create different realities depending upon the interviewer and researcher's life experiences, education, income, and relationships with other people. There is not a single truth in any absolute sense, rather an informed and knowledgeable view of reality (Denzin and Lincoln 1994; Guba and Lincoln 2008). An interpretivist epistemology was a key feature of the research as it was recognised that what was stated in interviews, discovered in data, and examined in policy documents in the urban planning field and how this information was interpreted is highly subjective and open to considerable variation in interpretation (Guba and Lincoln 2008). A positivist approach is not appropriate in this research because there are no single truths with regards to the investigation of open space planning, provision and maintenance made via researcher centred interpretation.

6.3 Research Approach

A mixed methods approach was utilised. Both qualitative and quantitative methods were used including semi-structured interviews, content analysis of key strategic planning documents, and spatial analysis of the chosen suburbs affected by urban consolidation utilising the geographic information systems (GIS) made available to the public by local

governments across WA (see Figure 6.1). Such an approach was utilised because it was recognised that one method alone would not reveal answers to the key objectives being asked in the research. Some of the key questions were more objective in nature and there was little room for variation in answers collected. Some of the questions had a variety of possible answers dependent on the organisation and the location being researched or the person involved, their responsibilities and their role with regards to open space planning and management. The key policy documents chosen for this study originated from the WA State government, as well as local governments, but were created at different times and as time progressed the key policies and emphasis of the documents changed (see Figure 6.2). The broader implication of these variations is that interpretation of the documents can become subjective, and hence the interpretivist epistemology. There is a recognition that by drawing on both qualitative and quantitative methods rigor, depth and breadth will be added to the research and a more in depth understanding of phenomena can be captured, although an objective reality will never be achieved (Denzin and Lincoln 1994; Grix 2010). Triangulation undertaken to draw on multiple sources of information provides a more comprehensive picture of the current situation with regards to the planning, provision, and maintenance of open space in areas where urban consolidation is occurring (Denzin and Lincoln 1994; Cresswell 2009).

It has been recognised by researchers, particularly in the social sciences, that traditional academic study relying solely on quantitative or qualitative methods can limit the ability of researchers to go beyond traditional academic disciplinary boundaries (Hesse-Biber and Leavy 2011). Adopting an approach that uses one method which is well recognised in a field of study, but very focussed on the type of data that is collected (whether it be qualitative or quantitative) potentially poses obstacles to developing new ideas in a discipline (Hesse-Biber and Leavy 2011). The mixed methods research landscape has the potential to move a researcher to a space beyond his or her comfort zone and into what some researchers liken to engaging with the boundary region of academic disciplines where there is the possibility of synthesising ideas from one discipline to another (Hesse-Biber and Leavy 2011).

There were elements of grounded theory research as well. Ass the data collected from interviews was collated questions emerged that were not considered at the beginning of the research. Information and data from the interviews revealed additional topics that needed consideration and were considered worthy of investigation and inclusion in the thesis. These included the fact that many officers from all three Councils did not overtly

mention or refer to liveability; it seemed to be a given assumption that this was one of the aims of open space. There was also deferral to the view that whatever decisions were made had to be economically viable. If a policy or a decision irrespective of its worth to liveability or its ability to improve environmental or social outcomes could not be justified for funding, then it would not be implemented. As Ewing (2015) stated it is possible to use grounded theory in urban planning research when ideas and theories can be developed from the commonalities of case studies. The interview process undertaken in this research drew on the lived experiences of the interview subjects which was considered a valuable element of the research (Oktay 2012). Not all features of grounded theory are necessarily used when other qualitative research methods are utilised (Oktay 2012).

A view emerged during the interview process that there is an already large theory practice gap in urban planning that is growing. The variety of backgrounds of local government officers working in the open space field do not engage or undertake deep theoretical conversations or think about many matters that are covered in this research. They are focussed on completing set tasks within their given jobs and complying with organisational requirements which may or may not consider best practices in the field of open space planning and management.

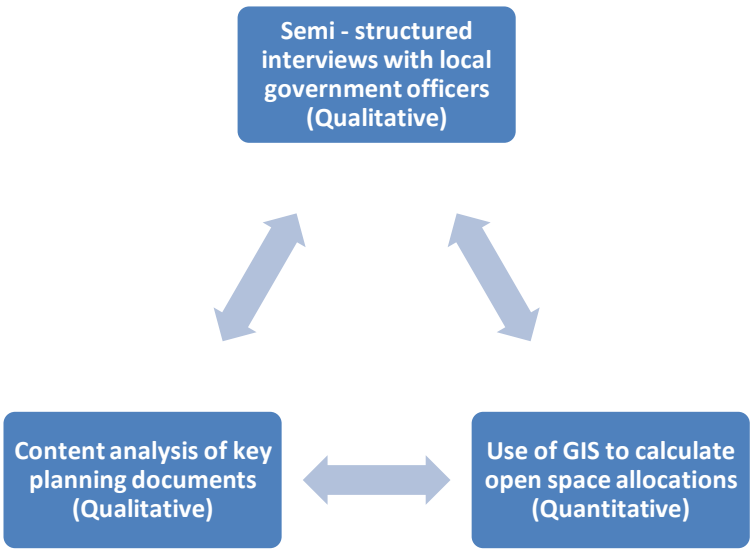


Figure 6.1 Key Methods Utilised in Thesis

Use of GIS to calculate open space allocations (Quantitative)	Content analysis of key planning documents (Qualitative)	Semi - structured interviews (Qualitative)
•Intramaps for cities of South Perth, Cockburn and Mandurah •Data collected on open space allocation for the suburbs of Como, South Perth, Cockburn Central, Success, Mandurah and Silver Sands	•*Directions 2031 and Beyond* •*Perth and Peel@3.5 Million* •*Development Control Policy 2.3: Public Open Space in Residential Areas* •*Liveable Neighbourhoods* •*R-Codes* •Numerous plans from respective case study local governments	•3 Local Governments- Mandurah, Cockburn, South Perth •17 Council Officers •4 State government officers

Figure 6.2 Key Sources of Information

6.4 Justification of the Use of Perth

Strong city centres with suburban dominated metropolitan regions are common characteristics of the urban morphology of Australian capital cities. Since the early 1990s all Australian capital cities have been subject to concerted government policies both promoting and directly facilitating more consolidated planning and development. As a capital city region, Perth reflects this urban morphology, the policy context, and also the social cultural shift in the lived experience and expectations of a population predominately raised in backyard suburbia but more recently subject to urban infill and densification.

Although the planning and policy frameworks do differ between the states, cities, and the local governments within, the unfolding of these urban development patterns has not been vastly different. From this perspective, Perth is broadly representative of these trends. There are also parallels with many North American city regions with strong post war car oriented suburban development traditions that in more recent decades have experienced densification.

These traditionally low density cities also tend to be well-endowed with open space with both public and private open space. In this respect, they are vastly different from such cities as Shanghai and Hong Kong, which are at the other end of the spectrum with very high dwelling and population densities, and with scant provision of open space, public or private. The “old world” European cities would tend to fall near the mid-point on such spectrum.

From this perspective, the Perth metropolitan region is a case study from which local governments and suburbs have been selected that will resonate with similar cities. In other words, the research findings and any conclusions from this study will have relevance for

many other jurisdictions, but not those that are markedly different. This reflects both the strengths and the limits of the case study approach to research (Yin 2003, 2010).

As the city is at the early stages of the urban consolidation process there are lessons that can be learnt from Perth that can be applied to other similar sized cities with similar characteristics before they become intractable issues that are difficult or impossible to overcome. Open space policy in the suburban setting is well established in Perth and as a result there is relatively generous open space provision. There is concern nonetheless that as the urban consolidation process gains momentum there will potentially be arguments as to whether the reliance on public compared to private open space is not seeing an overall decline in open space levels and in turn diminished liveability in these higher density areas. There is the additional concern that the policy linked to provision of open space is not keeping up with the uptake of urban consolidation and Perth is able to demonstrate the outcome of this.

6.5 Justification for Case Study Site Selection

Three case study areas were chosen; a central, inner-city location, a middle ring location and an outer regional location. All locations are undergoing increases in dwelling and population density in line with the WA government's urban consolidation goals for the Perth and Peel region. Simultaneously spatial data relating to the location and availability of open spaces could be compared relative to the open space requirements in planning regulations as well as other key land-use, spatial, demographic, and socio-economic data. As Yin (2003, 2010) points out by carrying out multiple cases studies it allows for the repetition of data collection across the chosen sites that improves the validity and reliability of the research; are the results generalizable outside the case study areas and can the results of the study be repeated? By carrying out multiple interviews with local government officers with various educational and work backgrounds and collecting data from the case study areas it increases the ability to make generalisations about how the local governments operate in relation to open space planning and management.

Three LGAs were the focus of the research and in turn two suburbs within each LGA were selected for closer analysis. These are summarised in Table 6.1. The sites represent a cross-section of suburbs that have similarities to other sites across the greater Perth region.

Table 6.1 Case Study Local Governments and Suburbs

Case Study Local Governments	City of Mandurah	City of Cockburn	City of South Perth
Focus Suburbs	Mandurah	Cockburn Central	Como
	Silver Sands	Success	South Perth
Description	Separate regional city beyond the Perth metropolitan area, but now included in planning for the region.	Middle ring suburbs in the Perth metropolitan area with high-density TOD centred around train station	Older, inner suburbs close to Perth CBD already with higher densities than many other suburbs across the greater Perth region

D2031 and *P&P@3.5M* promoted a hierarchy of activity centres across the Perth region in line with *State Planning Policy 4.2 Activity Centres for Perth and Peel* based on the future importance of each centre from a network perspective and the magnitude of development expected for each centre. The hierarchy is a guide to both public and private investment and provides minimum and desirable residential density targets and mixed-use land use targets (WAPC 2010b). As part of this hierarchy Mandurah was recognised as a strategic metropolitan centre, Cockburn was designated a secondary centre and South Perth had two district activity centres (Canning Bridge and South Perth) located within its boundaries (WAPC 2015a; WAPC 2015b; WAPC 2015c; WAPC 2010b).

Within the City of Mandurah (CoM) the suburbs of Mandurah and Silver Sands were chosen, in the City of Cockburn (CoC), Cockburn Central, as well as Success were selected, and in the City of South Perth (CoSP) the suburbs of Como and South Perth were utilised, with a particular focus on the area around the Canning Bridge Train Station (in Como) and the proposed South Perth Train Station. All these suburbs are being densified in some manner.

The CoM was chosen as a case study site because it is on the fringe of the greater Perth region. It is now included in strategic planning for the Perth region, rather than being treated as a distinctly separate area for planning purposes. It has gone from being a distinct planning region within the Peel area covered by the Peel Region Scheme (PRS), to being included in the broad strategic planning for the greater Perth region that is covered by *D2031* and *P&P@3.5M*. The change in urban form is distinctly different to what has been developed in the past in the surrounding areas around the chosen case study suburbs and LGAs. Although considered a fringe city and despite its distance from the Perth CBD (seventy-five kilometres) the CoM has undertaken to adopt higher dwelling densities in

specific locations across the Mandurah LGA, including the two chosen case study suburbs of Mandurah and Silver Sands. There has been a change in the types of buildings that are permitted to be developed and the density codings have been increased from R12.5 to R40/R60 and R100.

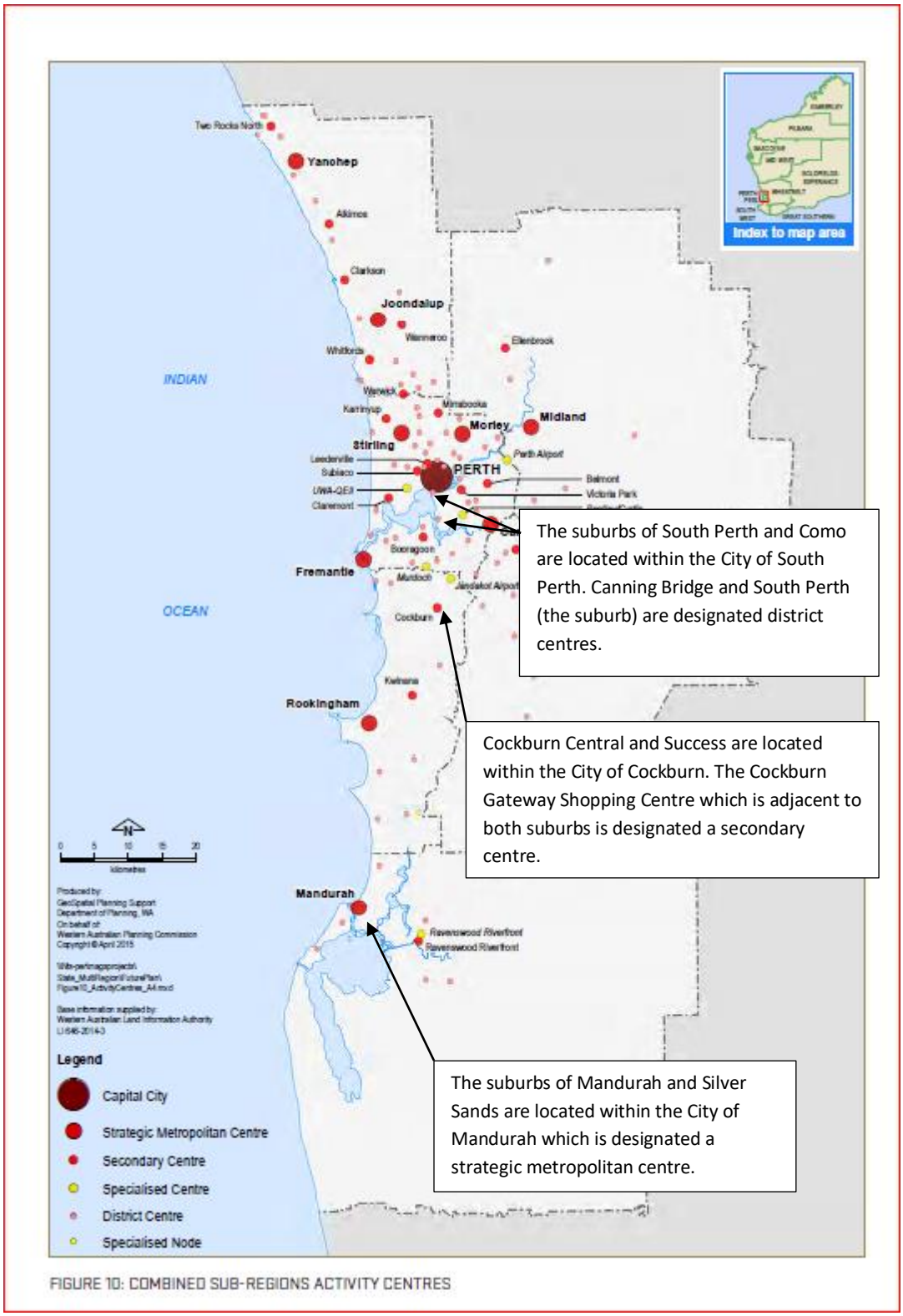
Cockburn Central was included because it marked a significant change in the type and density of dwellings that could be expected to be developed in a middle ring suburb. It signified a marked change in approach from the State government, the transport authorities and local government. Government land could be planned from the outset as a higher density transit-oriented development and utilised as a model development for areas abutting public transport networks (Curtis 2010). The suburbs that surround Cockburn Central (including Atwell and Beeliar) are predominantly low-density single residential housing. It has much higher dwelling densities than surrounding suburbs. Rather than being comprised of smaller residential lots that make urban consolidation more problematic, it is comprised of larger residential development lots that favour multiple storey residential apartments with mixed-use commercial and retail tenancies on the ground floor (Landcorp 2012). The suburb of Success was included because the northern part of the suburb has seen significant changes in the dwelling type built in the suburb. Whereas the southern sections of the suburb are comprised of more traditional low-density housing, the northern section has seen the construction of many apartments that are significantly higher and denser than surrounding homes. These multiple storey dwellings are adjacent to the Cockburn Gateway Shopping Centre which is the largest activity centre within the Cockburn LGA and such developments are in line with SPS 4.2 which actively encourages higher densities around activity centres (WAPC 2010b).

South Perth was chosen because of its proximity to the Perth CBD. It is adjacent to the Perth to Mandurah train line like Cockburn Central, Success and Mandurah. Its proximity to the Perth CBD has resulted in the area having much higher property values than the other case study areas, and as a result there is significant pressure to increase dwelling densities and allow greater heights in the proposed developments. Densification has been ongoing for years. Today it has higher dwelling densities than many other parts of greater Perth and has higher dwelling and population densities than Cockburn or Mandurah. It has an extremely high number of townhouses, units, and apartments in the two case study suburbs of South Perth and Como.

The three case study areas demonstrate different modes of consolidation. Unlike Cockburn Central and Success where urban development is new but at much higher densities than preceding development across Perth, both Mandurah and South Perth are seeing densification of existing urban areas occurring with structure plans and precinct plans introduced that permit significant changes in the form and density of buildings.

In the case of Mandurah, the densification plans were led by the local government to reinvigorate the inner-city area. The plans which permit much higher dwelling densities than previously accepted in the area were an attempt to reverse the economic decline and urban blight that had befallen the locality.

In South Perth there is significant pressure to densify due to high land values and proximity to the Perth CBD. The development lots tend to be smaller and owned by a greater number of separate landholders. The State government has been heavily involved in the creation of plans for Cockburn Central (through Landcorp) and the *Canning Bridge Activity Centre Plan (CBACP)* (through the Canning Bridge Structure Plan Project Working Group). The CoM created some of the precinct plans for the case study areas, while Landcorp was involved in the Mandurah Marina and Mandurah Junction development (City of Mandurah 2007; 2011; 2013b; 2016e; Landcorp 2012; Canning Bridge Structure Plan Working Group 2015).



The suburbs of South Perth and Como are located within the City of South Perth. Canning Bridge and South Perth (the suburb) are designated district centres.

Cockburn Central and Success are located within the City of Cockburn. The Cockburn Gateway Shopping Centre which is adjacent to both suburbs is designated a secondary centre.

The suburbs of Mandurah and Silver Sands are located within the City of Mandurah which is designated a strategic metropolitan centre.

FIGURE 10: COMBINED SUB-REGIONS ACTIVITY CENTRES

Figure 6.3 Case Study Locations

Source: Adapted from WAPC (2015a 43) with annotations by author

6.6 Semi-structured Interviews

The major source of primary data for this research was semi-structured interviews. Interviews were held with Council Officers involved in decision-making processes related to the planning, provision, and maintenance of POS at the local governments of Mandurah, South Perth, and Cockburn. Seventeen council officers were interviewed over 2014 and 2015 with the breakdown shown in Table 7.2. Officers from a variety of departments from each local government including town planning, recreation services, environmental services, landscape services, community development and engineering were interviewed. An additional 4 interviews were undertaken with State government officers involved with open space policy and issues. This was to ensure that a broad variety of views would be obtained on open space in terms of what is currently provided, whether they are open to the adoption of alternative solutions to open space and how they believed open space provision could be improved dwelling and population densities increased. By interviewing subjects across a range of departments differences in views and obstacles to changes in open space policy and processes could be identified. The different approaches adopted by different disciplines could also be ascertained and the level of cooperation or antagonism between departments and different disciplines could also be assessed.

Table 6.2 Interviewee Background and Code

Sector	Number	Interviewee Code	Department	Position
City of Mandurah	1	UP1	Urban planning	Coordinator
	2	UP2	Urban planning	Coordinator
	3	RP3	Recreation services	Officer
	4	CM4	Community services	Manager
	5	LM5	Landscape services	Manager
	6	EM6	Environment services	Manager
	7	EO7	Environment services	Officer
City of Cockburn	8	UP8	Urban planning	Manager
	9	EM9	Engineering and parks	Manager
	10	RM10	Recreation services	Officer
	11	CS11	Community services	Officer
	12	EM12	Environment services	Manager
City of South Perth	13	UP13	Urban planning	Manager
	14	UP14	Urban planning	Officer
	15	UP15	Urban planning	Officer
	16	RM16	Recreation services	Coordinator
	17	LO17	Landscape services	Officer
State government	18	SG18	Urban planning – Department of Planning	Officer
	19	SG19	Urban planning – Department of Sport and Recreation	Officer
	20	SG20	WALGA – formerly Department of Planning	Policy advisor
	21	SG21	Department of Local Government	Policy advisor
Total number interviewed	21	10 from urban planning, 2 from community services 3 from landscape services or engineering and parks, 3 from environment services, 3 from recreation services		

In urban planning the use of interviews including semi-structured interviews is widespread. It provides an insight into the views of professionals working in the area of interest. In the case of open space there is often a significant amount of focus on the users of the spaces particularly with the use of questionnaires and survey instruments, but the author felt there was a lack of research on the attitudes and approaches adopted by a range of professionals that make decisions regarding open space planning and management. The broad range of people that were interviewed within the study was also a recognition that it is not only planners that are involved in the design and allocation of open space. Semi-structured interviews are seen to be a means to collect information from experts in a field in a less formal manner than surveys and have the potential to reveal ideas and opinions that may not be revealed in written or spoken surveys (Hall 2008; Cresswell 2009). There have been several studies completed that made use of semi-structured interviews to elicit responses and collect data from experts in the field of urban spatial planning, government

administration and landscape planning (Faehnle et al 2014; Kabisch 2015; Kaczorowska et al 2015; Lenhart van Vliet and Mol 2015).

A Curtin issued student email address, as well as the author's personal mobile phone number was given to each local government for people to make contact. In most cases a reply email was sent confirming interviewees' willingness to participate in the research project. When there was no email response from candidate Councils the reception was telephoned, and contact was made with individual departments asking if any member of the respective section would be permitted to participate in the research project. Confirmation of the availability of each interviewee was made a day or two before the actual interviews to ensure that each interview subject was still willing to participate. In all cases an email was sent to people that confirmed their willingness to participate in the study and included the information sheet, consent form, and interview questions.

In each case interviews were held at the work premises of participants. They were provided with a written copy of the information sheet and this was explained verbally by the researcher. All participants were required to sign a consent form and were also provided with a written copy of the key questions. The interview process was explained, and participants were reminded that they could withdraw from the study at any time or ask questions relating to the research. It was intended that interviewees should be relaxed and comfortable during the interview and the researcher would be as open and transparent as possible to ensure that interview responses were honest and genuine.

The selection of interview subjects from a range of occupations ensured that a broader range of views and perspectives was collected. It was felt that it was critical to obtain opinions and ideas from both inside and outside the planning profession. A different perspective of the problems that are faced in the provision and maintenance of open spaces within the three case study areas would ensure a broader, more rounded study would be completed that would avoid the tendency towards the silo mentality that often typifies policy making and administration within many government departments, where experts in a certain field operate as if they are the only group in the field. Requests for interviews with people from outside planning would ensure that responses given were not planning centric and therefore considered other matters that planners may not be aware of or concerned with in their day-to-day jobs. This approach also recognised that there were departments working in the open space field that deal with planning policy and regulation, but outside the planning profession.

The interview duration was typically no more than one hour, although one interview went for approximately seventy minutes while another took twenty minutes. It was possible to build a relationship with the interview subject which promoted the ease with which they responded to questioning, and during the interview opportunities presented themselves to discuss topics which were not part of the interview schedule, but were nonetheless deemed relevant (Sarantakos 2005). There was a certain amount of freedom and flexibility that allowed the interviewer to evaluate the subjects' behaviour and attitudes and observe non-verbal behaviour. At the same time access was given to high quality information which was often not made available to the public (Sarantakos 2005). It was recognised that there were some weaknesses to in-depth interviews. The skills and values of the interview subject can result in responses that were biased or distorted, and this had to be recognised when analysing the interview results (Sarantakos 2005).

The same set of questions were utilised for all interviewees. It was recognised that some questions were less relevant to some respondents. This was reflected in their succinct responses or belief that the question was unimportant or irrelevant. Although there was a set of scheduled questions which were used as the basis of the interviews additional unscripted questions were asked to help with the clarification of responses (Bryman 2004). These supplementary questions provided insights into interviewees' views of the problems being investigated and each organisation's operations and decision-making processes and policies.

The intention from the start was to ask those charged with the responsibility of planning and managing public open space provisions what was most important for them in terms of the issues and challenges in their respective roles. Rather than lead the interviewee respondents into a discussion not of their choosing, the approach was to keep the conversation open and to capture the concerns and experiences that they chose to identify and articulate as important.

All interviews were recorded using a digital voice recorder (with interviewees' consent) to ensure an accurate record was taken. All interviews were transcribed in full by the author to ensure anonymity was maintained. Some interview subjects indicated that their responses were their own personal views, not the views of their local government employer.

The interview subjects were de-identified to ensure anonymity. It also permitted the interview subjects to speak freely in response to questions to ensure that they did not have

to give a set answer or one that contravened policies or regulations of the organisation they were involved with. All subsequent writing removed names and writing was completed in such a way that it would be difficult to identify contributors to the research. There were examples of interviewees that were happy to be identified, while some others felt it was critical that they be completely anonymised as they felt their contribution to the research "might make things difficult in their workplace."

The responses obtained from the semi-structured interviews were divided into key themes within the NViVo software package. These themes were revisited over time such that some themes and topics that were ultimately discussed in the thesis were the result of a merging of themes identified in the coding process that had similarities. These themes often aligned with the questions from the interview schedule, and included climate change and water supply, impact of drainage, maintenance, and cost of open space, use of school sites, community involvement in open space, and possible solutions to open space problems.

6.7 Spatial Analysis

Intramaps, a GIS software package used extensively by local government in WA and accessed through the internet was used to collect data on open spaces in each of the case study areas. Intramaps could reveal specific spatial data that could not be easily collected using qualitative methods and can be utilised to make calculations and incorporate information relating to open spaces. The open spaces were identified utilising the aerial photographs on Intramaps as well as personal visits to some of the parks to confirm features that may have been identified in the photography. The information that each Council provided to the public version of Intramaps (as personal and private information relating to ownership must be concealed for legal reasons) is slightly different. The system has greater functionality if accessed as an employee of a local government, but nonetheless is an extremely valuable research tool for members of the public.

It has functions that allow the user to collect data relating to surface areas of open space and surrounding lots, dimensions of lots, ownership of the land (whether it is privately owned or is under the management of local or State government), zoning, dwelling density coding and whether there are other problems that may be identified from aerial photographs or precinct plans or structure plans that have been implemented by the relevant local government that are presented to the user when the system is accessed. As much information that could be extracted and utilised from Intramaps as possible was

included in tables that were used to collate total surface areas of open space (detailed in Appendices Figure A1 to A11).

Intramaps identifies individual lots. In some cases what appeared to be a single area of open space was several Council owned or managed lots. In these cases, it was necessary to sum the individual surface areas of each lot together to find the total area of the open space. The information gathered from Intramaps was complemented with data collected from Google Earth because of the lack of accessibility of the public to corporate features of Intramaps. Aerial photos of the spaces gave the researcher additional information including the facilities and infrastructure within the space and features in the surrounding area. Natural features like trees and turf, as well as man-made features like playgrounds and barbecues can be readily identified (Taylor et al 2011).

Open spaces that were comprised of separate lots that had to be summed together to make a single unit and sports clubs that held leases over Council reserves were also included as part of the total open space count. The sport clubs provide facilities for specific sports that require considerable area and many of these sports cannot be played without this space. The clubs often have membership requirements and exclude non-members, but it is recognised that they occupy space that could potentially become "more public" over time because of changes in the status of the sport or closure of the club. It is the total area of the open space that could be utilised by the public that is important, not the fact that the area may not allow outsiders to utilise the space[11].

The definition of open space and the methods adopted to decide which areas are included or excluded presented difficulties when calculating the area dedicated to open space. When calculating the area should buildings and areas dedicated to car parking be included in the open space area calculation? Should areas that include drainage basins and sumps be included? Is it appropriate to include areas that are outside the cadastral boundaries of the open space lot, but could be considered open space? Should areas like cemeteries, swimming pools, golf courses, school ovals and stadium facilities be included in the calculation of open space areas?

For the purposes of this research all standard Council owned and managed reserves including buildings and carparks were included in the calculation of surface area, as well as foreshore areas, drainage basins and sumps and additional areas that have functions typically associated with open space including active sports, passive recreation, drainage,

and ecological functions (including nature reserves and conservation areas). Road reserves and roads are not included in the calculations; however, it is recognised that in some LGAs parts of road reserves have become parts of open space because of road redesign and attempts to reduce traffic and lower traffic speeds on some roads within residential areas, as well as increase landscaping and vegetation cover (examples of this include areas within the suburb of Como in the CoSP). A practice was adopted of only including areas inside the cadastral boundaries of an open space area as indicated on the Intramaps system.

Several calculations were included to demonstrate that the area of open space can be increased when golf courses, school sites and drainage basins are included in open space studies. Typically, if the area of open space is constrained or below ten per cent, then it would be appropriate to see how much this area can be increased if drainage reserves are added, followed by government owned and managed school sites, and then finally adding the golf courses and other private sports clubs and groups that may have exclusivity arrangements with Councils. The intention was to identify whether there was insufficient land dedicated to open space within the case study suburbs.

In the case of the CoSP they categorise their open space as being either metropolitan planning scheme recreation reserve or local planning scheme recreation reserve on Intramaps. The CoM designates reserves either as local or district reserves and the CoC designates local reserves as parks and recreation and within the Cockburn Central planning area they have the zoning of regional centre. Data was also collected on other land that was not formally included as recreation reserves; public purpose or community purpose zones which may possibly have schools or other infrastructure including community halls and surrounding open spaces that could potentially be utilised for open space purposes.

The total areas of open space were then used to calculate the percentage of the chosen suburbs that are dedicated to open space to obtain a greater understanding of the level of open space allocation compared to the minimum provision standard of ten per cent.

It is recognised that there are some limitations to this method of counting and measuring open space where local governments are located within heavily urbanised areas and there is the opportunity for people to travel easily from one suburb to the next and potentially move into another LGA and utilise open spaces that would not be counted in a study focussed on a particular area (Daker, Pieters and Coffee 2016). The boundaries of the case study suburbs for the purposes of POS utilisation are permeable and fluid.

In each case study suburb the total surface area was utilised. Rather than calculate the area dedicated to residential development only (as is required by *LN* when calculating the correct allocation of POS) the total surface area of the suburb was utilised for all calculations around open space allocation. The argument adopted was that in areas that are undergoing change in terms of land use and density it was better to include the total area of the suburb. In the case of Cockburn Central a significant portion of the suburb had industrial and commercial uses, as well as residential. The area is a mixed-use zone and there will always be some fluidity in the uses. At the same time, the northern portion of Cockburn Central has rural residential lots which have had structure plans adopted that will see the area change over the next few years as development proceeds. Development may be like the current development within Cockburn Central with a combination of high-rise, townhouses, and single residential dwellings. The industrial areas to the west of the suburb may come under pressure to relocate and be rezoned from the current industrial land use to commercial and service zoning as the residential area expands.

The suburbs of Como, South Perth and Mandurah also have a mix of residential and commercial zonings. The Mandurah precinct plans and the *CBACP* all promote mixed use zonings and residential and commercial uses will be able to co-exist within the same buildings. In the case of the *Inner Mandurah Precinct Plan (IMPP)* it is intended that the bottom floor of some of the new buildings constructed in accordance with the plans will be able to be fitted out as commercial or residential premises.

Badland et al (2014) found that there is no single approach that has been adopted across Australia when collecting data on POS measurement. Although the method adopted in this thesis may be different from the method used in *LN* and *DC2.3* it does provide a unique picture of open space allocation where it is difficult to accurately collate information on the breakdown of residential versus non-residential buildings and these uses are flexible.

By adopting the approach used in this thesis future proofing of POS allocation is being considered. It assumes that the whole suburb is developed for residential purposes even if there are commercial or industrial uses within the same suburb. It considers the possibility that areas that are currently commercial or industrial may become residential in the future.

6.8 Content Analysis of Planning Documents

In this study, significant focus is placed upon the key planning documents that establish the form and function of open spaces in WA including *DC2.3* and *LN*. In addition, the two key

strategic planning documents for the Perth and the Peel region were examined; *D2031* and *P&P@3.5M*.

Statutory plans including town planning schemes, precinct plans and structure plans, as well as local planning policies utilised by the subject local governments were utilised and relevant information was extracted (see Table 6.3). The documents allow the researcher to identify the stance that each respective organisation has adopted with regards to the research theme (Hall 2008).

The documents were examined for themes including open space allocation (including private open space and POS allocation), public realm, parks and gardens and similar topics that demonstrated a recognition of the need for such spaces in the case study areas where urban consolidation was being undertaken. A study of the information presented in the documents was undertaken and discussed. There are numerous studies in urban planning that have utilised content analysis (MacCallum and Hopkins 2011; O'Neill and Gallagher 2014)

Plans provide critical information regarding the size, function, accessibility, and features of open spaces and how each of the spaces contribute to the total open space allocation in an area, as well as their location relative to dwellings and land use zones. Dwelling densities within the case study areas were also important to consider owing to the research focus on urban consolidation.

Table 6.3 Planning Documents Relevant to Case Study Locations

Case Study Local Government	**City of Mandurah**	**City of Cockburn**	**City of South Perth**
Plans	*City Centre Precinct Plan*	*Cockburn Central Structure Plan*	*Canning Bridge Activity Centre Plan*
	Mandurah Terrace Precinct Plan	*Cockburn Central Town Centre Design Guidelines*	*Local Planning Scheme No 6 Amendment 25*
	Inner Mandurah Precinct Plan	*Muriel Court Local Structure Plan*	
	Mandurah Junction Structure Plan		
	Mandurah Marina Outline Development Plan		

6.9 Ethics Approval

An ethics clearance Form C was submitted as part of this research proposal due to the minimal impacts of the research on participants in the research. Written permission was

obtained from participants in the semi-structured interviews and copies of each consent form was stored for future reference if required.

6.10 Conflict of Interest

The researcher was an employee of the CoM from November 2012 until May 2013 while candidacy was being prepared, however, after this time there was no formal employment or involvement with any of the Councils chosen as case study areas. All interviews were completed while the researcher was a full-time student.

Exposure to local government operations and urban planning within a regional city at the outer edge of the greater Perth region exposed the researcher to personnel and agencies connected to the questions being asked and matters being examined in this thesis. It gave the researcher an understanding of how local governments communicate with their local communities, the type of personnel that would be able to help address the research question and inform the development of objectives.

6.11 Conclusion

This chapter has provided a description of the research methods that were utilised throughout the study. A discussion of the processes that were undertaken as part of each method were provided, as well as a justification for each method. A combination of semi-structured interviews, content analysis and spatial analysis were utilised to develop an understanding of the open space planning and management policies and processes in areas undergoing urban consolidation within the sample suburbs in the local governments of Mandurah, Cockburn, and South Perth.

The broad-based mixed methods approach utilised for this research allowed the collection of data for each research objective. There was a future oriented research agenda in terms of whether open space provision was adequate for higher density urban environments where populations are expected to rise. However, the data and perspectives are predominantly historical and current.

The focus on WA data has limitations compared to foreign cities with different histories, cultures, and urban environments. By international standards Perth could be described as a garden city with abundant open space provision and provides a stark contrast to cities that have denser and higher urban populations. Nonetheless, it holds considerable interest, particularly for other Australian, North American, and European cities, that are in a similar

situation moving from lower to higher density urban forms and the need to confront problems associated with urban consolidation.

It is argued that the results of these interviews are generalisable across Australia and other parts of the world that have a planning system that is responsible for ensuring that open space is provided by local governments, but often have the policies influenced by other institutions and levels of governments. Although the policies may not be the same other jurisdictions have the potential to learn from the example of Perth local governments; they have urban environments that are being densified, increased pressures in relation to open space provision and management and simultaneously deal with other challenges including financial constraints, dilution of local government powers, expectation that local government will consult widely with stakeholders and outcomes set by external bodies that may conflict with local government objectives and responsibilities.

While Greater Perth has lower population densities (refer to Tables 5.3, 7.2 and 7.3) and higher allocations of open space than many other cities across the world it is now facing sustained densification policy initiatives that will put increasing pressure on maintaining the qualities of these resources and in turn impact on the nature of lived experience.

The next chapter examines the links between open space and the changing urban form of Perth. As policymakers emphasise urban consolidation in response to concerns regarding sustainability and housing affordability, it is suggested that there are problems with open space policies, and liveability may be constrained by current approaches.

Chapter 7 Perth's Changing Urban Form

7.1 Introduction

This chapter provides details of the changing nature of Perth's urban form because of the imposition of urban consolidation policies, and other societal and economic changes. Considerable attention is paid to the importance of the *Stephenson Hepburn Plan (SH Plan)* in reinforcing a low-density suburban environment and embedding a minimum quantity of POS at the same time as the Great Australian Dream was emerging as a dominant socio-economic paradigm. The reduction in lot size and acceptance of higher dwelling densities because of changing lifestyles and housing affordability pressures are considered. Both *D2031* and *P&P@3.5M* are examined, with a particular focus on the open space elements of each document. The open space policies utilised in WA are discussed, as well as the changing recreation preferences of people. The high levels of liveability that were afforded by the *SH Plan*, and later strategic plans were a result of low dwelling densities and generous public and private open space provision.

7.2 The Stephenson Hepburn Plan

In 1953, the WA government appointed two British experts, architect Gordon Stephenson and urban planner Alistair Hepburn, to create a strategic spatial plan for the Perth metropolitan area. *The Plan for the Metropolitan Region of Perth and Fremantle*" was finalised in 1955 and known colloquially as the *Stephenson Hepburn Plan (SH Plan)*. Utilising modernist planning principles, it laid down the strategic spatial growth pattern for Perth for the next thirty years (Stephenson and Hepburn 1955; Foley 1995; Alexander and Greive 1997).

An Honorary Royal Commission had recommended the need for a regional plan, a regional planning authority and improved planning processes for the Perth region (Stephenson 1992; Foley 1995). Previous attempts at town planning at a state level had been constrained by a lack of funding and political support. It was the State government's belief at the time that economic development could be facilitated through urban planning (Stephenson 1992; Foley 1995). There was a view that better planning would mitigate some urban problems that Perth faced due to rapid population growth (Stephenson 1992; Foley 1995).

Stephenson believed that urban planning was a progressive reform activity that marshalled the state to achieve positive socio-economic outcomes (Alexander and Greive 1997). He arrived in a city that was desperate to adopt modernist planning principles and as a result

was given considerable decision-making powers and promoted his ideas widely in the media (Foley 1995; Alexander and Greive 1997). Stephenson and Hepburn were operating in a political environment that was extremely accommodating of their plans.

Perth was a vastly different place in 1955 compared to the greater Perth region of today. The city had a population of approximately four hundred thousand and an area of thirteen thousand two hundred square kilometres. It already had a low-density, suburban nature before 1955, but this was reinforced by the *SH Plan*. The *SH Plan* aimed to help Perth avoid problems that plagued other cities, including high-density slums and traffic congestion. Urban expansion occurred on the city's periphery with an emphasis on low-density housing that favoured the car, like many American cities (Freestone 2012).

Higher density housing was relatively foreign to Perth. Most residents lived in privately owned detached residential housing on lots typically larger than eight hundred square metres, although under the *SH Plan* ten per cent of lots were allocated for flats and townhouses (Stephenson 1992). Across Australia low cost higher density dwellings were typically supplied by state and territory governments to those unable to purchase or rent homes in the private housing market. These were often seen as an inferior housing product, and antagonism developed towards flats and apartments, which were viewed as slum-like homes for the poor, and became synonymous with crime, poverty, and social breakdown. They were often viewed poorly by residents because they dominated the surrounding low-rise, low-density suburban environment, and created a "disturbance" in their quiet suburbs (Butler-Bowdon and Pickett 2007).

7.3 The Great Australian Dream

The *SH Plan* was formulated at a time when the Great Australian Dream was emerging as an aspiration for many Australians. Home ownership was positioned as a right irrespective of income, profession, or class (Freestone 1982). This ideal coincided with the aims of Federal and State governments across Australia that were keen to promote home ownership to embed capitalist ideology as part of the Cold War, and the fight against communism from the late 1940s onwards (Freestone 2010). Simultaneously, there were vested interests, including the urban development and consumer goods industry that would benefit from increased demand for housing (Freestone 2010).

A variation on the American Dream, the Great Australian Dream centred around freehold ownership of a detached dwelling located on a suburban lot with a generous garden. In Perth suburbs ideas were borrowed from the Garden City movement, including the

promotion of tree lined streets and significant allocations of private open space, as well as the sale of freehold land (Freestone 1982; Freestone 2010). The Great Australian Dream was an expression of the financial security and status that was derived from home ownership. As the economy grew, rising incomes and increasing availability of finance allowed people to purchase suburban homes. Prior to World War Two home ownership was 50 per cent. It increased to 70 per cent in 1965 and was 65 per cent by 2016 (Freestone 2010; Australian Bureau of Statistics (ABS) 2016g).

Australian homes typically had large gardens and backyards by international standards. In the 1800s gardens were a means to produce food for the household (Freestone 1982). By the early 1900s a manicured garden was seen as an indicator of high morals and civic mindedness, with Federal Member of Parliament, and later Prime Minister Billy Hughes claiming that a house without a garden was not a home (Freestone 1982).

Negative connotations were attached to high-density housing, including flats and terrace housing. The "Royal Commission for the Improvement of the City of Sydney and its Suburbs" in 1908 promoted the idea that low-density suburban development was clean and healthy. Favouring suburban housing would reduce the likelihood of overcrowded, disease-filled slums developing, and the urban environment could be beautified (Freestone 1982). Much of the higher density tenement housing in Sydney was of such poor quality that slum demolition was undertaken. A similar program was implemented in the poorer quality suburbs of Melbourne. Ironically, the replacement housing was often high-rise apartments. These continued to be demonised by supporters of low-density housing and those that believed that there were implications for the morality and growth of the Australian population. During the 1920s and 1930s there were widely held views that flats and apartments promoted bohemian lifestyles and sexual permissiveness, as well as diminished the role of women as homemakers and mothers (Butler-Bowdon and Pickett 2007). The ability to promote population growth had both maternal and nationalistic purposes and this was supposedly eroded by people residing in flats and apartments (Butler-Bowdon and Pickett 2007). Some argued that the working-classes should have suburban housing with large gardens that allowed children to exercise outside, while others believed that housing the poor in cheap, higher density rental accommodation created a privileged class of property owners and an impoverished underclass (Butler-Bowdon and Pickett 2007). Opposition to higher density housing became so hardened that many local governments across Melbourne and Sydney banned the construction of flats and apartments (Butler-Bowdon and Pickett 2007).

Whereas the homes of the 1950s and 1960s were dominated by private open space, by the latter years of the twentieth century the situation had been reversed; the home had become the dominant feature of the lot. The Great Australian Dream was increasingly about maximising lifestyle, personal wealth, and material wellbeing (Mackay 2007). The "McMansion" phenomenon that emerged in the early twenty first century was epitomised by Australia having the largest homes on average in the world (Mackay 2007; Department of Housing 2013; McMullan and Fuller 2015; McKinlay, Baldwin and Stevens 2019).

Both the *SH Plan*, and the subsequent *Corridor Plan* (1970), pushed Perth in the direction of becoming a sprawling city with a range of economic, social, and environmental problems. The urban form of the city was having an impact on sustainability, and liveability. Housing affordability had declined. High median house prices meant that people were forced to negotiate large mortgages or pay high rents. Affordable housing was located further from employment. As the city's spatial footprint grew and travel distances increased commuting times and traffic congestion worsened. There were increasing concerns about the effect of urban development on the natural environment. An ever-expanding urban periphery was consuming large quantities of land causing biodiversity loss and promoting climate change. There was a growing belief that a more compact city and urban consolidation could be promoted as the panacea to these urban problems.

A variation on the Great Australian Dream emerged from the late 1990s. With the decline in the affordability of housing across Australia, a greater proportion of the urban population were choosing to live in higher density dwellings (Department of Housing 2013). The individual dwelling on a large lot in suburbia was still the preferred housing type, however, there was growing recognition that it did not suit everyone and was no longer the only housing type sought by Australians (Department of Housing 2013). Inner-city and middle ring suburbs with higher density dwellings that were potentially more affordable were becoming a favoured choice for many people (Department of Housing 2013). Perth was following an Australian trend with 23 per cent of new housing consisting of units, townhouses, and apartments (ABS 2016h).

Households with one or two people or elderly residents were increasing relative to other household types and did not necessarily desire a large home (Kellett 2011, ABS 2016a). As more Australians travelled overseas and gained experiences living in foreign cities, alternatives to traditional suburban homes became more acceptable. Similarly, many overseas migrants were accustomed to apartment living (Butler-Bowdon and Pickett 2007).

Foreign television shows consumed by Australians increasingly presented apartment life in a more positive light. This transculturation made higher density living more acceptable to a larger proportion of the population (Knox and Pinch 2006).

The traditional suburban backyard was being sacrificed in areas where dwelling density increased. There were many residents of higher density dwellings that did not desire a large suburban block and were willing to accept smaller backyards or balconies as substitute private outdoor spaces.

7.4 Densities in Greater Perth

The change in dwelling density and lot sizes was facilitated by the release of strategic plans, as well as changes in both local and State government planning policies.

Large backyards typical of Perth suburbia were a result of several factors. Perth was situated on a sandy coastal plain. This was ideal for the use of septic tanks where reticulated sewerage was not installed. Many homes also extracted groundwater for human consumption. To prevent contamination of this water by septic tanks minimum lot sizes of a quarter acre (1012m^2) were established by the authorities (Weller 2009).

Large lot sizes provided enough private open space to serve multiple purposes. The backyard served a utilitarian role providing areas to grow fruit and vegetables, dispose of household rubbish, dry clothes, and have room for children and pets to play. The front yard served an aesthetic function that often expressed the civic values of residents. Front gardens were often well manicured and frequently followed English gardening practises (despite the environmental limitations) with expansive (and water thirsty) lawns and exotic plants (Weller 2009; Freestone 2010).

The introduction of the *Town Planning and Development Act (1928)* saw the imposition of development controls over land and housing. Housing development increasingly included the provision of reticulated sewerage and regular waste collection that permitted reductions in the minimum lot size to six hundred square metres (Foley 1995; Weller 2009). The decline of the quarter acre tradition had begun.

In 1955 residential lot sizes were generally over 800m^2, however, by 1976 average lot sizes had fallen to 680m^2. However, the gross residential population density remained virtually unchanged shifting from 28.4 to 28.5 people per hectare from 1954 to 1976 (assuming household occupancy declined from 3.83 to 3.23 persons per dwelling) (Town Planning Department 1981).

The release of Metroplan marked the change in focus from urban expansion to urban consolidation with a goal of 20 per cent of the existing urban area to be utilised for urban consolidation (Department of Planning and Urban Development 1990). The promotion of policies containing the growth of the Perth metropolitan area was continued in *Network City* with an urban consolidation target of 60 per cent (WAPC 2004). The subsequent documents *D2031* and *P&P@3.5M* aimed for 47 per cent of residential development to occur within the existing urban areas at fifteen dwellings per gross urban zoned hectare (WAPC 2010a; WAPC 2015a). This was well above the historical average of 30 per cent. The remaining 70 per cent of development occurred on greenfield sites at ten dwellings per gross urban zoned hectare (Department of Planning 2016).

State Planning Policy 3.1 Residential Design Codes (*R-Codes*) and Council planning policies facilitated higher dwelling densities as well. They were modified to allow greater site coverage of residential lots which permitted the construction of larger homes on smaller lots. Many local governments approved plans and policies that permitted building footprints to increase above 50 per cent of lot area (City of Mandurah 2010; City of Cockburn 2017d). In addition, Council policies allowed an additional five to ten per cent increase in site coverage on top of the requirements of the *R-Codes* (City of Mandurah 2010; City of Cockburn 2017d). The *R-Codes* were modified to allow smaller lots with narrower frontages, rear loading garages and reduced boundary setbacks to allow dwellings to utilise lots more efficiently. Increasingly policies have permitted the construction of residential dwellings with larger footprints and smaller private open spaces (Department of Planning 2015b).

Urban consolidation undertaken in greater Perth has typically followed many forms. The first type involved the subdivision of a single lot into two smaller lots with two side by side dwellings or a front and a rear dwelling that attempted to replicate more traditional suburban housing, minus generous private open space (see Table 7.6). The second form saw larger lots subdivided into many smaller strata lots and a group development undertaken which created many smaller dwellings that had little private open space, other than a small courtyard or veranda area, and a common driveway to the dwellings located at the rear of the property. The third option involved the amalgamation of many smaller lots into a single lot and the construction of multiple storey apartments with balconies and small private open spaces or a common private outdoor space on the ground floor (see Table 7.6). Some may have had roof-top gardens (Newton and Glackin 2014; Duckworth-Smith 2015).

The first and second options were the cheapest and easiest to gain approval and implement, particularly where there was opposition to high-rise development. Antagonism towards multi-storey developments, where most housing was low-rise made such development less favourable. The construction of high-rise has occurred either in high value areas close to the Perth CBD (where development costs can be recouped) or in strategic areas where the State government has significant landholdings (like Cockburn Central) and the development of high-rise aligns with the government's strategic goals, without impacting on the low-density housing in surrounding suburbs. In the period 2011 to 2015 of the dwellings constructed in infill areas, 56 per cent were single dwellings, 19 per cent were two to five dwellings and 13 per cent were over fifty dwellings per lot (Department of Planning 2016).

Under current urban policy settings average lot sizes have declined and residential densities have risen. Thirty-four per cent of dwellings were constructed in existing urban areas by 2015 (Department of Planning 2016). As Table 7.1 shows there has been a marked increase in lots less than 600m^2 and a significant decline in lots greater than 600m^2. The largest percentage increase in lots approved was for those less than 320m^2.

Table 7.1 Lot Approvals in Perth and Peel Region (2010-2011 and 2015-2016)

Years	<320m^2		320-499m^2		500-599m^2		600-999m^2		1000-2999m^2		Total lots	Estimated median lot size (m^2)
2010/11	2427	23%	4538	42%	2303	22%	1161	11%	282	3%	10711	445
2015/16	4894	33%	7172	48%	1729	12%	744	5%	448	3%	14987	384

Percentages are rounded and may not sum to 100.
Source: Adapted from Department of Planning (2016)

Based on the net site dwelling density by build year within urban zoning the Perth metropolitan area average increased from 20.7 net dwellings per net site hectare in 2008 to 26.6 by 2015 while the Peel region declined from 20.6 net dwellings per net site hectare in 2008 to 20.1 in 2015. If the city zone is included with the urban zone in the calculations, then the net dwelling density in the Perth metropolitan region increased from 21.4 net dwellings per hectare in 2008 to 27.2 in 2015. The Peel region remained relatively constant with 20.6 dwellings per net site hectare in 2008 down to 20.1 in 2015 (Department of Planning 2016).

If the average household size is set at 2.63 persons (in accordance with the Urban Growth Monitor) this means that average gross dwelling densities of fifteen dwellings per hectare are resulting in population densities of 39.45 people per hectare which is higher than the

population densities of thirty people per hectare referred to in the 1981 open space report and the point at which a review of the open space allocation system should be considered (Town Planning Department 1981, Department of Planning 2016).

Finer grained data is revealed in Table 7.2 for the specific case study LGAs, as well as the inner local governments of Perth and Vincent. Net dwelling densities per hectare by build year (including urban and city centre zoned land) are provided and population densities for each LGA were calculated (using an average household size of 2.63 persons per hectare). The data suggests that all the LGAs require POS allocation to be reassessed. All have population densities above the critical thirty persons per hectare suggested by the open space report by the Town Planning Department (1981). Cockburn has seen dramatic rises in dwelling densities whereas South Perth and Mandurah have been relatively static in comparison. Perth and Vincent have extremely high densities compared to the case study LGAs.

Table 7.2 Net Dwelling Densities in Selected LGAs with Estimated Population Densities

Local Government	2008 Net Dwelling Density Per Hectare	2008 Population Density Per Hectare	2011 Net Dwelling Density Per Hectare	2011 Population Density Per Hectare	2015 Net Dwelling Density Per Hectare	2015 Population Density Per Hectare
South Perth	21.1	55.5	17.2	45.2	19.4	51.0
Cockburn	21.3	56.0	22.4	58.9	30.1	79.2
Mandurah	20.9	55.0	19.9	52.3	21.0	57.9
Perth	297.5	782.4	367.2	965.7	267.8	704.3
Vincent	51.7	136.0	37.9	99.7	114.7	301.7

Source: Adapted from Department of Planning (2016) with population density calculations by the author and assuming household occupancy of 2.6 persons per household.

The greater Perth region does not have high population or dwelling densities compared to many cities as Table 7.3 highlights. There are pockets of higher dwelling and population density across the greater Perth region within many suburbs that have been targeted for urban consolidation. However, these figures do have to be treated with caution. Using population density for the whole metropolitan area of a city can be deceiving. As mentioned previously fine-grained data (such as Table 7.2) that focuses on local governments within a city's area can be more revealing.

Table 7.3 Estimated Population Densities of Selected Cities

City	Country	Estimated Population	Area of City (km^2)	Population Density (people/km^2)	Population Density (people/hectare)
Perth	Australia	1785000	1566	1000	10
Portland	USA	2000000	1357	1400	14
Melbourne	Australia	3955000	2543	1500	15
New York	USA	20685000	11642	1800	18
Sydney	Australia	4070000	2037	1900	19
Los Angeles	USA	15135000	6299	2400	24
Berlin	Germany	4085000	1347	3000	30
Paris	France	10870000	2845	3700	37
Tokyo-Yokohama	Japan	37750000	8547	4400	44
London	UK	10350000	1738	5600	56
Shanghai	China	22685000	3885	5800	58
Singapore	Singapore	5725000	518	11100	111
Hong Kong	China	7280000	285	25600	256

Source: Demographia (2016)[12].

7.5 Effects of Higher Densities

Wherever urban consolidation is undertaken there are significant ramifications beyond increased dwelling densities. Private recreation space in the form of private backyards or communal open space on private lots is often reduced on lots where redevelopment occurred (Hall 2007). Dwellings and paved surfaces typically dominate the urban areas with minimal private open space provided around the exterior of the dwelling (Hall 2007). The backyard that may have consisted of lawn and trees has been replaced with solid man-made surfaces which absorb heat during the day, and re-radiate heat at night. The backyard actively contributes to the urban heat island effect (Brunner and Cozens 2012; Brown et al 2013). The trees provided a range of ecological services including habitat for wildlife, as well as the ability to shade and cool the surrounding built environment (Brunner and Cozens 2012; Brown et al 2013). As a result of the heating of the buildings and solid surfaces there is increased reliance on air conditioning and higher demand for energy to cool residences (Brown et al 2013). The private open spaces that remain are often not suitable for the planting of trees or shrubs because the areas are so constrained (Hall 2007).

Less private open space and higher population densities may increase demand for POS. The compensation hypothesis argues that a fall in private open space will cause people to travel to more distant POS as compensation (Maat and de Vries 2006; Byrne, Sipe and Searle 2010). Kellett (2011) suggested that POS may compensate people for inadequate private open space, but there may be little overlap in terms of usage between the two types of

open space. Policy should ensure that a variety of lot sizes are made available to serve different consumer preferences and usefulness of outdoor areas is assessed as building site coverage grows and lot sizes fall (Kellett 2011). Coolen and Meesters (2013) found that dwelling residents in the Netherlands view private outdoor space as another room of the dwelling and prefer private open space because of the privacy and quiet. It was revealed that residents of some higher density developments in Britain believed that there was too much POS created at the cost of private open space (CABE Space 2004b).

In WA there has been a steady decline in the size of rear yards and in some cases the creation of unusable outdoor open space (Hall 2007). The planning system's attempts to reduce lot size and increase dwelling density has produced different outcomes in WA compared to the UK where larger rear boundary setbacks and extensive use of double storey dwellings ensured that rear yards were retained in housing development. However, even in the UK there is increased pressure being applied to allow greater site coverage and larger buildings in newer developments (Smith, Clayden and Dunnett 2009). Duckworth-Smith (2015) argued that the form of urban consolidation that is facilitated by the *R-Codes* and is dominant in Perth (with approximately 80 per cent of all infill dwellings being created from the subdivision of individually owned suburban lots) has produced highly problematic outcomes. The construction of battle-axe dwellings or unit developments regularly sees clearing of all vegetation on the lot, creation of long driveways, multiple driveway crossovers, more unusable areas on lots and minimal design coordination with neighbouring properties (Duckworth-Smith 2015). This heightens the need for well-planned open spaces that serve a broad range of purposes and compensate for the loss of private open space (Hall 2010).

Whereas in new Perth suburbs the provision of 10 per cent POS allocation is a minimum requirement and developers sometimes provide more than the minimum amount, the redevelopment of existing suburbs has no requirement for the provision of additional or improved POS if development occurs incrementally, one lot at a time, by different owners. There is no requirement for additional POS provision where there are fewer than six lots being created and it is possible that over time, despite an increase in population density, the quantity of open space does not increase (WAPC 2002). As a result, the space available for the range of activities that people expect to carry out within POS may be constrained.

7.6 Open Spaces in Perth

A key feature of the *SH Plan* (and ultimately the *Metropolitan Region Scheme (MRS)*, the planning scheme for the Perth metropolitan area implemented in 1963) was the prescriptive nature of open space provision. Despite Perth's low dwelling and population density, POS was allocated at twice the level of London's Abercrombie Plan, which Stephenson had worked on and was highly familiar (see Table 5.3) (Stephenson 1992). The *SH Plan* required the allocation of 3.36 hectares per thousand population of publicly accessible open space, not including school playing fields. A population density of thirty persons per hectare was assumed. Typically, 85 per cent of the space was for active sports and the remaining 15 per cent was for other forms of recreation (Town Planning Department 1981).

The Town Planning Board, which was responsible for approving land subdivisions at the time, deemed that the allocation of 10 per cent of gross residential land to be developed for POS was appropriate. It assumed that at gross residential population densities of 12 people per acre (equivalent to 30 people per hectare) 1000 people would reside in 83 acres (or 34 hectares). Ten per cent of 83 acres is equivalent to 8.3 acres (3.4 hectares or approximately 3.36 as stated in the *SH Plan*) (Town Planning Department 1981).

This was not the first time that open space had been considered as a formal part of the land development process in Perth. In 1918 the City of Perth's Town Clerk William Bold argued for the allocation of ten per cent of land for open space at a national town planning conference. Bold's views were heavily influenced by the City Beautiful and Garden City Movement. City Beautiful emphasised the creation of wide, tree lined streets and large parklands which beautified and softened the hard, physical features of the urban environment, while the Garden City movement promoted the use of expansive green spaces (Freestone 2010). When the State government vested the Perth Endowment Lands with the Perth City Council in 1920, Bold was instrumental in ensuring that the low-density suburbs of Floreat and City Beach were created with generous allocations of public and private open space (Freestone 2010). Open space and the accompanying spaciousness became a significant feature of these suburbs.

From 1928 the *Town Planning and Development Act (1928)* required that land be allocated for recreation as a condition of residential subdivision (Town Planning Department 1981). However, it was not as coordinated as the later requirements set by the *SH Plan*.

Stephenson recognised both the physical and aesthetic benefits of open space when he included minimum open space requirements in the *SH Plan*. He stated that there were "benefits to the health and wellbeing of people which are induced by the proper provision of indoor and outdoor recreational facilities" (Stephenson 1992 85) and the scenes beyond people's homes should be "serene and welcoming" (Stephenson 1992 113). He felt that small and unusually shaped open spaces were as valuable as larger, turf covered playing fields and ocean and river foreshores should be treated as open space (Stephenson 1992). The provision of POS was an extension of the welfare state that emerged post World War Two; there was universal provision independent of need or income and allocation occurred based on standards that ignored context.

Open space was organised into three categories;

- Miscellaneous open space (that included playgrounds, public gardens, primary school ovals and small playing fields with the suggested standard of three to 4.7 acres per thousand persons).
- District open space (that included larger parks and ovals for organised sports, as well as high school ovals with the suggested standard of 5.5 acres per thousand persons).
- Regional open space (ROS) (that included beaches and river foreshores, landscape areas in the hills and large centrally located parks with no standard prescribed) (Stephenson and Hepburn 1955).

Consideration was given to a range of other private recreation spaces that were not formally included in POS allocations, including private school ovals, private sporting grounds, swimming pools, racing, trotting and cricket facilities, golf courses and gardens surrounding institutions like hospitals. It was declared that standards could not be easily applied to such spaces (Stephenson and Hepburn 1955).

A key feature of the *MRS* was the inclusion of a hypothecated tax called the *Metropolitan Region Improvement Tax (MRIT)* which used land taxes collected by the WA government on the value of undeveloped land and investment properties to raise money for the acquisition of land for public purposes, including road reserves and ROS. Between 1963 and 1995, fifteen thousand hectares of private land was acquired for parks and recreation purposes by the *MRIT* (Stephenson 1992; Foley 1995).

Stephenson recognised that spatial plans had to be politically acceptable; support from the government of the day was essential for a plan to be fulfilled. Without this support the

policies relating to the *SH Plan* and open space would not have been implemented (Stephenson 1992).

As the growth of Perth accelerated during the late 1950s and 1960s the minimum allocation of open space within new low-density suburbs provided a form of social equity. However, there were no guarantees regarding the quality or sustainability of the spaces. The style of park provision increasingly did not match the values and lifestyles of a diverse population. For those not involved in traditional sports played at local playing fields, nearby parks may have been viewed as recreational, environmental, or social deserts. The large expanses of green lawns provided limited ecological services due to the removal of the native vegetation to create the park. In addition, only established sports were catered for, partly because they dominated the politics and decision-making linked to open spaces. As Grose (2009) argued the open spaces were often unattractive, boring spaces and Giles-Corti et al (2005) stated that many open spaces were designed for traditional field sports, rather than alternative forms of recreation.

The method of open space allocation did not consider the following challenges.

- Climate change (hotter and drier climate with increased possibility of storm events that result in drainage within parks being inundated).
- Changing tastes in recreation and expectations about the type and quality of facilities that should be provided within open spaces.
- Widening socio-economic differences across suburbs.
- Increased financial pressures on local government due to their narrow revenue base and inability to gain increased autonomy from other levels of government.
- Rising population densities in areas where dwelling density was increasing, noting that the ten per cent POS allocation was based on population densities of 30 people per hectare[13].

7.7 Directions 2031 and Beyond

Directions 2031 and Beyond (D2031) is both a strategic plan that established a vision for the growth of the Perth and Peel regions, and a framework to guide planning and delivery of housing, infrastructure, and services (WAPC 2010a). It outlined the future structure of the city and patterns of land use that would support development up to the year 2031. It stated that “By 2031, Perth and Peel people will have created a world class liveable city: green, vibrant, more compact and accessible with a unique sense of place” (WAPC 2010a, 2).

Greater Perth was to become a “Connected City” with medium density growth the preferred option, with the requirement that 47 per cent of new dwellings were to be provided by urban infill (up from less than 30 per cent). The average residential dwelling density was to increase to 15 dwellings per gross urban zoned hectare (an increase from ten dwellings per gross urban zoned hectare) (WAPC 2010a, 4). This would result in reduced reliance on cars, improved access to infrastructure, increased leisure time and better health (WAPC 2010a).

Three networks formed the foundation of the plan including activity centres, movement, and green networks. The latter was described as “A network of parks, reserves and conservation areas that support biodiversity, preserve natural amenity and protect valuable natural resources” (WAPC 2010a 3).

Five key themes were listed: liveable, prosperous, accessible, sustainable, and responsible. Three were relevant to open space planning. The document recognised that “quality passive and active open POS” was critical to the maintenance of liveability along with “good urban design and development” and “well connected and sustainable urban communities that enable inclusion and participation” by all community members (WAPC 2010a 22-23). At the same time the city had to be sustainable, and this could be partly achieved by improving open space networks, protection of the natural environment, and the improvement of air quality. Maintaining a responsible city drew on ideas from governance theory. A key action was ensuring that social infrastructure provision was equitable and involved a range of stakeholders in the implementation of the strategy including developers, government, and the community (WAPC 2010a) (see Table 7.4).

Table 7.4 Key Actions Relevant to Open Space According to *Directions 2031*

Liveable City	• promote good urban design and development to enhance people's experience of the city • design accessible well connected and sustainable urban communities which support and enable effective inclusion and participation in the community for all residents • provide quality passive and active POS
Sustainable City	• protect the natural environments and scarce resources • respond to social change and optimise the land use and transport conditions that create vibrant, accessible, healthy, and adaptable communities • protect and manage significant biodiversity areas, mitigate, and adapt to climate change • improve air quality • enhance our open space network • integrate natural resource management into land use planning
Responsible City	• planning for the efficient and equitable distribution of social infrastructure • engage with the development industry, state and local government and the community to implement the strategy

Source: Adapted from WAPC (2010a 22-23)

It was stated that there were many things about neighbourhoods beyond the physical elements that were valued by residents including vistas, seeing groups of people use local POS and the nature that is observed in local bushland. These intangible features can be compromised by development and planning should ensure that the positive characteristics of suburbs are not overwhelmed by change. The sense of place and belonging that is created by both tangible and intangible elements of the built environment need to be preserved or enhanced (WAPC 2010a).

Disease caused by physical inactivity was highlighted as a growing problem that could be mitigated by the provision of accessible open spaces that encourage physical activity, provide a range of recreational opportunities, and protect the natural environment (WAPC 2010a).

There was a deliberate focus on ensuring adequate land supply to satisfy future housing demand. Increasing attention was paid to identifying locations suitable for higher density housing including sites with retail businesses, employment opportunities and community facilities (WAPC 2010a). It was stated that the DoP will work with housing providers to ensure that affordable housing is provided in areas that are targeted for redevelopment (WAPC 2010a). Mixed use zoning, as well as higher amenity environments could promote urban consolidation (WAPC 2010a).

It was highlighted that the characteristics of the urban population were changing, and open space needed to adapt to changing preferences in recreation. Some "communities may

require ready access to large areas of active recreation space for sporting pursuits, while other communities, particularly higher density communities, may prefer smaller parks and public places" (WAPC 2010a 69). It was also stated that consideration must be given to ensuring that water can be supplied to open spaces given that the climate was drying (WAPC 2010a).

7.8 Perth and Peel@3.5Million

Perth and Peel@3.5Million (P&P@3.5M) was the strategic planning document that followed *D2031*. It described the strategic intentions of the State government for Perth to the year 2050 when it is expected that the city will have a population of 3.5 million people. It stated that greater Perth would be "liveable, prosperous, connected, sustainable and collaborative" (WAPC 2015a, 4).

It noted that the greater Perth region has low dwelling densities, and three quarters of all new development is on the urban fringe. It forecast that the population would continue to grow and without a change in approach liveability would be affected (WAPC 2015a). It noted that rates of infill were at 28 per cent in 2014 and needed to reach 47 per cent by 2050 to overcome the following challenges;

- Perth was a sprawling city stretching over one hundred and fifty kilometres along the coast, with an area above eight hundred and seventy square kilometres.
- Climate change.
- Overdependence on the car.
- Environmental degradation caused by urbanisation.
- The mismatch between housing location and employment opportunities (64 per cent of jobs located in the central sub-region while most of the new housing was on the city's periphery).
- Housing affordability and affordable living (WAPC 2015a 16).

P&P@3.5M continued with the "Connected City" growth pattern established in *D2031* (WAPC 2015a 19-21). The characteristics of such a city included a strong CBD with connected activity centres and specialised nodes, a range of housing types, supporting infrastructure, environmental protection, climate change resilience and improved liveability (WAPC 2015a).

The minimisation of the impact of infill housing on existing suburbs character and amenity was described as a primary consideration that would be achieved by identifying development sites most suited to urban consolidation (WAPC 2015a).

As part of this sites for sport and recreation facilities needed to be identified, areas with landscape and conservation values had to be protected, and a green network was required to create links between these spaces (WAPC 2015a). Fragmentation of bushland caused by urbanisation was a threat to native flora and fauna, but ecological linkages between areas of remnant vegetation were a means to assist fauna to survive (WAPC 2015a).

Population growth would see the demand for sporting and recreation facilities increase. The co-location of a variety of functions in the sporting, recreation, library, and cultural sphere was favoured to increase use, and reduce the cost of providing such services (WAPC 2015a)

Urban forests were recognised for their ability "to improve air quality, reduce the urban heat island effect, promote outdoor recreation, create habitats for biodiversity and enhance the amenity of local areas" (WAPC 2015a, 55). POS was seen to be crucial to liveability (WAPC 2015a).

Numerous recommendations were made within *P&P@3.5M* relating to open space and outlined in Table 7.5. There was a broadening of actions that were originally outlined in *D2031*, including planning for new and existing ROS, moving to shared use of open spaces for a range of functions, and finding innovative solutions to the undersupply of sporting spaces (WAPC 2015a). As part of the "Connected City" aspiration it recognised that green spaces should be linked across higher density areas. The benefits of urban green infrastructure to reduce the urban heat island effect and promote alternative water sources for open spaces were noted as actions under the "Sustainable City" aspiration (WAPC 2015a). Like *D2031* calls were made for increased community participation in decision-making. There was direct reference to the utilisation of school facilities and government buildings with surplus space. According to *P&P@3.5M* underutilised land should be utilised and obstacles to the use of vacant land for temporary parks, playgrounds and community markets should be removed (WAPC 2015a).

Table 7.5 Key Actions Relevant to Open Space According to Perth and Peel@3.5 Million

Liveable City	• Identify and protect new and existing ROS • Enable shared use of open space for conservation, recreation, and sports and for public and education purposes • Find innovative solutions to address the undersupply of active open space in outer metropolitan area consistent with water sensitive urban design
Connected City	• Ensuring that green spaces are linked with areas that provide higher density employment and residential land uses
Sustainable City	• Support green network strategies to increase urban forest, reduce urban heat island effect, encourage planting in urban areas including food sources for native fauna, identify underutilised open spaces, encourage the planting and retention of suitable native trees • Transition to alternative water sources for open spaces- Perth will be a city with an enviable quality of life characterised by a community which is diverse and inclusive; engaged and creative; safe and healthy
Collaborative City	• Increase the role of community and stakeholder consultation in decision-making • Innovative use of idle facilities outside school hours or surplus space in government buildings • Maximise use of underutilised land. • Remove regulatory barriers to the use of vacant land for temporary purposes such as "pop-up" playgrounds, community gardens, car parks, growers' markets, and camping areas.

Source: Adapted from WAPC (2015a 63-67)

It was emphasised within *P&P@3.5M* that both State and local governments must be prepared for change, adapt to new circumstances, and seize opportunities presented by change. Administrative, legal, and financial obstacles that are considered unnecessary should be removed, so new policies can be implemented that respond to new socio-economic and environmental challenges (WAPC 2015a). It was expected that local government in collaboration with the WAPC would support and follow key elements of *P&P@3.5M* (WAPC 2015a).

7.9 Liveable Neighbourhoods and Development Control Policy 2.3

Currently in WA two key policy documents guide open space creation; *Development Control Policy 2.3: Public Open Space in Residential Areas (DC2.3)* and *LN* (WAPC 2002, Department of Planning 2015a). Since 1928 there has been a requirement for portions of land to be vested in the Crown for recreation free of cost as a condition of land subdivision in accordance with the *Town Planning and Development Act (1928)*. This was continued under the later *Planning and Development Act (2005)*. From 1956 the urban planning system required a minimum level of provision of POS of 3.36 hectares per thousand people at a density of thirty persons per hectare that was equated to a ten per cent gross residential area allocation to POS as described previously in Section 6.6 (WAPC 2002).

In both *LN* and *DC2.3*, POS is land that is contributed free of cost by the owner as part of the subdivision process. It is handed over by the developer to local government and the spaces are vested in the crown for recreation purposes (WAPC 2002; Department of Planning 2015a).

As discussed in Chapter 3 the Western Australian government has adopted *Liveable Neighbourhoods (LN)* to control the planning of residential development in WA (Department of Planning 2015a). The document positions liveability as the key guiding principle for new urban development in Western Australia (WA). *LN* provides comprehensive guidance to the parties involved in the creation of new residential subdivisions and larger urban consolidation sites (Department of Planning 2015a). Several elements of urban design are included in the document including POS (WAPC 2015a 9). A direct link was made between liveability and open space provision. It includes specific guidelines relating to the provision, and design of open space to ensure the creation of liveable residential suburbs.

The latest iteration of the policy was designed to complement strategic plans like *P&P@3.5M* to help "create liveable, sustainable, compact, walkable urban communities that encourage innovation and are responsive to community needs and economic drivers" (WAPC 2015a 6).

LN was based on principles established by New Urbanism which has been promoted to achieve improved sustainability and liveability of neighbourhoods. It aimed to promote the creation of neighbourhoods that were walkable, affordable, permitted mixed land uses and encouraged a diversity of residents. It catered for greenfields development and urban consolidation and in parts of the US has been widely adopted. It has been criticised heavily for its failure to achieve some of the claimed benefits. Falconer et al (2010) found that *LN* which utilised New Urbanist principles found a large gap between principles and practice; there was high street connectivity, but the densities were not high enough to sustain mixed use neighbourhood shopping centres or reduced reliance on car transport and greater use of public transport. They concluded that suburbs were anchored to open space and water features.

A connection was made between liveability and the provision of POS within *LN* beyond its name. POS must meet "the recreational, social and health needs of existing and future communities" (WAPC 2015a 19). It was recognised that POS "contributes significantly to the quality of life, vitality, identity, community interaction and sense of place in

neighbourhoods" (WAPC 2015a 90). The spaces should be innovative, fit locational requirements, encourage healthy and active travel, and promote access to local facilities (WAPC 2015a).

The latest version of *LN* heralded a shift in the treatment of POS from previous versions. There was an emphasis on the function of spaces, rather than just size, and a clear change from the concept of passive and active spaces to open space that have declared functions including sport (formal recreation), recreation (informal recreation, relaxation, and socialising) and conservation (environmental and recreation). The sport, recreation and conservation functions are derived from the Department of Sport and Recreation's (DSR) preferred typologies of POS to ensure that people working in the open space field use consistent terminology and assessment processes (Department of Sport and Recreation 2012). There is a size hierarchy that refers to district, neighbourhood, local and small POS, as well as the inclusion of community purpose spaces, and linear parks as POS. POS allocated for sport is recommended to have 6.5 square metres of active playing space per resident. For the first time there is a direct link made between the allocation of open space and population[14]. Although this allocation is designed for new areas, it does point to how much sporting space is required to ensure shortages do not occur as asserted in Middle, Tye and Middle (2013). As has been highlighted by Middle, Tye and Middle (2010) suburban development that has occurred with LN as the guiding policy appeared to have under allocated sporting space and favoured open space for recreation, drainage, and ecological purposes.

The fact that a site is allocated a specific function such as conservation or sport does not mean that this is the only function allowed. It was recognised in *LN* that "effective spaces offer multiple functions" and designated functions may cover only a portion of the land area identified as POS (WAPC 2015 90). It is also stated that "all publicly accessible land can contribute to a function even if it is not a dedicated POS site" (WAPC 2015 90).

There are many variations that are permissible under *LN*. There is no requirement to provide POS where there are five lots or less being created (unless a contribution is demanded by a local planning scheme or structure plan, or the WAPC and local government believes that intervention is necessary) (Department of Planning 2015a). With mixed use sites the allocation of POS should consider the number of residents compared to non-residential land uses. Commercial land uses do not require an open space allocation, but it was recognised that there are benefits to providing POS to offset the lack of private open

space in areas with higher population densities (Department of Planning 2015a). Cash in lieu payments are acceptable in some circumstances; for smaller subdivisions less than one hectare in size, or where the POS created would be considered too small or impractical, or the local government believes that the existing POS allocation is adequate, but any payment must be equivalent to the value of land that would have been handed over as part of the subdivision process (Department of Planning 2015a). Ultimately the funds must be spent on development of land for POS (Department of Planning 2015a).

There are some land uses that can be deducted from the total site area before the ten per cent POS allocation is calculated, although some of these serve either recreation or conservation roles. These deductions include; "higher order activity centres, regional road, school sites, drainage sites, Bush Forever sites, wetlands, surface area of natural water bodies, restricted access conservation areas, ROS, transmission corridors and foreshore reserves" (Department of Planning 2015a 106). In the case of schools, playing fields are often included in the development of such sites and they can provide additional open space, although the WA Department of Education (DoE) will co-locate primary schools with POS and community facilities, where primary school sites are between 3.5 and four hectares (Department of Planning 2015a).

Landscaped drainage basins may be utilised within the open space allocation. Middle, Tye and Middle (2013) believed that this had increasingly occurred at the expense of active recreation spaces and was one of the reasons for the inclusion of a minimum amount of POS being provided for sport in *LN*.

ROS is referred to in *LN*, but the document predominantly discusses POS. ROS can be included in the ten per cent POS contribution where it has the potential to achieve both regional and local benefits. ROS is like POS, but generally acquired by State government and managed by local government.

It was maintained that open space delivery by local governments should be informed by POS strategies which should be guided by local planning strategies, community consultation, population growth and proposed dwelling densities. The cost of infrastructure and maintenance should be taken into consideration and arrangements should be made to share the use and cost of open space with schools and other organisations (Department of Planning 2015a).

Sometimes open space and foreshore reserves adjoin each other and from the point of view of users these spaces are part of the same space. The fact that open space may be underprovided in an area can be offset by the presence of foreshore reserves, which are not included in the total open space allocation. In these areas, there may be the opportunity to carry out many of the activities that could be carried out within traditional POS (Department of Planning 2015a)[15].

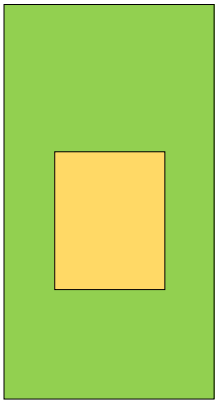
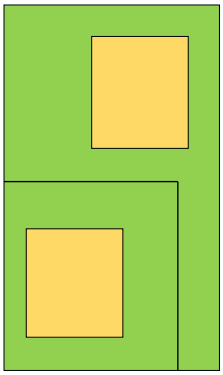
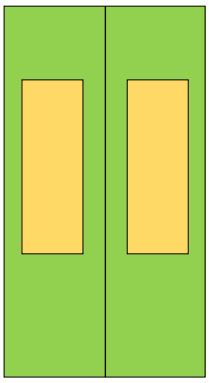
Road reserves, vacant private land, easements, and land owned or managed by government or non-government organisations (and not zoned for recreation) that can be utilised for recreation purposes without compromising current uses might be considered part of the solution to providing additional open space where it is constrained. As shown in the interviews with Council officers there are many obstacles that prevent wholescale adoption of policies and processes which overcome some of the challenges associated with open space planning and management (see Chapter 9).

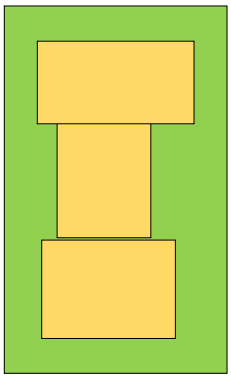
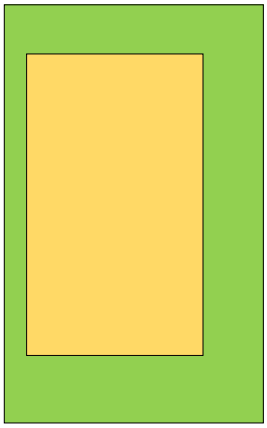
The subdivision of lots in brownfields and greyfields areas is highly dependent on the parent lot size and R Coding. Lots that are chosen by the owner for subdivision will have a density coding attached that is decided by the local government and the subdivision approval will be given by the WAPC based on the lot achieving minimum criteria including minimum lot area, average lot area and frontage where required (See Table 8.6). The WAPC has been giving local governments dwelling targets in line with its strategic plans and to ensure that they achieve these targets the R-Code density codings have been raised in some areas by local government. Local government may oppose subdivision, however, if the lot achieves WAPC criteria, then subdivision will be granted irrespective of other issues that may be present in the urban environment. Open space levels are not taken into consideration with small scale subdivision and development. There is the potential for this to be less problematic where there is a single landowner of a large lot of land or multiple lots of land (as is the case in Cockburn Central, but less so with the City of South Perth or the City of Mandurah). Subdivision is complicated by the ability of landowners to amalgamate lots to increase their dwelling yield, but potentially not being required to contribute to improvements in open space, either in terms of quality or quantity. From the point of view of the developer if the subdivision process is on a small scale and incremental then they are helping to achieve the dwelling targets, but the effects of increased dwelling density on liveability are ignored. It points to the failure of the *R-Codes* to address the

change in focus for urban development from one where most urban development was for new housing estates to one where an increasing proportion is urban consolidation.

Table 7.6 Examples of Possible House and Lot Arrangements Following Subdivision and Redevelopment in Western Australia

Adapted from the *LN* and the *R-Codes* (Department of Planning 2015a; Department of Planning 2015b)

Example Number	R Code	Diagram Showing Possible House and Lot Arrangements in WA	Comment
1. Single lot, single dwelling	R2.5-R80		Single dwelling on a lot. If there is sufficient area in the front or rear yard, then subdivision may occur, and a battle-axe lot may be created (see example 2) which adds an additional dwelling and reduces the area of private open space.
2. Front lot and rear battle-axe lot with 2 dwellings.	R20 to R80 As the density coding increases the potential for more lots with smaller surface areas rises.		The creation of the battle axe lot in the rear yard of an existing dwelling is common due to the ability to retain the front dwelling and the potential to utilise existing utilities and reduce the cost of development. The developer increases dwelling density without having to consider POS. There is also the potential for a decline in the level of private open space required by the *R-Codes*.
3. 2 side by side lots with 2 dwellings	R20 to R80		In some cases, the owner may apply for a side-by-side subdivision. In examples 2 and 3 the loss of private open space is similar. There is unlikely to be a requirement to contribute to POS.

4. Single lot with 3 dwellings	R30 to R80		In areas with larger lots, including the traditional quarter acre lots (1012m^2) a decision may be taken by the local government to increase the density coding from R10 or R12.5 to R30 and higher. By doing this more dwelling units can be built on existing lots. A triplex arrangement is shown but more dwelling units may be constructed depending on the design and density coding. The lot is increasingly dominated by buildings, and private open space declines. The benefits derived from the private open space may be significantly reduced if it is dominated by the driveway to allow vehicle access to rear dwelling units or parking. Similar outcomes will occur if development involves the creation of 2 or more dwellings without developers being forced to build upwards to preserve private open space.
5. Single lot with multiple storey apartment	R40 and above		Developers may amalgamate many smaller lots or purchase larger lots suitable for the construction of multiple dwelling units in high-rise. There may be considerable common open space as well as the use of balconies as private open space. Depending on the design of the complex including allowable maximum height and building footprint on the lot it may create private open space that is dominated by hard surfaces like driveways for vehicle access or private open space that cannot be utilised effectively.

Key to Diagrams

Feature	Diagram
Lot area	
Building footprint	
Lot boundary	

As noted above the *R-Codes* allows private open space to be reduced as the density code increases. This is worsened by local governments that allow automatic reductions in private open space or developers negotiate reductions in the private open space requirement. The question needs to be asked; if density is going to be increased and there is an expectation that liveability is not to be sacrificed then why reductions in private open space are permitted and no expectation of an increase in POS is planned or negotiated unless the development is larger scale. The alternative is for local governments to promote higher density codes that allow multiple dwellings to be constructed and private open space to be retained and for a contribution from the developer for expanded POS opportunities in terms of quality or quantity.

7.10 Conclusion

This chapter has provided detailed coverage of greater Perth's development over the twentieth and early twenty first century. The promotion of urban consolidation and densification through strategic planning documents like *D2031* and *P&P@3.5M* has changed the form of the city to create areas with higher dwelling densities, although this has had consequences for open spaces. In certain areas, the city is moving away from the traditional low-density suburban development and there are reductions in the amounts of private open space. At the same time there have been minimal changes to POS policies. This dichotomy between private and POS may create problems particularly for liveability in areas that are being densified.

It could be suggested that the approach that has been adopted in cities like Perth where there is considerable opposition to multiple storey dwellings, but a desire to increase density has created an urban form that will increase pressures on POS because the erosion of private open space is seen as an acceptable trade-off to ensure that densities increase but multiple storey dwellings do not become the dominant form of housing. The irony is that liveability of one group is maintained at the expense of others who may be open to other forms of density; the perception that low-rise denser suburbia with less private open space and no change in POS allocation is better than high-rise density.

The following chapter provides details of the case study areas. There is an examination of the spatial and socio-economic characteristics, as well as details of open space provision in the specified suburbs where urban consolidation is being undertaken.

Chapter 8 Case Study Backgrounds and Open Space Allocations

8.1 Introduction

This chapter provides background information on the three case study LGAs, as well as more specific information on the suburbs that are the subject of densification plans.

Several planning documents were examined including a variety of precinct, structure and activity centre plans that highlight the change in density that the State government is promoting through strategic documents like *P&P@3.5M* and the case study local governments are supporting. Evidence is presented of the expected increases in dwelling density within the case study local governments according to *P&P@3.5M*.

Data on open space allocation was collected utilising the Intramaps GIS that is used by the case study local governments, and the results included later in this chapter, with more detailed results in the Appendices.

8.2 Infill Targets

All three case study LGAs are expected to contribute to infill targets set by *P&P@3.5M*.

Most dwellings that are to be constructed in infill areas will be delivered in the Central Sub-Region which is represented by the older centrally located local governments of Perth (two hundred and fifteen thousand out of three hundred and eighty thousand dwellings). South Perth is part of this sub-region and expected to deliver 3.9 per cent for the sub-region and 2.1 per cent of the total number of infill dwellings for the greater Perth region. It already has higher dwelling and population densities than many other parts of Perth.

Mandurah and Cockburn are part of the Southern Sub-Region and are expected to deliver approximately seventy-five thousand dwellings in infill areas. Mandurah is expected to approve the development of fourteen thousand five hundred dwellings which is equivalent to 19.2 per cent for the region and 3.8 per cent of the total number of infill dwellings for the greater Perth region. Cockburn is expected to build fourteen thousand six hundred and seventy-eight dwellings in infill areas which represents 19.4 per cent for the region and 3.9 per cent of the total number of infill dwellings for the greater Perth regions. In both Mandurah and Cockburn there are many suburbs with low dwelling and population densities that are like the traditional low-density suburb referred to in Chapter 7 (WAPC 2015d).

Although, none of the LGAs will produce more than four per cent of the total number of infill dwellings for their respective regions, both Mandurah and Cockburn will be producing

nearly 20 per cent of the infill dwellings for their region and in many cases the dwellings will be constructed in specific suburbs like central Mandurah and Cockburn Central, where there is a focus on increasing dwelling densities from existing levels. The density increases are concentrated and there may be a substantial impact on features like open space which can affect the liveability of urban areas.

According to the CoM's local housing strategy an additional eight thousand four hundred and fifty-five dwellings will be constructed in the study area out to 2031 representing a 54 per cent increase on the current number of dwellings in the area. The gross dwelling density will rise to 16.9 dwellings per hectare (CoM 2013 40).

In the case of Cockburn Central there are approximately 1000 dwellings in the Cockburn Central City Centre (population two thousand one hundred), 1100 dwellings in Cockburn Central West (population 2200) and in the higher density dwellings directly to the south of the Cockburn Central Shopping Centre (Success Central) there are approximately 800 dwellings with an estimated population of 1600 (City of Cockburn 2015).

In the case of South Perth Train Station Precinct, it was estimated that an additional 950 dwellings would be created in the area with population rising by 1710 people (WAPC 2011a; WAPC 2011b).

Table 8.1 Case Study Local Government Infill Targets

Local Government	Total Infill Target to 2050 (380000)	% of Infill Dwellings for Sub-Region	% Infill Dwellings for Greater Perth
South Perth	8300	3.9% (of 215000 targeted for Central Sub-Region)	2.1%
Cockburn	14678	19.4% (of 75488 targeted for South Metropolitan Peel Sub-Region	3.9%
Mandurah	14507	19.2% (of 75488 targeted for South Metropolitan Peel Sub-Region	3.8%
Total	37485		9.9%

Source: Adapted from WAPC (2015b, 41) WAPC (2015d, 67)

Table 8.2 Summary Socio-economic Data for Case Study Local Governments

Local Government	City of Mandurah	City of Cockburn	City of South Perth
Distance from Perth CBD	72km	25km	6km
Population	80813	104473	39883
Area	174.9km^2	167.9km^2	19.8km^2
Population Density	462 people/km^2	622 people/km^2	2014 people per km^2
Unemployment Rate	10.9%	7.6%	7.2%
Median Age	43	35	37
Median Household Weekly Income	1162	1756	1780
Median Weekly Rent	320	380	375
Median Monthly Mortgage Repayments	1820	2058	2173
Average Household Size	2.4	2.7	2.3
Single house Dwellings	24879/38941 (64%)	29835/40615 (73%)	8121/18941 (43%)
Terraces and townhouses	4054/38941 (10%)	4653/40615 (11%)	5905/18941 (31%)
Apartments and flats	1254/38941 (3%)	1725/40615 (4%)	2243/18941 (12%)
Unoccupied	8465/38941 (22%)	4123/40615 (10%)	2599/18941 (14%)
Rented	8263/30475 (27%)	9110/36489 (25%)	6076/16341 (37%)

Source: ABS (2016j) ABS (2016i) ABS (2016k)

Table 8.3 Key Socio-economic Data for Case Study Suburbs

	Population	Surface Area (hectares)	Number of Dwellings	Average People Per Household	Median Weekly Household Income ($)	Median Age (Years)
Mandurah	7837	720	5489	1.9	805	48
Silver Sands	1258	120	779	1.9	1286	45
Cockburn Central	1260	2.8	805	2	1381	30
Success	10148	610	3856	2.9	1941	32
South Perth	12063	524	6702	2.1	1883	39
Como	14138	639	7492	2.1	1598	36

Source: ABS (2016l) ABS (2016m) ABS (2016p) ABS (2016q) ABS (2016o) ABS (2016n)

8.3 Case Study 1 – City of Mandurah

Mandurah is located approximately seventy-five kilometres south of the Perth CBD with a population of approximately eighty thousand people (ABS 2016j). The city began as a rural settlement in the early 1830's and developed as a distinctly separate, but small, urban centre separate from the Perth metropolitan area. From the 1970s Mandurah experienced rapid population growth and today, although not part of the Perth metropolitan area, has

been included in strategic urban planning for the greater Perth region through the planning documents *D2031* and *P&P@3.5M*. It is covered by the Peel Region Scheme (PRS), while Perth has the *MRS*.

Mandurah is described as a strategic metropolitan centre by *P@P@3.5M* and is expected to be the focal point for the Peel region[16] providing commercial and retail services and employment opportunities for the local population, as well as tourism experiences for visitors. It is also seen as a gateway to employment opportunities north of the city. The local population is characterised by lower income levels and higher levels of unemployment. There are few large employers, and the city relies on local government, Alcoa's mining and alumina processing operations, construction, retail, and hospitality to provide jobs.

Mandurah has undergone significant change in the last twenty years with large increases in population and many single residential properties being constructed within numerous low-density housing subdivisions. The housing catered for retirees, as well as first homeowners and established homebuyers. The inner-city area had become blighted with many buildings constructed between the late 1940s and 1960s and many businesses located at larger shopping centres, elsewhere in the city (City of Mandurah 2013c).

The western edge of the study area (see Figure 8.1) is dominated by POS and foreshore reserve that fronts onto the Peel Harvey Estuary. The CoM has placed much emphasis on the care and maintenance of the foreshore area, as it serves as a popular tourist destination and recreation area for residents. It is fringed by a series of retail and commercial businesses located on the eastern side of Mandurah Terrace that forms the edge of the foreshore park area. There are retail stores, cafes, bars, and restaurants at both the southern and northern boundary of the park that face the park and estuary. The CBD is predominantly low-rise except for more recently constructed residential apartments with significantly higher dwelling densities and building heights. Older residential dwellings have been demolished and replaced with newer commercial premises, or alternatively existing dwellings have been retained and modified to house local businesses. The global financial crisis after 2008 slowed development and there are some lots that have had the original buildings demolished and remain undeveloped (City of Mandurah 2013c).

The north of the city centre has a range of buildings which includes higher density residential dwellings and smaller commercial businesses.

To the east of the CBD the built environment is dominated by residential housing with the occasional business located in an existing commercial building or modified residential dwelling. The lots which are between one thousand and two thousand square metres are large by contemporary standards and have potential for redevelopment as recognised in the precinct plans (City of Mandurah 2010; City of Mandurah 2011). The lots that have been redeveloped have seen the creation of group developments with single storey units being constructed with a driveway serving all the dwellings. A significant proportion of the homes are rental properties owned by investors (ABS 2016j). There is also a large sporting precinct that includes a number of sporting ovals, netball courts and a professional Australian Rules football oval (Peel Thunder Football Club) located on the eastern fringe of the suburb which serves the Peel region.

The suburb of Silver Sands is directly to the north of the suburb of Mandurah and abuts the Indian Ocean. It is predominantly residential with some tourist accommodation and a hotel. It has a total population of over one thousand two hundred with seven hundred and seventy-nine dwellings (ABS 2016m). The southern section has been allowed to develop at higher densities in line with a tourism focus which has promoted higher density tourist accommodation and increased building heights.

The CoM created precinct plans for the city centre (now called structure plans in accordance with State government requirements) including the *Mandurah City Centre Precinct Plan (MCCPP)*, *Mandurah Terrace Precinct Plan (MTPP)* and the *Inner Mandurah Precinct Plan (IMPP)*. Two additional plans were also included in the study because they also promoted higher densities in two other areas within the suburb of Mandurah; the *Mandurah Junction Structure Plan (MJSP)* applied to land owned by Landcorp adjacent to the Mandurah Train Station and the *Mandurah Ocean Marina Outline Development Plan (MOMODP)* applied to the Mandurah Ocean Marina and nearby canal development that was initially developed by the State government (City of Mandurah 2013b; City of Mandurah 2016)

All the plans are extremely comprehensive in that they provide a range of development requirements including the density coding, land use zoning and building heights.

The plans permit much higher dwelling densities than previously accepted in the area and were an attempt to reverse the economic decline and urban blight that had befallen the locality and cement Mandurah's role as a strategic centre in accordance with *D2031* and

P&P@3.5M. Mixed residential and commercial development at higher dwelling and population densities were permitted to help activate the areas and promote the city centre as a viable commercial, service and tourist centre for the surrounding region. The plans also included design guidelines which aimed to improve the aesthetics of the area and control the type of building being constructed on development sites.

The *MCCPP* for example, aimed to increase employment, promote street activation, and ensure the development of quality buildings and public spaces (City of Mandurah 2013d).

There was a clear emphasis on permitting taller apartments, and some like Brighton One have been constructed which tower above the surrounding area. Heights of between twelve and forty-seven metres are permitted, depending on location, and allow for considerable increases in dwelling and population density. The *IMPP* has followed a similar approach to the *MCCPP*, however, building heights are much lower (City of Mandurah 2011). Buildings are still permitted that have a minimum scale of three storeys at the street front for R100 sites and a minimum of two for R60 sites. Maximum building height is limited to five storeys or twenty-one metres. Active street frontages are encouraged with the expectation that the ground level of developments can accommodate office or shop uses. Minimum densities have also been imposed to ensure that desired densities are achieved. Minimum private outdoor spaces are prescribed for residential dwellings with a four metre minimum width and 16 square metres minimum total area for dwellings within each development. For the density coding of R60 this is the same as the *R-Codes* requirements, but for the R40 coding this is less than the twenty square metres that would normally be required. A similar path is followed for the *MTPP*. A six storey twenty metre maximum building height for some sites and development at R40 density coding for others with private open space set at a minimum of four metre width and sixteen square metres area. In both the *IMPP* and the *MTPP* there is a preferred layout for proposed dwellings, such that there is a common shared driveway for dwellings on the same lot to minimise crossovers and ensure parking is hidden behind the front dwellings (See Figure 8.2). Whereas the *IMPP* caters for permanent residential development the *MTPP* has a focus on encouraging the development of some sites for short-term tourist accommodation.

One of the clear omissions from each of the precinct plans is attention to POS. The *MCCPP* clearly stated that “the CoM may prepare a “Public Realm Design Guide” (CoM 2013 2). However, this was never formally prepared. The plans are silent on POS or parks, other than noting the existing open spaces on the plans. Dwelling densities have been increased

without any increase in POS or requirement to contribute to a development fund to provide better facilities at existing POS. (City of Mandurah 2013b; City of Mandurah 2011). There have been improvements to certain spaces including the development of a professional Australian Rules football oval and stadium and the creation of a new bowls club that replaced an older club.

Both the MJSP and the MOMODP included additional POS areas as the areas were considered new development and as such had to provide the minimum 10 per cent of POS as required by *LN* and *DC2.3*. In the case of Mandurah Junction existing POS from a previous residential development was added to a large and newly created open space. The Mandurah Ocean Marina was created from a combination of land reclaimed from the sea and areas of land that were underutilised and consisted of beach, dunes, and lagoon at the ocean entrance of the inlet into the Peel Harvey Estuary. The change is clearly recognisable in Figure 8.3, Figure 8.4, and Figure 8.5.

Figure 8.1 Areas of Interest within CoM
Source: City of Mandurah (2017)

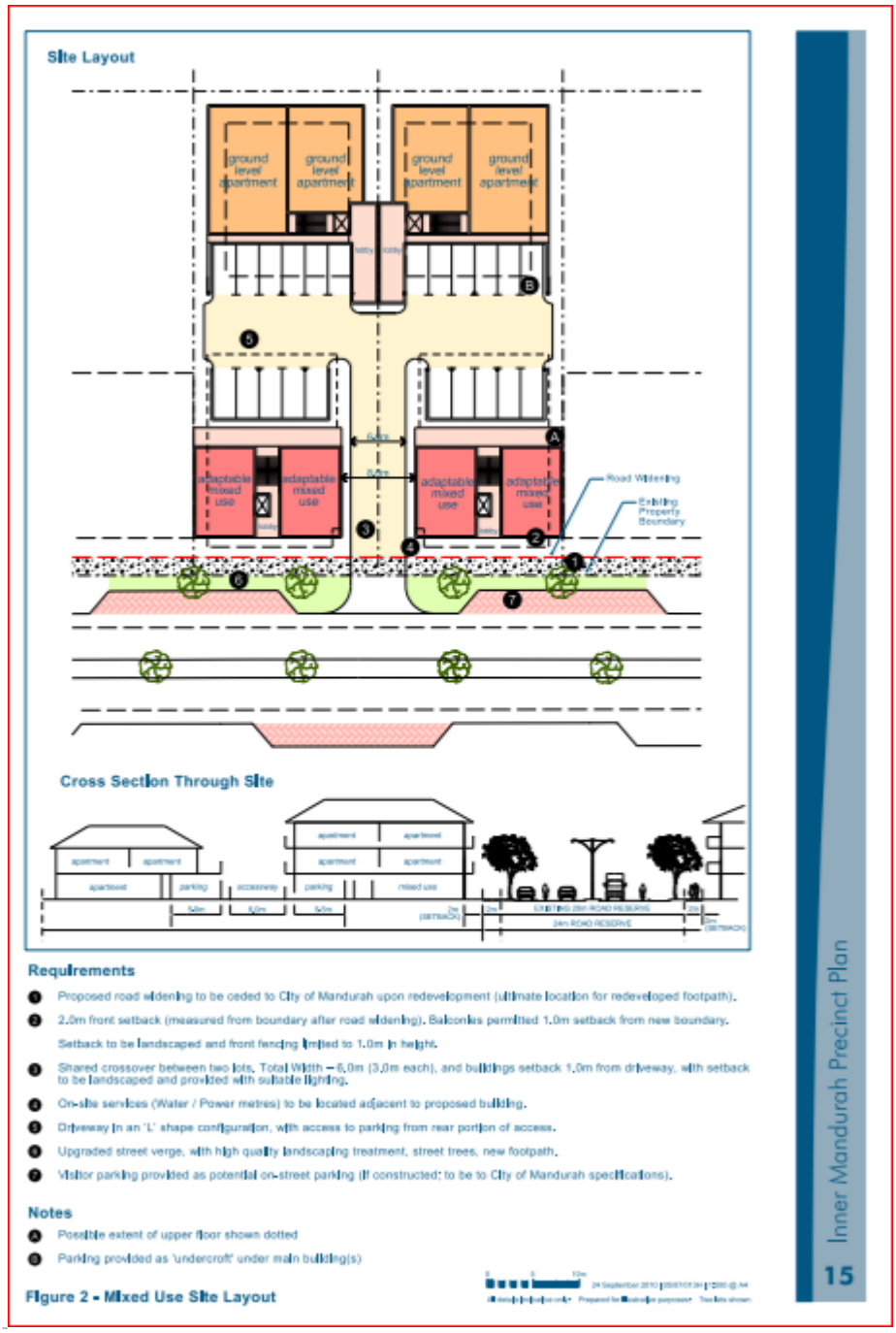


Figure 8.2 Expected Site Layout for Mixed Use Sites in *IMPP*
Source: City of Mandurah (2010)

Note that similar site layouts were adopted for both the *IMPP* and the *MTPP*. In both cases the building form that is required by the precinct plans result in crossovers being minimised but significant amounts of open space being consumed by parking and driveways. This format is common where a single lot is subdivided into two or more dwellings and access to the rear properties is shared by common property.

Figure 8.3 Aerial Photo Mandurah 1974
Source: City of Mandurah (2017)

The outline of the Mandurah Marina development can be seen overlaid on the aerial photo of the same area in 1974. Land reclamation around the Mandurah Ocean Marina has seen the creation of land for development at higher densities, as well as new POS being created.

Figure 8.4 Aerial Photo Mandurah 2017
Source: City of Mandurah (2017)

Figure 8.5 Aerial Photo Mandurah Junction
Source: City of Mandurah (2017)

An expanded POS was provided as part of the Mandurah Junction development which proposed dwelling densities significantly higher than the surrounding suburbs.

8.4 Case Study 2 – City of Cockburn

The City of Cockburn (CoC) is located approximately fifteen kilometres from the Perth CBD and covers approximately one hundred and seventy square kilometres, with a population of approximately one hundred thousand (ABS 2016k). It extends along the coast south of the local governments of Fremantle, Melville and Canning and is west of Armadale and north of Kwinana (City of Cockburn 2016) (see Figure 8.7). It is a local government that has significant new urban residential development to the south and east, as well as many redevelopment sites where land formerly occupied by industrial and rural uses has been rezoned for residential development. Some older residential areas presented opportunities when the State government privatised older state housing complexes. There has also been development of areas along the coast that were formerly zoned industrial, at higher densities with a mix of medium density dwellings and multi-storey apartments in areas directly adjacent to the coast. Like many local governments in the Perth metropolitan area there has been a shift towards higher density nodes in addition to more typical low-density development in alignment with *D2031* and *P&P@3.5M*.

One area of particular interest is Cockburn Central. This suburb represents a bold departure from the urban form that had been typical of middle ring suburbs in Perth. The establishment of a higher density area (both in terms of population and dwelling density) around the train station was not new (as it is repeated in centres like Subiaco and East Perth), but relatively new for Perth to have an area beyond the inner-city area targeted for significant density increases with the construction of multiple storey apartments. It is described as a secondary activity centre (in *P&P@3.5M*) that has the ability to become a key commercial and retail service provider and utilise the train station and road network to increase the diversity and range of land uses, and provide increased employment opportunities for local residents (WAPC 2015d).

The newer part of Cockburn Central is comprised of several larger lots which were sold to developers by Landcorp (the WA government land development agency), to achieve the State government's aim of creating a transit-oriented development. A higher density residential and mixed-use hub has been created on the doorstep of the Cockburn Central Train Station and bus interchange. Many multi-storey apartments (varying in height between two and seven storeys) have been constructed. Unlike the low-density single residential housing (with single dwellings located on five hundred to eight hundred square metre lots) that lie to the west, south and south east of Cockburn Central, the focus is on ensuring that residents have walkable access to the train station and bus interchange.

Many commercial enterprises and government organisations, as well as Cockburn Gateway Shopping Centre are located within a relatively short travelling distance from the apartments.

To the west of the suburb there is a significant commercial and industrial employment centre as well as more traditional detached dwellings with a density coding of R40 that are wedged between the newer high-rise developments and the existing commercial and industrial zone.

At the centre of the area leading into the train and bus station is a public square that is characterised by large areas of paving with minimal turf. This is the only significant open space in the eastern section of Cockburn Central. Some shade trees are provided as well as seating. At the western end of the square a café was operating to activate the area. The square can be used as a venue for cultural activities and is advertised in documentation used by both Landcorp and developers to highlight the benefits of living in the area. It was remodelled following concerns that the space was not an attractive or functional space for users.

The residents of Cockburn Central have had to wait for an expansion in open space opportunities; the Fremantle Dockers training ground and a regional aquatic and recreation facility as well as a publicly accessible oval, children's playground and wetland is constructed on part of the site to provide recreation facilities for both the local and regional population (See Figure 8.8). A fee is charged for use of the aquatic and recreation centre.

Land to the north of the development that is still being used for rural-residential purposes has had a structure plan submitted which details residential densities between R30 and R160 and includes POS in accordance with the requirements of new urban development. There are some older drainage reserves located in the commercial and industrial sections of the suburb as well as some smaller recreation reserves abutting the lower density residential dwellings.

The suburb of Cockburn Central is adjacent to a large conservation area known as Yangebup Lake Reserve. Although it is more than one hundred hectares in area, most of the reserve is water filled (over eighty hectares) and access is limited to footpaths and trails around the reserve.

To the south of Cockburn Central is the suburb of Success. The northern section of this suburb is adjacent to the Cockburn Gateway Shopping Centre. It is being developed at much higher dwelling densities with many multiple storey apartments being constructed nearby. These complexes represent a stark contrast to the traditional single storey lower density housing that dominates the rest of the suburb.

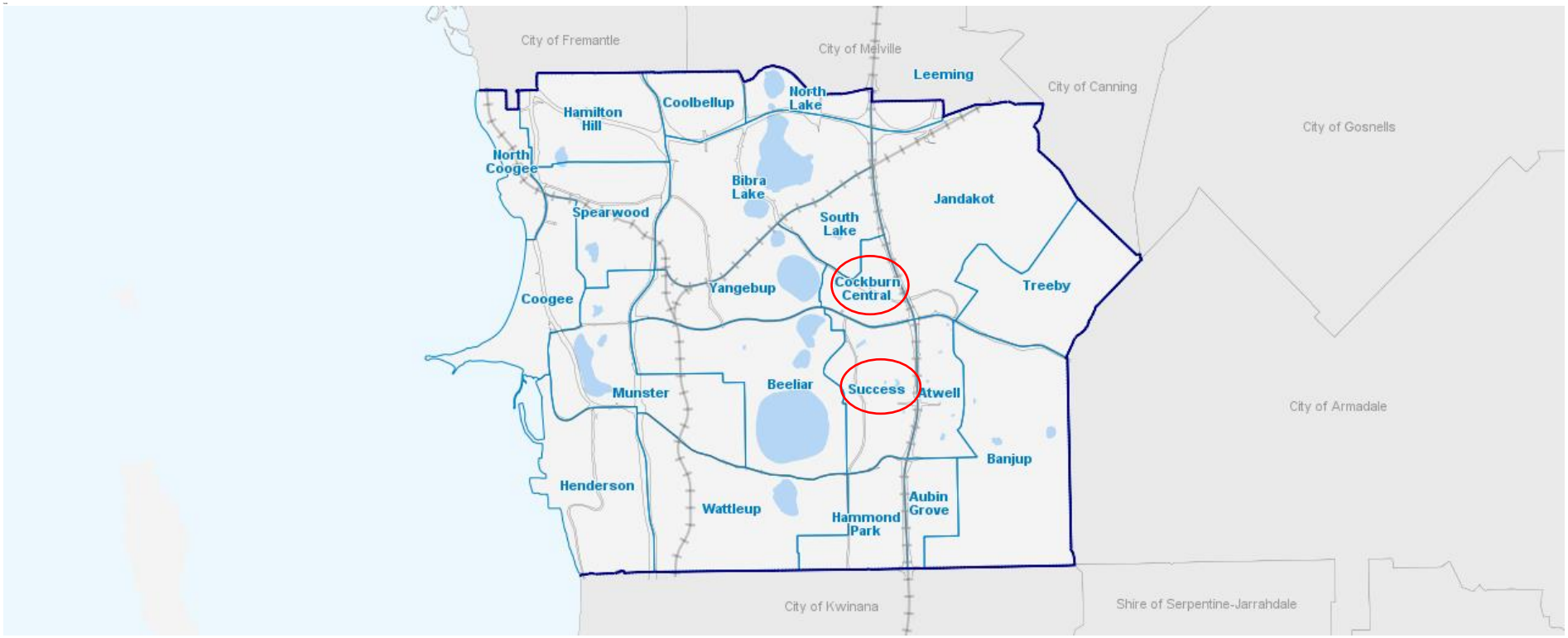


Figure 8.6 Areas of Interest within CoC
Source: City of Cockburn (2017)

Figure 8.7 Cockburn Central POS Plan 2002 and 2016
Source: City of Cockburn (2002); Landcorp (2016)

The change in the area allocated for open space and other recreation uses from 2002 and 2016 is visible in Figure 8.7. There is a clear decline in the amount of traditional open space compared to areas that are to be developed with buildings for the aquatic and recreation facility.

8.5 Case Study 3 – City of South Perth

The City of South Perth (CoSP) is a small LGA in comparison to the other two councils. It has a mix of old and new housing varying from high-rise apartments, single and double storey group dwellings as well as more traditional single residential dwellings. South Perth has a population of over forty-five thousand people with a surface area of approximately twenty square kilometres and a population density of 22.84 persons per hectare which is higher than CoM, but less than the CoC.

It is an area that due to its proximity to the Perth CBD has undergone continual redevelopment since Perth's founding in 1829. Densification has been progressing for many years. The area has much higher property values than the other case study areas. As a result, there is significant pressure to increase dwelling densities and allow greater heights in the proposed developments. Like Mandurah it is on the edge of a large water body (the

Swan and Canning Rivers) and has significant foreshore reserves close to the resident population. Much development occurred prior to the *SH Plan*, so some development occurred without consideration for the POS requirements laid down by this plan or subsequent policies. Currently over 50 per cent of residential dwellings located within South Perth are medium or high-density buildings (City of South Perth 2016).

The suburbs of South Perth and Como within the CoSP have a greater level of affluence and education possibly owing to the location of the suburbs. The suburbs abut a railway line, are close to the Perth CBD, and subsequently have greater access to employment opportunities with centrally located businesses, government departments and tertiary education institutions. Three universities (Curtin, Murdoch, and the University of WA) are located within ten kilometres of the CoSP.

The Swan River foreshore is dominated by James Mitchell Park in the north and remnant vegetation along the western foreshore north and south of Canning Bridge Train Station and along the foreshore reserve up to the Narrows Bridge. This reserve is characterised by a bike and pedestrian path that covers much of the available space between the Kwinana Freeway and the Swan River foreshore reserve. There are many pedestrian overpasses that allow people to access the foreshore reserve. There are also some user facilities provided by Council including playground equipment, shade structures, seats, and small beaches. The dominating feature of these places is the traffic noise produced by vehicles travelling at high speed along the freeway. There are many native shrubs and trees located along the more southern sections of the reserve before Mount Henry Bridge. There are also many more parks located along the eastern side of the Kwinana Freeway that potentially serve the traditional role of open space; these spaces include Olive's Reserve which is bounded by Mary Street and Melville Parade, Comer Reserve bounded by Melville Parade, Comer Street and Eric Street and Richardson Park Richardson Street and Labouchere Road, as well as Royal Perth Golf Club which is a private golf club. It could be suggested that residents of South Perth are spoilt for choice with regards to open space. There are many large Council managed reserves along the freeway, as well as the foreshore reserve and numerous reserves further inland, including Ernest Johnson Oval, James Miller Oval and Neil McDougall Park.

Newer development in the South Perth area since the late 1970s has been characterised by the tendency for the Council to permit low-rise development on larger lots with a single residential dwelling being replaced with two or more dwellings. Typically, each unit has

minimal private open space. Several precincts have high-density multi-storey developments. The most notable example being the area closest to James Mitchell Park, along the northern foreshore of South Perth and around the peninsula area of South Perth.

Two areas are of interest including the area in Como around Canning Bridge Train Station that is covered by the *CBACP*, and the area around the proposed South Perth Train Station known as Precinct 15 in the CoSP's (Local Planning Scheme) LPS 6.

Amendment 25 to CoSP's Town Planning Scheme has created a redevelopment area with higher densities, increased building heights and mixed commercial and residential land uses in the area abutting the proposed South Perth Train Station. Multi-storey developments (between 10.5 and forty-one metres) with the potential for a mix of commercial tenancies on the bottom floors and residential premises above are permitted. In addition, as the developments are categorised as multiple dwellings in the *R-Codes*, plot ratios are used to assess development applications for proposed buildings. Buildings can take up more of a site, but typically will be lower, whereas if they produce more private open space, they can have greater heights. Although a minimum of 40 per cent of site area is to be dedicated to landscaping it may include rooftop gardens, planting on walls and traditional ground level gardens (City of South Perth 2003b; 2018).

The *CBACP* proposes residential dwelling densities up to R80 to R100 coding and heights of up to forty-eight metres (or fifteen stories) (WAPC 2011). This is in stark contrast to the surrounding area in Como beyond the activity centre plan which has a variety of density codings (R20, R30, R40, R50 and R80). The suburbs of Salter Point and Manning (to the south and south east of the *CBACP*) have density codings of R15 and R20 and as a result have minimum lot sizes of five hundred and eighty square metre and three hundred and fifty square metres respectively (or six hundred and fifty-five and four hundred and fifty-five square metres respectively if battle axe lots) (Department of Planning 2015).

The *CBACP* refers to open space, by improving the foreshore reserve in the area to increase the recreation opportunities, but does not expand on how this would be done, other than providing a diagram of possible foreshore improvements around the train and bus interchange.

It is forecast that there will be significant increases in the population within the *CBACP* area. This area includes parts of the City of Melville which is not relevant to this study. According to the document it is estimated that the number of persons per dwelling will remain low,

but there will be significant increases in the number of units within multiple storey apartments being built in the area up to 2051. In 2014 it had one thousand nine hundred dwellings with a population of three thousand eight hundred. By 2031 it is forecast that this will increase to four thousand one hundred dwellings and a population of eight thousand. By 2051 over twelve thousand dwellings are planned to be constructed with a population of nineteen thousand. This represents a 537 per cent increase in the number of dwellings and a 400 per cent rise in the population. If it is assumed that 50 per cent of this population lives within the CoSP and the remaining 50 per cent lives in the City of Melville, then there will be an additional 7600 people living in Como by 2051.

Such an increase in population will potentially place increased pressure on the surrounding infrastructure like POS. Assuming that there is no increase in the allocation of POS (counter to what the *CBACP* suggests), and 50 per cent of the population of the forecast increase in population out to 2051 use open space then the amount of POS available to people within Como will fall from the current level of 68.3 square metres per person to 45.5 square metres per person which is still above the level set by the *SH Plan* of 33.6 square metres per person. Even if all the people in the area covered by the *CBACP* were to be allocated space within existing open space then the allocation would be equal to 30.3 square metres per person which is just below 33.6 square metres per person. This represents less than 10 per cent variation in the amount of open space available per person. Compared to other major cities around the world it is still generous (see Table 5.3), and the data does not provide any details of the functionality, accessibility, or popularity of specific POS.

It is recognised that people do not necessarily limit themselves to completing all interactions with open space in their own suburb. If there are leakages of people using POS in the suburb to other suburbs, or alternatively not using open spaces at all, then if 25 per cent of additional people living in the area covered by the *CBACP* used POS the allocation would be 54.6 square metres per person which is also well inside the SH allocation of open space. If 10 per cent of the forecast increase in population use the open space, then 62.1 square metres per person is available. Despite significant increases in population in the region the open space allocation will not come under significant pressure (below 33.6 square metres per person).

Table 8.4 Possible Population Increases in *CBACP* Area

	Area of Open Space	**Population**	**Additional Population to 2051 According to *CBACP***	**Estimated Population 2051**	**Allocation of Open Space (m^2 per person)**
Como	1031906.3m^2	15103			
CBACP		3800			
100% of Population Increase as Forecast by *CPACP*			15200	34103	30.3
50% of Population as Forecast by *CBACP*			7600	22703	45.5
25% of Population as Forecast by *CBACP*			3800	18903	54.6
10% of Population as Forecast by *CBACP*			1520	16623	62.1

Source: ABS (2016n); Canning Bridge Structure Plan Project Working Group (2015)

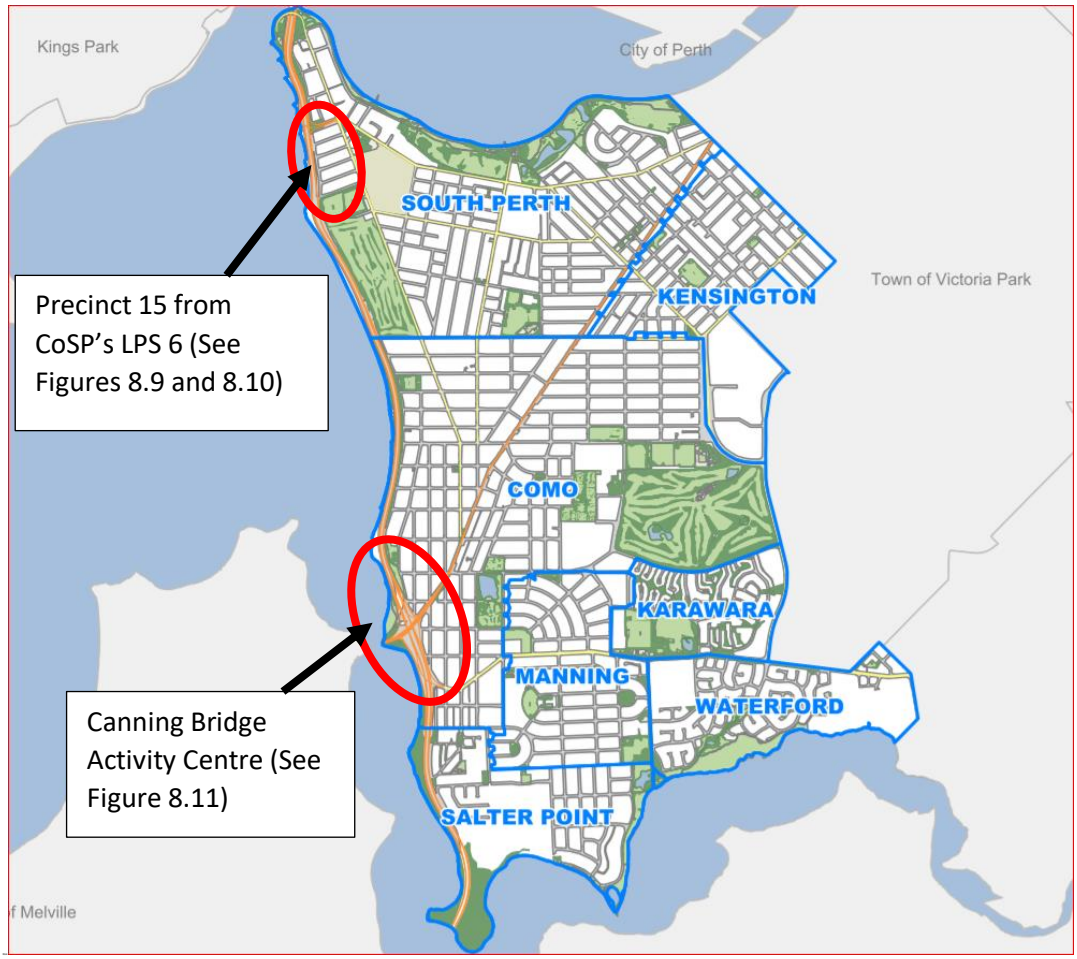


Figure 8.8 Areas of Interest within the CoSP
Source: City of South Perth (2017)

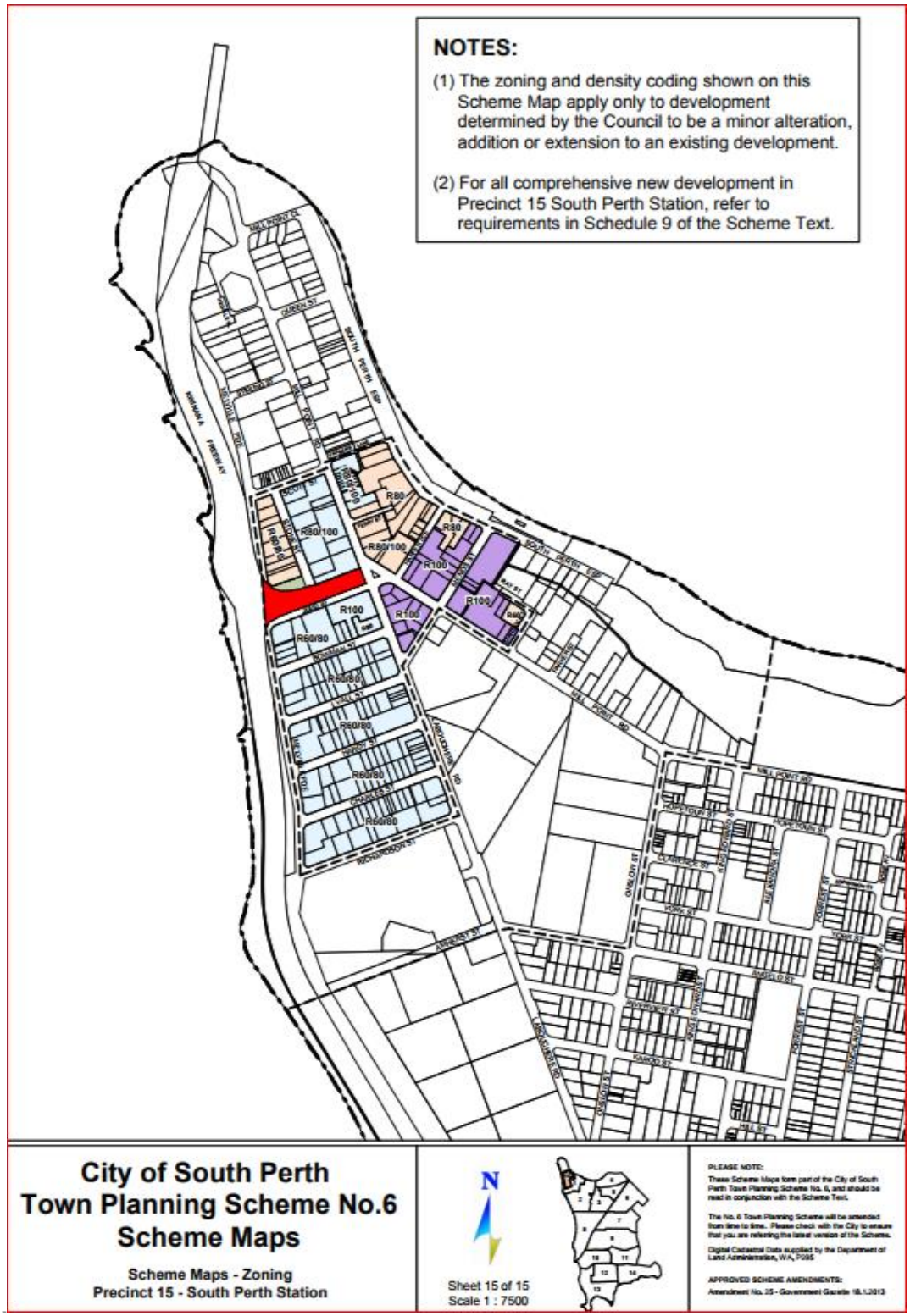


Figure 8.9 Density Codings South Perth Train Station Precinct
Source: City of South Perth (2003a)

Figure 8.10 South Perth Station Precinct
Source: WAPC (2011 16)

Note that Perth Zoo was not included in the open space count for the South Perth area, although it provides significant UGS and some functions like traditional POS.

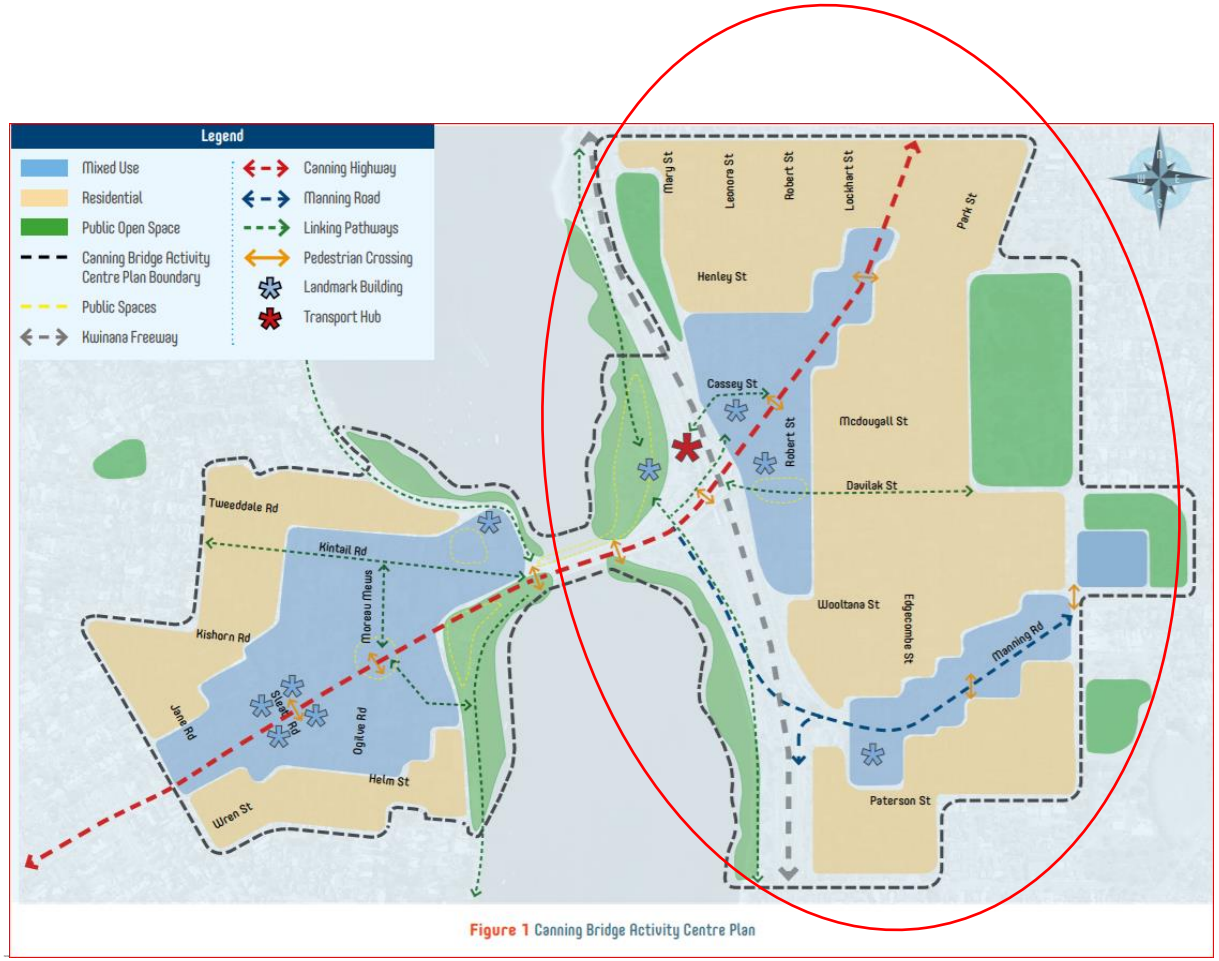


Figure 8.11 Canning Bridge Activity Centre Plan

Source: Canning Bridge Structure Plan Project Working Group (2015)

Note that only the CoSP component of the *CBACP* was considered as part of this study.

8.6 Case Study Open Space Allocation

There are several details to point out regarding the open space allocations in each of the case study areas.

All the suburbs that had open space measured achieved the minimum 10 per cent allocation apart from Cockburn Central. It must be noted that a significant proportion of Cockburn Central is still to be developed. There are currently several rural lifestyle properties located to the north of the current development area with much lower population densities. The surface area of the whole suburb was used to calculate the percentage allocation, recognising that there are several areas that are mixed residential/commercial zones as well as industrial areas. This recognises that potentially any area has the potential to provide open spaces, not just residential areas, particularly those areas on the perimeter of industrial zones.

There is the possibility that Cockburn Central will have much higher population densities in the future once development of the northern section of the suburb is complete. When this occurs, it is likely that that there will be falls in the allocation of open space per person.

In terms of allocation of open space per person Silver Sands has the highest allocation of 264.4 square metres per person while central Mandurah has 144.1 square metres per person. Both have the lowest population densities of 10.5 people per hectare and 10.9 people per hectare, respectively. The suburbs within the CoSP have population densities over twice the Mandurah suburbs. The CoC suburbs of Atwell and Success have population densities above the Mandurah suburbs (see Appendices A1).

In the case of the suburb of Mandurah, where there are significant plans for increased dwelling and population densities and there is increasing evidence of densification occurring 13.9 per cent of the suburb area is allocated to open space assuming the inclusion of all local, district and ROS, as well as land zoned community purpose, city centre development and precinct development. If land that is zoned only local, or district open space or ROS the figure drops to 6.1 per cent of the total land area and of this there are reserves that have been quasi-privatised as a result of the local government leasing facilities like parts of Rushton Park to a professional football club (Peel Thunder Football Club) that potentially denies large sections of the population the ability to access the facility, unless they are players or members of the football club. The facility is fenced and has private clubrooms and parking. At the same time this facility has a highly-manicured turf surface which has significant watering requirements to ensure it meets the ground

standards of the WA Football League and an admission by one officer from the CoM that water rationing does occur to ensure that sufficient water is available for such facilities.

There is no shortage of open space in the suburb of Silver Sands. The issue is more with the appropriateness of open space and accessibility of the spaces. Most open space is divided between the beach reserves and reserve directly abutting major roads within the suburb. A significant proportion of the suburb (15.2 per cent) is comprised of beachfront reserves including the narrow dunes that abut the beach which are designated ROS under the Town Planning Scheme. Residents who want to travel to the beach are well catered for, but if you do not choose to visit the beach and remain in the suburb there are limited options. Just over 10 per cent of the suburb is made up of local recreation space, but these spaces are immediately adjoining major roads that lead into the Mandurah CBD. They are located at the back of residential properties and there is limited turf area and facilities. Much of the linear park that runs along the road is vegetated with shrubs and trees. It serves certain ecological functions and provides a linkage for pedestrians and cyclists because of the footpath that runs along much of its length, but does not provide a traditional park where people can have a picnic in quiet surroundings (due to the busy road nearby) or alternatively visit a park that can be monitored by nearby residents as it is hidden behind trees and backyard fences.

The measurement of the open space allocation revealed that open space is provided by land zoned community purpose so is not specifically created for recreation. It has recreation potential and can help provide certain social and ecological functions, but could provide non-recreation uses like parking for the newly refurbished Mandurah Aquatic and Recreation Centre. A cemetery is located within the area around the Mandurah Aquatic Recreation Centre that is zoned community purpose and has the potential to provide passive recreational opportunities, as well as ecological functions and distinct socio-cultural functions for the local community. Some of the spaces are dedicated to drainage and serve a valuable function in terms of ensuring that storm water can be disposed of quickly and safely. It also presents certain opportunities for creating niche UGSs that can have limited and possibly more intimate facilities like a bench or a small playground or a conservation or nature area that may not require watering as intensively as other open spaces (assuming it rains). There is the potential to collect the water in underground reservoirs that can have water pumped out later for irrigation.

What is clearly demonstrated by an examination of the open space allocation within Mandurah in the areas that have been targeted for urban consolidation is that there is an under provision of traditional open spaces, however, there are many more spaces that help to lift the total area of open spaces above the 10 per cent standard. There are some spaces that have been included in the overall count that have the potential to provide UGS, but it may not be traditional open space with large areas of turf suitable for playing field sports. Rather the spaces are better suited to walking trails, cycle paths or ecological functions. Mandurah Primary School has a considerable area allocated to playing fields, however, this could be problematic as the spaces are effectively monopolised by the school during school hours, although there is the potential for the facilities to be shared as has happened at many sites throughout the Mandurah LGA. In areas where open spaces are constrained school ovals and playing fields as recognised as valuable spaces. They can be utilised for additional open space where it is lacking subject to agreements relating to access and maintenance, including the ability to enter the space if the playing fields are fenced and have locked entry gates.

In the case of Cockburn Central there is a shortage of open space in the suburb with the total area of space allocated to open space currently sitting at 3 per cent and including the area allocated to the new regional sporting facility that will become the home of the Fremantle Football Club, as well as a large aquatic centre and recreational facility. Again, like the situation in Mandurah the facility has sections that are not accessible to the public. There are limited spaces that could become open space as the land is being intensively developed with new residential apartments and there is little spare land within the industrial and commercial areas of the suburb. There is a significant area of land that is still to be developed to the north of the existing residential area. This area will see additional open space created that services new residential development that will increase the total percentage of land that is dedicated to open space in Cockburn Central.

The suburbs of Como and South Perth do not have a shortage of open space with 16.1 per cent and 27.5 per cent allocated respectively, although as the open space schedule reveals there are significant amounts of open space coming from foreshore reserve and there is additional space that is available from golf courses and school sites.

Table 8.5 Open Space Allocation for Selected Suburbs within Case Study Areas

Suburb	Open Space Allocation (% of suburb area)	Open Space Allocation (m^2 per person)	Population Density (Persons per hectare)
City of Cockburn			
Cockburn Central	3.0	1260	4.5
Atwell	10.2	39.4	25.9
Success	10.7	68.2	16.6
City of South Perth			
Como	16.1	68.3	23.6
Kensington	12.0	73.4	16.3
Karawara	30.7	149.2	20.6
South Perth	27.5	112.2	24.5
Manning	18.7	75.9	24.6
City of Mandurah			
Silver Sands	27.7	264.4	10.5
Mandurah	15.7	144.1	10.9

Source: Calculations by author, original source material from City of Cockburn (2017a); City of Mandurah (2017); City of South Perth (2017)

8.7 Private Open Space versus Public Open Space

There is a distinct difference in the way policy deals with private open space and POS. There are poor links between the two types, and they are treated separately. Decisions affecting either policy area do not have to take the other into account. This potentially creates problems because it does not consider the effects of reduced backyards on the urban environment, including liveability and clearly shows the failings of local government to recognise the long-term impacts of policy silos.

DC2.3 and *LN* clearly discuss open space requirements when developing land irrespective of dwelling density and the allocation of private open space. Conversely, the *R-Codes*, local development plans (also known as detailed area plans, local structure plans or area specific plans) and local planning policies do not consider POS availability or accessibility in an area where densities are set to increase, and the requirements of the respective density code have to be applied.

There is considerable leeway in the private open space requirements for individual and grouped dwellings according to the *R-Codes*. Assessment of proposed developments using the *R-Codes* permits planners to utilise the design principles if a proposed dwelling fails to meet the "deemed to comply" criteria which might be interpreted as an easier means to achieve development approval.

According to the *R-Codes* as dwelling densities rise the private open space requirements fall (see Table 8.6).

Table 8.6 Open Space and Outdoor Living Area Requirements from R-Codes

R-Codes	Minimum Area for Coding (m^2)	Minimum lot size for battle-axe lots (m^2)	Open Space (% of site)	Open Space Based on Minimum Area for R-Code (m^2)	Open Space Minus 5% As Permitted by certain local governments in accordance with local planning policies or local planning schemes	Open Space Based on Minimum Area for R-Code (m^2)	Minimum Outdoor Living Area (m^2)
R2	5000	-	80	4000	75	3750	Nil
R2.5	4000	-	80	3200	75	3000	Nil
R5	2000	-	70	1400	65	1300	Nil
R10	875	925	60	525	55	481.25	Nil
R12.5	700	762.5	60	420	55	385	Nil
R15	580	655	55	319	50	290	Nil
R17.5	500	587.5	50	250	45	225	36
R20	350	455	50	175	45	157.5	30
R25	300	425	50	150	45	135	30
R30	260	410	45	117	40	104	24
R35	220	395	45	99	40	88	24
R40	180	380	45	81	40	72	20
R50	160	380	40	64	35	56	16
R60	120	380	40	48	35	42	16
R80	100	380	30	30	25	25	16

Source: Adapted by the author from Department of Planning (2015b)

The *R-Codes* is one of the key planning documents utilised by planning authorities (including the state government and all local governments) across WA that provides development guidelines for new and existing dwellings. The guidelines are partially determined by the density coding that is allocated by decision-making authorities like local governments to areas and suburbs and enforced through their planning schemes. The density or R-Code sets minimum and average lot sizes which guide subdivision and development controls. The original version of the *R-Codes* would allow the planner to quickly determine the minimum lot size that was permitted for specific R-Code by dividing ten thousand (the number of square metres in a hectare) by the R number. For example, if an area has an R coding of R2 then the minimum allowable lot size is 5000m^2 whereas if the R coding was R40 then the minimum lot size was 250m^2. However, over time changes have been made to allow smaller lot areas for certain density codes such that the R20 coding has a minimum lot size of 350m^2 rather than 500m^2 and R25 has a minimum lot size of 300m^2 rather than 400m^2. There has been changes made to the *R-Codes* which allow subdivision of land into smaller lots, without requiring changes to local planning schemes. This has allowed the state government to increase the possibility of densification without requiring the cooperation of local government some of whom have resisted urban consolidation. It

should also be noted that subdivision approval of land in WA (apart from built strata subdivision applications) is the responsibility of the state government's WAPC which can make subdivision decisions relating to residential land irrespective of the views of local government. The promotion of urban consolidation is thus weighted in favour of state government.

For some local governments local planning policies are used to allow reductions in private open space provision. Under CoM's LPP10 an additional 5 per cent reduction in open space is permitted for residential dwellings (City of Mandurah 2010). A similar policy applies in the CoC where open space requirements may be reduced by 5 per cent and two thirds of the outdoor living area can be covered in translucent roofing material for proposed development (City of Cockburn 2017a).

The CoC has introduced reduced requirements for medium density developments. LPP1.16 modifies the *R-Codes* for medium density developments (R25, R30, R40, and R60) such that outdoor living areas of 20m^2 or 10 per cent of the site area (whatever is greater) is permitted (City of Cockburn 2017b). At the same time boundary setbacks can be reduced to zero for two sides of the lot for R60 and R40 dwellings (City of Cockburn 2017b).

In all three LGAs there has also been the adoption of local development plans (or similar) that modify the design criteria for individual lots within new developments and the requirements for site coverage and minimum outdoor living areas is typically lower than the *R-Codes* and LPPs. They are often adopted where there are many smaller suburban lots at higher densities than other parts of the same suburb (say R30, R35 or R40). They may permit site coverage as high as 70 or 80 per cent and smaller outdoor living areas.

As part of the development within the South Perth Station Precinct and Canning Bridge Activity Centre it is expected that higher density dwellings including apartments will be constructed within both areas. Typically, all residential dwellings are required to have a balcony or outdoor living area of at least ten square metres (City of South Perth 2003). Small private open spaces are created that are much smaller than the traditional backyard.

Land is being used more efficiently because of such changes, but buildings dominate the site, and more dwellings are constructed with smaller outdoor spaces. It was stated that there is an attempt to gain some balance between dwelling area and private open space (City of Cockburn 2017c), but it is hard to see how this is achieved if buildings are growing

in surface area and private open spaces are shrinking. It confirms the findings of Hall (2007) and Brunner and Cozens (2012).

Individually, the increase in site coverage and the reduction in private open space may not seem significant, however, if it is applied to larger areas then cumulatively there is a greater overall impact.

A reduction in POS allocation would probably not be tolerated in areas with high densities although, there seems to be an acceptance of the reductions in private open space in areas being densified. The benefit derived by private individuals and organisations from the construction of larger dwellings with smaller open spaces shifts the responsibility of providing open space onto local government. The loss of private open space may be compensated by additional POS or other spaces in the public realm. Given that local government have allowed the private open space reductions to occur it could then be argued that it is incumbent upon local government to respond by ensuring that open space provision in higher density areas is improved through better design and more sophisticated infrastructure at accessible POS.

If new land is not available and local governments are unwilling to provide new open space for operational or political reasons, then the road presents an opportunity to provide additional alternative spaces that can improve streetscapes, revitalise the public realm and help reforest the urban landscape.

Local government have potentially reduced the liveability of urban areas because of the willingness to sacrifice private open space. This also potentially increases the pressure on POS to provide the features previously provided by private open space, including the ability to entertain and socialise, ecological functions and passive recreation.

8.8 Effect of Time on Open Space Availability

There are capacity and scheduling constraints related to the lack of suitable active recreational open space when it is needed the most; on weekday afternoons and weekends.

One of the possible problems faced by users of open space is congestion due to excessive demand for the space when most people are free to use that space. Many organisations schedule training and meeting times when participants are free, and this is typically outside school and working hours. On weekends open spaces that are allocated to sporting competitions and community activities become very busy. Certain activities particularly the

more passive activities may become less attractive or difficult to undertake while they are being used for field sports and other organised activities over the weekend.

Over the day the period between 6am and 8am and after 4pm until 9pm during the working week is potentially going to be the busiest period for the use of open space (assuming the open space reserve is illuminated with artificial lighting). This continues from 7am until 6pm on Saturdays and Sundays. Based on these assumptions the total time available to most people for the traditional activities carried out at open spaces will equate to 57 hours for a week out of a total of 168[17] or 34 per cent of total time available. The converse of this is that there is increased availability of open spaces for a range of activities in the non-peak times. The equivalent of 66 per cent of total time is non-peak.

This difference in availability points to the need for local governments, as well as other stakeholders to attempt to utilise open spaces in non-peak times and by instituting a peak pricing system for the use of open spaces in peak times, while at the same time recognising that some clubs and participants may not have the finances to pay for space in peak times. Local government may have to consider providing lighting to facilities that are heavily used during the evening which also can have the benefit of being cooler during summer. There are other considerations including the social benefits of participation in activities at open spaces in peak times, as well as the activation of the site, which potentially reduces certain incivilities. Certain commercial activities that are charged little or no fees for use of the space and carried out at open spaces that are in high demand probably should be charged higher fees for the use of the space. There must also be recognition that smaller open spaces that may receive little attention from either local government or users can potentially relieve pressure on more heavily utilised POS.

8.9 Alternative Opportunities for Recreation

An internet search of commercial gyms and fitness centres was carried out within central Mandurah area, the area within three kilometres of Cockburn Central Train Station and within the boundaries of the CoSP. This search revealed that there were at least fifteen gyms within Mandurah, sixteen gyms in Cockburn Central and fifteen gyms in South Perth (see Appendix A2).

The centres and businesses that were identified were all privately owned facilities except for Mandurah Aquatic and Recreation Centre which was owned by the CoM and the Cockburn Aquatic and Recreation Centre managed by the CoC. All required payment on a sessional basis or membership of the gym or fitness centre to utilise facilities. They were

not freely available like POS. However, they presented opportunities for people to engage in physical activity which potentially could be carried out at publicly provided POS. For a range of reasons people undertake paid recreation at gyms. As with any private business it could be closed by the owners and cease operations, and as such the opportunity to exercise at that facility ceases. Likewise, failure to pay entry fees or membership restricts who can participate. As with any paid activity, recreation facilities that require payment are only available to those who have a capacity to pay. Those on low incomes or unemployed may be denied the ability to participate in the activities provided. The reliance on private or local government provided facilities requiring payment for use has potential social justice implications.

8.10 Conclusion

This chapter has provided details of the case study LGAs; Mandurah, Cockburn, and South Perth, as well as information on the specific suburbs within each LGA that were selected for closer study. Significant focus was placed on the planning documents that outlined the dwelling and population density increases that were called for in *D2031* and *P&P@3.5M*. Details of the effects of density increases were also considered, as well as the open space allocations in each of the case study suburbs. Additional information was included that compared the planning treatment of public and private open space, as well as the temporal considerations around POS use.

The data and perspectives that have been brought together in this chapter are available to local governments across many jurisdictions, however, they normally would not consider these aspects together. It is a research agenda and interest that spans across multiple organisations (including state and local government), at varying levels and within many departments with links to open space.

The results of the semi-structured interviews with local government professionals will be revealed in the next chapter. A variety of themes have been included in Chapter 9; key challenges, as well as possible solutions to some of the problems according to the people that are working either directly or indirectly in the field of open space planning and management.

Chapter 9 Interview Findings

9.1 Introduction

Many topics were discussed with officers from the three local governments chosen for this study. These topics are reflected in the structure of the chapter and include whether there were shortages of open space, concerns relating to higher dwelling and population density, the use of open space for drainage, the cost of providing open space, the impact of climate change and water supply problems, community participation in open space management, concerns over legal liability and the level of collaboration between departments within local government.

It was broadly accepted across the three local governments that there was not a single solution to open space challenges; rather a suite of options had to be implemented including, better scheduling of open space allocation, the adoption of artificial surfaces, increased utilisation of school ovals, greater engagement with the community and the utilisation of financial contributions from developers for open spaces. Local government was seen to be in the best position to implement solutions, but State government had to allow more flexible responses to open space provision and provide more ROS to complement local government POS.

The topics emerged from the interview question responses and as stated in the methodology (Chapter 6) it was intended that the interviewees would not be led into providing responses that suited the thesis author and matched the chosen theoretical topics of liveability and governance. The topics reported on were those that were repeated the most often by the interview subjects and aligned with the original interview questions. These themes were collated by the author after key words and phrases were identified and grouped together if it was felt that they were covering similar ideas. Themes that were not as prominent and were repeated by fewer interview participants were excluded from the findings.

The interviewees were left to provide their own responses to questions within the interview schedule. The questions permitted an open response that was not controlled or constrained by previous comments.

9.2 Density and Open Space

It was widely recognised that density increases were occurring in both existing and greenfield suburbs, and as a result private open space and the traditional backyard were disappearing. There was acceptance from several interviewees that homes on smaller lots,

as well as apartments were the favoured housing type for some people, and it was a means to achieve the goals of *P&P@3.5M*. There was concern from certain individuals that the backyards of some dwellings were limited, but people could enjoy the recreation opportunities that POS offered as compensation for the lack of private open space. However, it was also recognised that it would be sensible to increase the utilisation of existing POS before committing to additional open space and associated infrastructure to cater for increased demands being placed on spaces by higher population densities. Shortages of open space in areas where density increase was occurring was not considered an urgent issue within the three local governments.

Within all the cities there was a widely expressed view that passive use of open space could occur on active recreation spaces and they could co-exist, recognising that organised sports were given priority to utilise the active playing space. The emphasis was on co-location of different sporting clubs to ensure spaces served multiple functions and facilities were shared by different groups.

Within the CoM the focus was very much on providing active open space that could be used for passive recreation. The view had been taken that there were shortages of active playing fields, and this needed to be addressed before worrying about open space in areas where dwelling density was increasing. Simultaneously, there was a push within the CoM for the creation of multi-sport open spaces controlled by the City suitable for a variety of activities. There was a move away from the approach utilised by the CoM that had led to serious problems. Certain sporting clubs were given exclusive leases of ovals and attached facilities. Some had found themselves in financial difficulties and been unable to repay their debts to the local government, so the CoM had resumed control of the facilities. It was felt that the cost of building and maintaining facilities attached to playing fields had become prohibitive for single sporting clubs and it was better if exclusive leases were not granted. It was noted by one interviewee that some sporting clubs had undertaken to run bars and commercial kitchens from the sporting facilities, and this had detracted from their role to organise sport for the members.

UP1 stated;

> *"We've given sporting clubs exclusive leases to facilities at their locations and that's got them into trouble financially."*

The CoM's planning department had developed an open space template, in collaboration with other departments that could be superimposed on new reserves. It could provide two senior ovals or two rectangular pitches adaptable to a range of sports that require turfed areas. It was maintained that it would avoid the problems associated with designing and providing a sporting field for a single sport or club. If the popularity of a sport declined or the associated club ceased to exist, then other sports and clubs could utilise the same space. The size of the sporting fields proposed in the template facilitated flexibility.

Although the Environment section at Mandurah tried to balance the competing interests of recreation and conservation, it was recognised that if there were more people living in higher density dwellings with smaller backyards then making space for recreation for these people was critical. EM6 believed that if more people were squeezed into smaller backyards, then alternative space for recreation was necessary.

CM4 made it clear that there are problems with socio-economic equity within cities like Mandurah. This related to participation and accessibility to organised sports at active reserves, rather than passive reserves;

> *"The problem in places like Mandurah is that we have the old tale of two cities - we have a very affluent and a very poor almost underclass - it is very easy on one level to say it is only a fifteen or twenty minute drive but on another level there is a heck of a lot of people without a car or if they have a car they can't afford the fuel."*

In Mandurah LM5 believed that the inner-city might need new parks to cater for higher population densities. There had been a heavy focus on land acquisition for road infrastructure in inner Mandurah. It was suggested that road reserves could be utilised as alternative open space.

However, larger open spaces were preferred over smaller open spaces by LM5;

> *"I don't know whether it is really that beneficial for residences to have pocket parks everywhere - I think they are prepared to walk five to ten minutes to a larger POS provided the streetscape connections are good."*

Within Mandurah it was recognised that certain facilities had users travelling some distance to participate in sports. Rushton Park, which is in central Mandurah had two football clubs and Little Athletics that utilised the space and some people travelled significant distance to

use this park. The focus over the next decade would be to improve sites like this to broaden their usage to other sports, but also provide new open spaces elsewhere that eased congestion at existing spaces. RP3 said;

> *"So where we are going to get increased urbanisation and higher density dwellings in Mandurah - we can look at the northern suburbs and say right this is what we need to develop - these people are actually travelling from the northern suburbs to use the central facilities - to decrease that congestion we're spending a lot of time planning for those new facilities."*

Shortages of open spaces was not seen as an issue requiring urgent attention within CoC. There was a view from a recreation officer (RM10) that seasonal licenses issued to sporting clubs for exclusive use of ovals over certain periods had prevented fixture clashes and overuse of sporting fields.

There was a CoC policy to relocate sporting clubs if necessary, to ensure that they had space appropriate for their needs and considered the demographic changes that occurred within clubs and suburbs over time. Like Mandurah there was a view that active open spaces needed to serve multiple purposes to ensure that many sports could be played on the grounds.

RM10 stated;

> *"Providing a strategic plan that you've gone out and consulted with the clubs on certainly helps to pave the way for you to manage your reserves - who you put on your reserves and it makes it very clear and it sometimes takes the political aspect out of it - so people can't lobby councillors."*

It was stated that there were not problems between passive and active users of open spaces because active users (through sporting clubs) were allocated specific parks. Passive users could utilise alternative areas within the same parks or use another POS. There was a tendency to focus on the provision of active open spaces through sporting clubs.

The construction of a new recreation and aquatic facility at Cockburn Central that incorporated public facilities and an elite training facility for the Fremantle Football Club was considered an improvement to the recreational opportunities for the region. The existing residents had to tolerate limited open space that was comprised almost entirely of

hard surfaces with little natural landscaping. It was asserted that there would be many benefits for a professional sporting club to be co-located with a community facility from a financial perspective, although the centre was being constructed at the expense of nearby lakes and bushland.

It was felt that ROS that provided venues for many sports should be provided in every local government. The CoC did not currently have ROS like Kingsway Reserve (in the City of Joondalup) or Sutherland Park (in the City of Gosnells). There was a need for ROS in addition to smaller, more local POS.

It was felt that it was important for local governments to collaborate with state sporting associations and clubs to better understand the requirements of different sports. If this was combined with greater leadership from State government, then it was felt that better (active) open spaces would be provided.

Creative solutions to the under provision of open space would be required as pressure mounted to provide more and better open spaces. Underutilised and unusable spaces like drainage sumps could be modified to increase their use. There was a preference for adding features that increased informal uses, without increasing the area of turf. Active open space had to be clearly identified and configured to become multipurpose spaces. Single sports should not gain exclusivity, although it was recognised that certain clubs had infrastructure that restricted the ability to make it a multiple use space. In some cases, the sports dictated the form and function of the spaces based on the rules and format of the sport (such as tennis or lawn bowls).

It was acknowledged that people who lived in higher density dwellings may recreate and socialise differently, particularly if they are from different cultures. It was recognised that if large groups used POS, crowding may occur that denies other users the ability to use the space. EM9 said;

> *"If you're going to increase the densities from R20 to R60…. you're now tripling the number of people in those areas - so thereby you should be ensuring you've got triple the amount of open space because you're going to be increasing the use of that park."*

Within South Perth UP13 felt that apartment dwellers within the City had access to many, open spaces and this compensated for not having large backyards. It was recognised that

POS was critical for people living in homes with small outdoor areas. Where redevelopment was occurring, it was considered essential that the open space was of a quality that allowed increased numbers of residents to use the space.

UP15 stated that people used private open space differently today compared to the past. It was believed that increasingly people did not want large private gardens and saw their local POS as a substitute recreation space. POS would be used if it provided a range of functions and had appropriate enhancements that compensated for the lack of private open space.

UP13 recognised that limited open space in areas undergoing urban consolidation may be a problem, but stated that open space was well provided and distributed across South Perth.

UP13 highlighted that residents' perceptions of open space provision do vary. They may have different ideas about the amount and distribution of POS compared to the local government and their staff. UP13 said;

> *"While it is easy for me to say from a planning point of view we are very well provided with public open space that's not necessarily the perception of a local resident."*

9.3 Climate Change and Water

There was recognition that climate change would have an impact on park maintenance and watering, although it was not considered an insurmountable hurdle to overcome. Climate change was a challenge to the traditional view that open space should always be lush, green, and well-watered. The hotter, drier climate would put increasing pressure on Councils to continue to provide large areas of turf within open space, despite having limited water supplies. Only seven thousand five hundred kilolitres per hectare per year was allocated through the ground water licenses issued by the State Government's Department of Water for each local government. Several strategies had been actively pursued to manage water allocations and ensure POS could be adequately watered.

Shading infrastructure at open spaces was also becoming more important to ensure that playgrounds were shaded during the hotter months. It was felt that as private open space declined, and the urban heat island effect became a greater concern POS could be used to provide relief from the heat in homes with smaller yards and little vegetation.

In Mandurah, most water was provided from bores rather than from scheme water. Recycled wastewater was utilised extensively to reduce the demands on groundwater

resources, where open space was near wastewater treatment plants (Meadow Springs Playing Field and Caddadup Reserve in Dawesville). It was accepted practice in Mandurah to ration watering across reserves to ensure that more heavily utilised reserves continued to be watered. To ensure that water allocations were not exceeded Rushton Park and the eastern foreshore park received more water at the expense of other sites. Less prominent open spaces were not watered as often. Native plantings were used widely and concentrated in certain spaces and smaller areas of turf were watered. Hydro zoning was used extensively to ensure that vegetation on reserves received appropriate amounts of water during the warmer months. Planting and mulching of turf areas had also been undertaken to decrease the amount of turf and reduce the watering requirements at certain open spaces.

The CoC collaborated with University of WA research looking at water allocations on turf. It was calculated that turf could be sustained at five thousand kilolitres per hectare per year. The CoC had a policy of not watering reserves in winter and juggled water allocations, so water saved on some reserves was transferred to more heavily utilised ovals which would get more water (ten thousand to twelve thousand kilolitres) over the hotter, drier months. Watering passive open spaces was being sacrificed for active playing surfaces. RM10 stated;

> *"There is a water management plan where we focus on the playing surfaces to make sure they are still well maintained."*

The CoC was looking at reducing turf and increasing the mulching and native landscaping in certain parks. However, it was recognised that a balance had to be found between landscaping, mulch, and turf to meet the operational objectives of POS and satisfy community requirements. Complaints had been made by community members that mulch surfaces were not suitable for park surfaces where ball sports were played. There was a view expressed that the community was not aware of the benefits of reductions in turf within parks.

The CoSP was managing water supply challenges even though it had vast areas of reticulated turf and required huge amounts of water. There were also problems with the inflow of fertilisers and pollutants into the Swan River and the City was attempting to mitigate this. It was asserted that the CoSP was always having to balance the cost and impact of open space maintenance and management against community expectations that they always have green open spaces available for recreation. UP13 said;

> *"We're required to maintain huge areas of reticulated turf - now you can't do that without huge amounts of water and that water has to come from somewhere and it runs off into places like the Swan River ….. balancing the cost and the impact of that against the community expectations they have nice green areas."*

It was stated that there would probably have to be a reduced turf, increased areas of mulch and more trees in open spaces. Councils would see increased pressure applied to find cost effective means to maintain open spaces. Residents liked their lush, green open spaces and would have to be convinced about the benefits of change. One officer in South Perth questioned whether residents were willing to pay higher rates to pay for the maintenance and watering of turf. UP14 said;

> *"Can we afford to continue to maintain these huge areas of turf - are our residents willing to pay the rates that are required ….. there will be increasing pressure on people who are responsible for maintaining open space to find cost effective ways of doing it."*

One respondent (LO17) believed that people were starting to realise that many of our parks would not continue to be green and lush "European parks" because of the effects of climate change. There was a view expressed that there was a need to develop an Australian style with park design that recognised our climate. LO17 stated;

> *"We are not going to end up with parks that look like the parks of Europe….. - we need to develop an Australian style at least - some kind of Australian aesthetic….. a local understanding of our climate."*

9.4 Drainage

LN allowed up to two per cent of open space to be used for drainage so pressure on available open space comes not just from sporting clubs and residents, but also stormwater drainage. It was felt that higher dwelling densities and the requirement for drainage was encroaching on useable areas within open space. There were some developments that had allowed high levels of site coverage and insufficient areas for soak wells, so drainage from dwellings was being pushed into street drainage and open spaces had to absorb more stormwater.

Concern about drainage sumps being incorporated into open space was widespread. It was suggested that some drainage areas had become problematic because they were inundated

with water for significant periods limiting the opportunity for use of that land. Any pooled, stagnant water became a haven for mosquitoes (that could spread diseases like Ross River Virus), and the areas became a maintenance problem and fire hazard. UP2 (from Mandurah) said;

> *"The allocation of drainage within open space is an interesting thing as well - you just sort of wonder whether that is also eroding the open space element - the useable open space."*

In some cases, the CoC had to retrofit parks because the existing landscaping restricted the type of activities that could be carried out in certain spaces for considerable periods of time. It was felt by EM9 that the local governments of Melville and Stirling had created better open spaces with larger grassed areas that had little or no intrusion from drainage.

The CoC was reconsidering having drainage separate from the park using subsoil drainage systems, rather than swales that ran through parks. It was argued that the requirements of drainage were incompatible with organised sporting activities at POS. Fenced drainage sumps could be made into alternative spaces suitable for walking or running that would improve the amenity of an area. There was a feeling that the WAPC and Department of Planning needed to review the *LN* policy of combining recreation spaces with drainage.

9.5 Collaboration within Council

In Mandurah decision-making related to the provision of active open space appeared to be led by the Recreation Services team with significant consultation from a range of departments within Council. It was argued that it was easier to plan and fund open space if departments spoke with a common voice, although it was recognised that various teams had different priorities and agendas.

An urban planner (UP2) said;

> *"Most people are quite accepting of the challenges that we have as a City - obviously we know we need active space - we know we need to have areas just for conservation and for passive so I haven't come across any sort of big angst when it came to spaces like that - we're pretty good at collaboratively coming out having an outcome - certainly each team has got their own agenda."*

A recreational planner (RP3) stated;

"We're trying to now see what used to be recreation services planning projects as City Projects - so we've established that across the board now with all those managers - yes we might be leading it from a Recreation perspective and experience but it is a city project."

There was competition from different departments to manage certain spaces for department specific purposes. While the community wanted more sporting fields, recreation services produced a facilities plan, community services wanted more sites for community halls, environment wanted bushland retained to achieve biodiversity targets and planning wanted to make sure that enough sporting space could be provided. These competing land uses had to be settled between different groups through negotiation.

EM6, an environment coordinator said;

"You know it's probably not an appropriate thing to say but it's the loudest voice gets what they want - so you're around a table and bang the table and say we need to save this bushland because we've got very good reasons why - we would say this is a conservation category wetland - it's a wetland buffer - it's a Ramsar…. - but you need to consider Recreation Services they have very good reasons as well for people's health and lifestyle - you need playing fields - you need bike paths - though our priority is decided by sometimes the strongest voice at the negotiation table."

There was a recognition of the existence of organisational silos within the CoM from EM6;

"In this organisation where everyone tends to work in silos and communication isn't as fluid as it should be - that lends itself to a situation where it's like a competition - we're going to get as much bush as we can or we're going to get as much playing space as we can - so you're not trying to sit around a table trying to find that balance - you're trying to grab everything you can - perhaps the reason for that is 10 per cent is just not enough."

The landscape services manager (LM5) believed that;

"In terms of what you do with that open space there is collaboration but it comes down to whose priority is more important because if you look at conflicting land uses that's quite an issue."

At times, there appeared to be some concern from officers engaged in work that was geared towards protecting the environment that greater efforts needed to be made by non-environmental sections to find solutions that reduced the negative effects on the environment. There was an underlying feeling from people in the environmental and landscape sections that there was too much of a tendency to disregard the environment when making decisions. LM5 was very strident in his views regarding this disregard for the environment;

> *"You have a land use master plan that went through the whole process community consultation in that they said no sports ground on Caddadup Reserve - regionally significant vegetation - when the guys in rec services want a sports ground they see it as space that they can involve a couple of ovals ….. there is quite a strong push a few years down the track for a sport ground gaining support."*

It was asserted that the best decision for the environment and the wider community was often not taken despite recommendations by Council officers. Often the decisions made were driven by narrow sectional interests or for financial reasons, but eventually decisions relating to the environment would be forced upon Councils. Many officers believed that Councils were inclined to be reactive rather than pro-active and despite having longer term strategies, often overlooked these to placate residents and interest groups that made themselves heard within Council.

Budgeting could determine the success or failure of alternative approaches to providing and maintaining open space.

There was a view that commitment from decision-makers, including the State government, regarding alternative approaches to providing and maintaining open space was critical, and without "buy-in" from these stakeholders any policy was doomed to fail.

Within the CoC it was believed that there was significant collaboration between the different departments when looking at open space. A decade ago, there had been little collaboration between departments, but increasingly decisions had become multidisciplinary and processes had improved after the introduction of an open space strategy.

The open space strategy had enabled many stakeholders to better understand the open space infrastructure that was available or required. Larger developers were supposedly

happy with this arrangement and it had given the Council greater authority when negotiating with smaller developers who were less inclined to spend money on open space and more likely to challenge requirements in the State Administrative Tribunal.

EM12 noted that the environment department within the CoC was located within the engineering department, although it had to implement open space policies created and controlled by the planning department. EM12 believed that the environment section's input over policy was weakened by this arrangement;

> "*My division or department is housed within the engineering division but planning generally have control of a lot of those policies - we can provide input into them but can't drive the way those policies are finalised."*

RM10 believed that the role of recreation planning had increased in recent years which had resulted in improved outcomes;

> *"In Cockburn in previous years the recreation team didn't have a lot of involvement with the planning of open space - as we built our profile internally within this organisation ….. we have been able to influence some of that planning."*

A collaborative approach was adopted when making decisions regarding open space within the CoSP. There was still a tendency to work in silos, but at officer level it was considered easier for collaboration given that South Perth was a small local government, and despite officers being located at two different worksites.

It was felt that greater collaboration occurred after the open space strategy was adopted and open space was now managed in a more professional manner. There was recognition that town planners were not the experts on park management and needed advice from other departments to produce better open spaces. It was recognised that departmental silos could be broken down and collaboration improved if the main actors within local government worked to overcome the problem. Frustration related to an inability to complete projects led different groups to work together to achieve success with Council projects. An urban planner UP14 stated;

> *"Local governments have a reputation for working in silos in their departments - now with South Perth it's a good example because the infrastructure team who do park maintenance and landscape architecture and the environmental section are in*

a completely different building kilometres away from the main office of the City of South Perth where planners and community development and rangers are located - so just that physical barrier made it more challenging to be collaborative with other departments."

There was considerable collaboration between the CoSP, the City of Melville and the DoP when working on plans for the Canning Bridge area to mitigate the effects of higher densities that were proposed. This was a large redevelopment area that was going to take many years to be completed and would have a significant impact on the amount of public and private open space in the area.

9.6 Funding Open Space

The financial viability of open space and the cost of infrastructure and maintenance programs attached to them was emphasised by many interview participants. There was a general view that larger, multipurpose open spaces were more appropriate than smaller, single function open spaces.

The CoM was highly dependent on external sources of funding for community facilities. At the time of the interviews the City was expanding the Mandurah Aquatic and Recreation Centre, constructing a new bridge crossing the Peel-Harvey Estuary, and building a new sea wall on the eastern foreshore of the city centre. Organisations like Lotteries West, government departments like the DSR and the Royalties for Regions program provided significant sums of money to fund large infrastructure projects. According to UP1;

"*The key is to gain the funding and be smarter about the way the money is spent and ensure that any facilities are multipurpose and provide for a wide range of interests in the community."*

Interviewees felt that local government was forced to do too much, and lack of resourcing was seen as an issue.

LM5 said;

"The amount of open space that has been gifted to the city through the development process has exceeded our ability to maintain those areas to the standard we'd like to see - so we are expanding our parks operations team commensurate with the expansion of open space but it's still not enough."

LM5 believed that the amount of open space that had been handed over to Mandurah as part of the development process had been difficult. He argued that the City needed more staff and more money to manage additional open space. It was felt that the elected members of Council and the community did not fully understand the cost of maintenance of open space, particularly at the level expected by the public. This problem was exacerbated with the City having to manage older parks with few facilities.

It was stated by UP1 that *LN* had favoured smaller open spaces rather than larger open spaces. Large numbers of smaller parks within suburbs were a significant financial and maintenance liability for Councils. Smaller parks were difficult to reconfigure later for other functions and could be constrained by drainage. UP1 stated;

> *"When they've got smaller spaces and more of them then there is more of a maintenance burden on the City and that's in terms of grass spaces and bushland spaces - as the spaces get smaller they're actually harder to manage."*

In some cases, the level of facilities demanded by certain sporting bodies was beyond what was financially acceptable to the City. Sporting groups were continually pressuring local government to provide facilities well beyond what was necessary for the sport to operate. RP3 stated;

> *"Expectations may be filtering down from the requirements from the state sporting associations…. this is the minimum structure requirements you need - this is the quality they must be - as a minor example they all need umpire changing rooms - first aid room - four changing rooms …. it's very expensive."*

A view was expressed that more money was required to ensure that new open space was up to standard, but it was also proposed that the standards that some people and organisations expect had to be reduced to ensure that maintenance costs were contained.

LM5 believed that it had ultimately come to "bite" Council when the developer handed over open space and the local government became responsible for maintenance.

A similar view regarding the dichotomy between small and large open spaces was expressed at the CoC. The traditional approach had seen work teams set up with a variety of machinery and equipment that were suited to larger open spaces. If smaller parks were created, it would require different equipment and expertise. There was concern that

smaller parks increased the costs of maintenance for little benefit. It was stated that it had to be accepted that not everyone would have a park at the end of their street, but there would be larger parks within a relatively short walking distance of most homes that were financially sustainable for the local government. EM12 stated;

> *"It's a large cost for a Council to absorb and accept these small pocket parks - you don't want to be sending a crew of three or crew of four with two mowers to a park that will only take one mower to get around in half an hour."*

It was stated that natural spaces like bushland still required significant funding to pay for maintenance and could not be used to reduce expenditure on open spaces. Natural spaces in urban areas were increasingly problematic. The edge effect was a major issue; weed invasion and dumping of waste were affecting these open spaces.

EM12 said;

> *"It costs just as much to keep the natural area in good condition or to begin to enhance it as it does to maintain one of those nice grassy oval spaces."*

Maintenance of reserves shared between the CoC and the DoE had become problematic. The CoC liked to maintain recreation reserves under one contract, rather than having two separate contracts (one for school reserves and one for Council reserves). According to RM10 it was better for the City to maintain the reserve and the DoE to pay for this maintenance, although the DoE took the view that if it made the school reserve public then they should only pay for half the cost of maintenance of the land and the remainder should be paid by Council. The view was expressed that the CoC's maintenance quality was higher than contractors engaged by the DoE.

Research was being carried out within the CoC to identify areas where there was an overprovision of open space, so surplus land could be sold. The proceeds of the sale could be used to upgrade remaining POS.

Ultimately budgetary constraints limit actions. LO17 from CoSP stated;

> "*The priority I guess always sits with what the budget is - local government is always working to a budget - whether it's a maintenance budget an operational budget or whether it is capital works."*

According to UP15 in South Perth the purchase of land for additional open space was not necessary, because open space was in abundance and further purchases would be unviable due to its prohibitive cost. However, it was argued that open space could be consolidated if surplus land was sold, and the money raised spent on enhancing remaining open spaces.

LO17, a landscape architect, felt that the expectations of the public had changed over time and people expected far more from POS, but were oblivious to the full cost of providing open space;

> *"I think many years ago public open space was exactly that - it was purely open space ….. over time you get more expectations that there'll be high quality finishes and services and facilities whether its seating, playgrounds, shade and cover ….. it's a long shopping list."*

9.7 Legal Liability

The issue of legal liability and insurance emerged as a prominent issue. There was concern that the potential for litigation was driving some decisions and decision-makers. Trees and the potential for branches to break off and injure park users was considered a problem, as well as ensuring that park equipment was safe. The creation of community groups that looked after certain reserves was a potential legal nightmare, although within the CoSP this appeared to have been overcome. There was concern that members of community groups can use the group to further their own interests, rather than working in the best interests of the community and expose the Council to increased liability.

One interviewee from CoC, EM9 was concerned that stories in the media increasingly portrayed Councils as risk averse, but it was recognised that local governments were exposed to litigation if unauthorised activities occurred on Council reserves or infrastructure was installed that did not meet accepted standards. EM9 said;

> *"A lot of this infrastructure needs to be installed by professionals with the appropriate insurances to mitigate our liability and reduce our risk."*

The CoSP's response to the community garden at McDougall Park seemed to have overcome the challenges relating to liability and insurance by ensuring that there was a committee that could make legal decisions on behalf of the group. UP14 stated;

"Liability certainly comes into it because insurance was certainly something that had to be considered and written into the memorandum of understanding with the McDougall Farm Community Garden."

RM16, a recreation coordinator at South Perth, felt that insurance and liability was an issue that could be resolved;

"There's all the issues around insurance - the liabilities - who pays for what - who maintains what - all those sorts of things and for me they're all resolvable."

9.8 Trees

There was concern that in areas with higher densities, dwellings dominated the lots and there were few trees in backyards or road verges. Verges were being lost to driveway crossovers. On street parking limited the ability of trees to be planted. Waste collection access became problematic. It was considered critical to encourage tree planting on the verges to ensure that urban forests could be established. All the Councils had policies related to street trees and verge treatments that discouraged the paving and concreting of verges, but many residents were ignorant of the policies or chose to ignore them.

In Mandurah LM5 said;

"We could also improve streetscapes just for the general amenity of the area - paths and shady trees - streets could be improved."

EM13 from the CoC, was concerned that urban consolidation was seeing significant reductions in the number of trees in backyards and verges. Aerial photos were displayed showing the effects of urban consolidation. The lots were dominated by driveways and car parking with minimal side and rear setbacks and there was little surplus area for gardens or trees. He believed there was an accepted development orthodoxy to remove all vegetation from sites chosen for redevelopment. An example was cited of one hundred and sixty square metre lot developments where there was only room for a small home with car parking. EM13 said;

"You've got a quarter acre lot which has got a house and you've got the back yard with three or four trees in the backyard but then with our increased density that single residence can now be turned into up to six residences - if all the trees go the tree on the verge usually has to be knocked down to put in the additional driveways."

Some interviewees maintained that revegetation of turf areas within open space had been opposed where scenic views were threatened. For example, local government officers had proposed plans to replace large areas of turf with trees within Sir James Mitchell Park. However, this plan had been opposed by residents and certain Councillors who may have lost their scenic river and city views. Change like this was strongly opposed by certain community members as expressed by UP13;

> *"People who have a view of the river or water or city tend to be very attached to it - a lot of the time they have invested very heavily in obtaining that view."*

9.9 Local Government's View of State Government

There was a view that State government planning policies like *LN* and *DC2.3* were focussed on new residential and suburban development and failed to address the problems related to urban consolidation and higher densities. There was a feeling that the planning framework was not holistic enough, nor flexible enough to cater for urban consolidation.

UP2, from Mandurah said;

> *"We've looked to negotiate outcomes that the City is quite happy with and then when they go to the Commission the Commission doesn't necessarily support them - so they're not as flexible as they probably could be and they're probably working within their own frameworks and clearly their framework needs to adapt to infill situations."*

UP2 continued;

> *"Liveable Neighbourhoods serves standard greenfield residential development well but is probably not so good for infill development."*

Urban consolidation has not required the allocation of more open space despite the increased population. It is recognised that there are limited opportunities to acquire land for open space in established areas. Nonetheless, EM9 from the CoC argued that the percentage allocation of open space should increase to 15 per cent or 20 per cent in areas targeted for urban consolidation and the State government should buy the land;

> *"It should be State government buying land and saying this is now to be POS - why should the local authority be burdened with that."*

A view was held that the State government believed that local government rate revenue would increase because of higher densities so there would be more money to spend on improved recreation infrastructure, including POS.

It was believed that larger developers were better and easier to deal with than small scale developers because they understood the POS requirements and tended to go beyond minimum requirements. At the same time developers working on one site at a time were able to avoid providing POS or contributing to a development fund because of the clause in *DC2.3* relating to developments of five lots or less normally not being required to contribute to POS or a development contribution fund, unless included in a planning scheme or statutory policies. It was felt that if open space was underprovided then the developer must contribute to a development contribution scheme or provide cash in lieu for expenditure on public realm infrastructure.

There was support for the allocation of open space being broken down into specific proportions for conservation and recreation, but it was recognised that spaces need to be adaptable to change given the changing demographics in many areas due to processes like urban consolidation.

There was a view that local government was in a better position to make decisions relating to local communities and open space than the State government. State government departments like the DSR and the DoP were dealing with a range of communities across the whole state with vastly different requirements and resources.

According to CM4 state or local government open space policy did not consider large developers whose residential development interests spread across neighbouring local governments (such as the boundary between the City of Rockingham and the CoM). It was felt that improved outcomes could be achieved in terms of provision of POS if there was a mechanism that ensured that Councils talked to each other and developers about these common problems.

9.10 Management of Open Space Allocation

All three local governments have adopted a central roster of allocating sporting fields to different sports. The CoC issued season licenses that guaranteed certain sports the use of specific open spaces over the season. Monopoly control of open spaces was not considered appropriate and spaces had to be multiple use spaces, even if they were allocated to

specific clubs or sports for certain times. There was an expectation that the spaces would be used by passive users when they were not being used by sporting clubs.

RP3 from CoM stated;

> *"If facilities are built adjacent to sites that are suitable for active open space they'll be managed by the City - they'll come under our booking system so that we can make them available to the wider community."*

At the time of interviews the CoM was developing an active open space strategy, while both the CoC and the CoSP had implemented open space strategies. In 2010, a strategic plan was developed for the CoC which mapped out the sporting reserves across the city and the sports that can be played on those areas (City of Cockburn 2008). A similar plan for passive reserves was being developed. Like CoM there was an emphasis on active reserves. The CoC took an active interest in the success or failure of sporting clubs located within the City. Sporting clubs were monitored to identify what clubs were operating and where, which clubs were not viable and needed to be consolidated, what clubs needed to relocate, and which reserves became available as a result. The city felt that it would not be fair to have small clubs with few members operating from certain ovals, while there were larger junior clubs without facilities. It was felt that strategic plans removed the politics from the allocation and control of spaces.

It was asserted that the open space strategy that had been developed by the CoSP improved open space provision and gave city staff a better understanding of open space use, accessibility, and functionality. LO17 said;

> *"There wasn't really a strategy as such before taking stock of what the city had overall - what they had in public open space and what they do for us."*

9.11 Artificial Surfaces

Both the CoM and the CoC believed that artificial surfaces might be used in the future, but were taking a wait and see approach claiming that there were many matters to consider. There were concerns about the longevity and cost effectiveness of such surfaces, as well as problems with water penetration and the surface temperature of the synthetic material. It was acknowledged that it had been adopted in some jurisdictions, but there were concerns that the surface would have to be replaced within seven years. It was argued that even after paying for maintenance, natural turf might still be more cost effective. It was also

stated that it would take time for the community to accept artificial playing surfaces as a substitute for natural turf, although it was well suited to certain sports.

LM5 from CoM stated;

> *"The perception is that there is a lifecycle for the synthetic turf and yes you can put all your traffic on it – a recent perception is that it is not actually lasting as long as the suppliers say it will...they can also be quite hot."*

While EM9 from CoC said;

> *"It was between five and seven years for a payback so that's not bad but once again you're not going to invest in that unless the community have seen it and have accepted that as a viable alternative to grass."*

9.12 Development Contributions

The CoM had not implemented a development contribution scheme related to open space. However, some respondents from Mandurah believed that new developments in inner Mandurah should have a requirement for some type of open space contribution. It was maintained that there was no intention to introduce development contributions for urban consolidation areas in Mandurah.

Small scale investors had undertaken much of the infill development in central Mandurah and it was believed they would not support policies that increased their costs.

It was maintained that the focus was on providing active open space in newly opened low-density suburbs, rather than in areas of urban consolidation. This was part of the strategic plan for the city to ensure that all communities had sufficient active recreation space near the user population. Once a strategy was in place it was easier to request funding from government and developers and this reduced the possibility of decisions being made based on politics. CM4 said;

> *"Where local governments need to go to developers and say this is the bigger picture and I think where that happens there's more chance of better community outcomes - some of the bigger developers we deal with down here are really active in that space - they do see the big picture."*

It was stated by CM4 that the State government ignored the social side of planning but was intensely interested in planning economic infrastructure. Local government would be left to plan and provide social infrastructure like open space and the attached facilities, while the State government would exert significant influence over large scale economic infrastructure that was required. CM4 believed that it was critical that planning was undertaken, and finance provided to accommodate the growing population. CM4 said;

> *"Not just recreation but all those things that make a community."*

In the CoSP developer contributions were not sought for open space apart from the South Perth Station Precinct and the area governed by the *CBACP*. It was argued that development contributions were more appropriate for large scale higher density developments that had greater impacts on the public realm.

The CoC required a contribution for open space from developers where there were more than five dwellings being created on a site. It was recognised that developers preferred features that appealed to potential buyers and helped to sell land. There were examples where Council had to replace turf and features that were installed by developers. At the same time residents were quick to contact Council whenever lawn was removed or infrastructure was changed at POS. Council had to be aware that inappropriate features within open space (from a Council's point of view) created two problems; the additional costs of retrofitting a park and managing the public response to changes being made within open space. It was critical that open space was manageable and functional, rather than just aesthetically pleasing. It was up to Council to ensure that appropriate policy controlled POS creation by developers.

9.13 School Sites

In all three local governments school sites were a means to provide additional recreational space. The CoM had seven shared-use agreements in place with the DoE to share the use and maintenance responsibilities of ovals located within or adjacent to school grounds. This was particularly useful where local POS could not provide the playing space required for sports. A partnership had been created between the CoM, DoE, and the land development company Peet to develop a master plan for shared ovals adjacent to a high school in the suburb of Lakelands. The aim was to share the open space and facilities to prevent duplication of infrastructure and ensure that costs were shared between parties and higher quality facilities could be provided.

A similar response was received from the CoC which was pursuing opportunities with the DoE for joint use arrangements. RM10 believed that local school ovals were a means to address the under provision of open space in areas being redeveloped, but it recognised that school fences were a barrier to utilisation of these spaces.

There was concern in *LN* that the areas allocated to primary schools had fallen from four hectares to three hectares with less space being set aside for school ovals. In RM10's words the extra hectare could have been used for recreation space by the surrounding community. It had also been found that when existing schools expanded new buildings were constructed on ovals and recreation space was sacrificed.

In locations where, primary schools had been closed and redeveloped for higher density housing (like Coolbellup in the CoC) the standard 10 per cent open space allocation had been included.

The CoSP welcomed working with both government and private schools to expand the provision of open spaces. There was a view that private schools had resisted calls to open their facilities to the public while the DoE was receptive to the idea.

RM16 said;

> "*We have a number of private schools here and they have some sensational spaces but they won't share ….. we still have a lot of schools that use our spaces anyway and they are all crying for extra space ….. but there's ability to share."*

RM16 believed that if conversations were held with private schools, then new open space opportunities can be created. Concerns relating to liability, control of the space and maintenance could be overcome through legal agreements being drawn up between the schools and local government. RM16 said;

> *"For example Aquinas College ….. they want it at a certain level and it's a standard probably a lot higher than a grass roots level or a local government would maintain it at so they don't want others come and use it and create problems or make whatever it is increase their costs ….. it is conversation that needs to be had - but those conversations are just not happening - I don't think it's about control - I think it's about liability and cost."*

The erection of fences around ovals controlled by schools was a problem noted by several interviewees. The fences restricted access and when locked prevented utilisation of school ovals. They also detracted from the aesthetics of the local streetscapes.

9.14 Alternative Open Spaces

In all three local governments there were a range of opinions regarding alternative types of open spaces that could be used to expand open space utilisation and opportunities. Although there was general support for the purchase of land for new open spaces, many respondents felt that this was not a wise use of local government funds. The enhancement of existing spaces was a better option.

There was a fear of doing things differently, as well as concerns around safety, maintenance, and litigation. It was generally accepted that it was possible to get more out of existing spaces. By allowing open spaces to evolve and having a cycle of activities throughout the year open space activation would increase. Commercial activities in open spaces had the potential to activate underutilised open spaces, but there was concern that excessive commercial development can overwhelm POS. Some respondents believed that there was a lack of recognition that some open spaces offered little to the local community and had few attractions that would encourage increased use of the space.

Within the CoM some officers believed that it was feasible to purchase land to expand open space where it was underprovided, like the existing policy of purchasing land for environmental purposes. However, some believed that this program would not be expanded to include open space for recreation.

It was recognised that open spaces were limited in inner Mandurah. Organised sport could not be played on many spaces due to their small size or control by sporting groups. It was claimed that people found the open spaces that suited their needs and travelled (often by car) to those spaces.

The possibility of new types of open space, like parklets (very small parks) or pop-up parks located in road reserves, received some support subject to conditions including no interference with traffic flows, utility services access and sufficient parking. CoM respondents believed that the road reserve could be used for the expansion of open space where there was an overprovision of roads and infill was being undertaken, although the road engineers would have to be convinced that narrowing roads was beneficial. It was thought that surplus areas within existing sports grounds could be identified and utilised.

It was hoped that future facilities for sports would be built with shared use facilities, managed by external organisations. Shared use facilities would allow diverse groups to share the high cost of running facilities. Although some sporting groups wanted their own exclusive facilities, they were often not in a financial position to operate a single facility and it often resulted in facilities being underutilised.

It was acknowledged that co-location did not solve all problems, because some uses and clubs were incompatible. Certain clubs wanted to serve alcohol to members while sharing a facility with a children's group. In some cases, there was such acrimony between clubs sharing facilities that distinct areas had to be allocated to prevent conflict between groups.

Within the CoC the acquisition of land might be considered if open space was underprovided. However, several concerns had to be addressed with regards to new open space that was purchased including accessibility, area and potential maintenance costs associated with new POS. It was recognised that some Councils like the City of Melville had purchased land for open space in suburbs where it was underprovided. Pocket parks were a good idea in terms of accessibility, but larger POS was preferred because of the benefits of economies of scale. The CoC work teams were provided with equipment suited to larger reserves and it was not considered economically viable to spend time and resources on smaller parks.

People still expected high levels of embellishment to smaller parks and they still had to be maintained. If residents wanted smaller parks, and this was accepted by Council, then local government would have to be prepared to fund the smaller parks. EM12 stated;

> *"The problem is with these pocket parks people still want the same embellishment level as a large park - so from an asset value perspective you've got this high asset on a relatively small area which you've still got to manage and maintain compared to somewhere with a larger asset - but then again if that is what the community wants really want and they drive it hard and Council's accepting of that Council has to be prepared to pay the ongoing management."*

He added;

> *"Narrowing of suburban roads - you're not going to get the engineers of the world to believe that you can do that because you've got a road reservation - you've got*

service alignments on each side and potentially you want to ensure that in case of future movements or traffic flows you can increase it."

EM9 was concerned that innovative responses to open space provision like the Highline Park in New York would be difficult in Perth because engineers would not consider proposals where roads were closed, or utility connections were interfered with. It was stated that a common utility trench for energy, water and telecommunications would improve streetscapes markedly, because it would allow the verge to be utilised differently and reduce concerns linked to utility location and access.

The CoSP might consider creating parklets in the road reserve, but it depended on many factors including whether the road was the responsibility of the local or State government, safety, and whether a narrower road could cope with traffic levels and parking. It was felt that priorities were weighted in favour of roads as expressed by LO17;

"Car is king in Perth."

Greater utilisation of street verges could add to existing open spaces. However, rather than having local government create new parklets within verges it was better to encourage residents to better utilise the verges. It was stated by a few South Perth officers that incentivising residents to plant and maintain the verge had significant benefits. Tree planting along streets to create urban forests was a valuable exercise and local governments should follow the lead of Melbourne and Sydney in implementing an urban forest strategy. The conversion of drainage sumps into parks and food gardens was also seen as a viable means to increase open space opportunities without having to purchase more land specifically for open space.

Both the CoC and the CoSP felt that the areas underneath high voltage powerlines could be better utilised as alternative open spaces even if it was to locate a footpath or seating. It was felt that Western Power imposed unnecessary constraints through the creation of easements that limited the ability to use these spaces.

Community gardens were considered a valuable contribution to existing open space areas, although it seemed to have far greater support within the CoSP.

In Mandurah community gardens had been established within the suburb of Coodanup (lower density suburb) and also in a new POS near the Mandurah Junction development

(higher density suburb), but there appeared to be minimal involvement between the local government and those involved in the community gardens in the latter case.

In the CoC it was clearly stated that if a neighbourhood wanted a community garden, then it had to be managed and maintained by the residents. It was stated that community gardens would probably work well in higher density environments but were not necessary in lower density environments where there was sufficient private open space.

In the CoSP a community farm was established within an existing POS in Como. The City was approached to establish the community garden at McDougall Park, and it is now largely self-sustaining because of the group's efforts and the support of the local government. The McDougall Community Farm is an incorporated not for profit group that has a memorandum of understanding with the City that ensures that the garden does not become a legal, financial or maintenance liability for the local government. At the same time volunteers from the community are encouraged to plant and harvest food produce. Non-traditional recreational activities are carried out, the park is activated, and social capital is built.

Smaller open spaces were considered viable for Cockburn Central's town centre. These parks were considered convenient and accessible open space close to many apartments. In areas where there were high densities it was necessary to look at the quality of open space and the experience that could be generated from the available open space. In Cockburn Central the original open space area had not worked well so the CoC and Landcorp reconfigured the area to improve the space. UP8 asserted that local government needed to have the courage to revisit open space once residents moved into an area and accept that changes might be needed if the spaces were not as functional or popular as originally envisaged.

The open space area adjacent to the Mandurah Junction development had demonstrated what could be done where an existing open space with few facilities had been amalgamated into an additional area of open space as part of a new land development. A high standard of development had been undertaken by the developer, but the issue would be allocating finance to fund the maintenance of the park going into the future. This issue was repeated on several occasions by many interviewees.

LM5 said;

"Maybe we have to reduce the standard in park development."

and

"The amount of money that was thrown about in new developments was little bit obscene - I think it was such an enhanced landscape that it has come back to bite us - we have learnt from that."

9.15 Natural Areas

Mandurah strongly supported protection of biodiversity in the region and conservation and environmental sustainability aims were incorporated into Council operations. Departments (including planning and landscape services) collaborated to get better outcomes and the biodiversity strategy had identified ecosystems that required protection. As part of this, a Bush Buyback Strategy had been implemented to purchase land which could be retained for environmental purposes. It was suggested that such a policy could be extended to include areas where open space was underprovided. However, it was recognised that the benefits can be limited and only suited flora and fauna that were adaptable to urban environments. Open spaces located in urban areas for environmental purposes could struggle to achieve the desired level of ecological diversity and it would be extremely expensive.

EM6 stated;

"We have got our bushland buyback scheme so that's in terms of conservation - I think Council in days gone past has recognised that we need to have more area than we're currently getting from the 10 per cent provision - so we're actually going to buy land that would otherwise be developed."

It was stated by one interviewee (EO7) that in some cases the conservation reserves might be best left without humans, but it was recognised that as backyards got smaller open space became more important for the residents of those homes.

EO7 saw a role for less lawn in open spaces and more dense vegetation to help cool the spaces, as well as address "nature deficit disorder" in children. It was recognised that these spaces would not be the same as more traditional bush reserves, but they would still provide a habitat for wildlife in an urban environment. It was stated that people should be able to enjoy natural areas and the different needs between society and the environment could be balanced.

A similar stance was adopted at the CoC. Some people argued that open space should have less lawn and more mulched surfaces and trees. There was a recognition that nature play was important, and natural landscapes like King's Park's Naturescape, rather than traditional playgrounds, were an acceptable alternative.

One interviewee (EM12) from the CoC said his position towards natural open spaces had changed over time. He now believed that it was better to retain larger areas of bushland and allow smaller areas to become more traditional parks with remnant trees. The smaller areas were not ecologically viable over the long-term and required significant amounts of resources to maintain them in good condition. There was a view expressed that natural open space needed to be considered on a regional basis and linked together to allow birds and animals to migrate between areas.

EM12 believed that if open space was underprovided the only option was to purchase land. As part of the CoC's bushland conservation policy there was the option of the City purchasing land for such purposes. Given the price of land it was not seen as viable.

The obstacles that stood in the way of providing and maintaining alternative approaches to open space included changing the mind-set of people by helping them understand the value of natural areas, as much as active open spaces. Not only could natural areas provide space for recreation, but also habitat for local native species.

EM12 stated;

> *"We need to change the mind-set and people need to realise that natural areas are just as important if not more important than those active spaces because not only do they provide somewhere for you to go and recreate but they also provide habitat for the local native species."*

There was concern that the many traditional open spaces were underutilised and used significant resources. There was a feeling that the open spaces often needlessly modified the natural environment. They could be designed with a remnant native vegetation to provide a link to other bushland, while the remaining open space could be utilised for active recreation.

EM12 continued;

> *"I would like to see our parks department start to say look let's keep the remnant vegetation around the sides of - we can still keep this green spot we can still kick the footy around here but in the meantime we are still providing all this habitat - we're still providing a place where people can see trees and birds and animals ….. they can be active open spaces as well as spaces where other creatures can survive."*

Some verges could be widened and have trees planted, but waste collection trucks still needed to be able to travel along streets.

EM12 was not a fan of the Cockburn Central development and felt that it might end up as a slum in the future. There was no vegetation or trees in the central open space area and with the development of the Dockers training oval the neighbouring wetland would become a drainage sump. EM12 said;

> *"I'm not a Cockburn Central aficionado - I'm not sure it's going to end up being the most fantastic place in the world - I think we might end up with suburban slums in the future."*

It was felt that people increasingly have a negative attitude towards trees particularly those that believed that trees continually dropped their leaves and created a mess in their yard.

EM12 again;

> *"That's often the complaint we get from residents - there are leaves on our verge - can we remove the tree."*

EM12 believed that urban forests were a means to create ecological linkages, retain biodiversity and change people's preference for European style gardens.

9.16 Community Involvement

In Mandurah residents could be involved in a voluntary capacity in organisations linked to protecting and managing reserves, although their responsibilities were somewhat limited. There was a view that such groups were sometimes promoted by those looking to personally gain from the creation of such groups. There was a fear that if local open space groups were given responsibility for maintenance activities like pruning vegetation, they would not meet Council standards, or trim trees to improve estuary or ocean views.

Both Bushcare and Coastcare groups were successful projects in recruiting community members to help maintain certain locations. Regular planting days were organised over the year by CoM to mobilise volunteers to carry out revegetation and clean-ups in bush and coastal reserves, although they were not specifically working within local or neighbourhood open spaces.

Landcorp had established a community garden within a newly refurbished open space in the Mandurah Junction development, a higher density development near the Mandurah Train Station. The CoM was not involved in the establishment of the garden, but was concerned that it would have to manage the gardens once Landcorp ended its involvement with the development.

It was stated that Council needed the involvement of the community to get certain projects started. It was felt that areas are often better cared for if there was an element of community involvement. Some interviewees felt that it was essential that opportunities were provided in the community to channel the enthusiasm of those willing to be involved. At the same time, it was believed that if these same community groups "took over" responsibility for open space it could be a recipe for disaster. One interviewee asserted that groups tended to underestimate the cost of maintenance, provision, and development of projects within Council managed reserves. There had been examples where the City had to step in to finish certain projects, because community groups had underestimated the resources required.

UP1 said;

> *"Local governments basically need a balance - if you try and do everything yourself nothing will happen - if you try and let community groups take over then that's a recipe for disaster - so it needs to be well managed and I think the examples of the Coastcare Bushcare groups is a good example ….. I think you've got to give the community group opportunities to be involved otherwise places don't get loved and cared for."*

It was maintained by some officers that "noisy" residents aware of how Council worked ensured that their local reserves were looked after in a manner that suited them. There were some attempts by locals to act as local "park wardens," but LM5 believed that this was a veiled attempt at improving the aesthetics of the open space or an attempt to ensure that estuary or ocean views could be maintained by pruning vegetation that obstructed

views. There had been examples of local people carrying out informal planting in local open space. Sometime later the trees were damaged by Council workers completing routine maintenance and this had destroyed the goodwill that existed between residents and Council. It was seen as critical that open space maintenance standards set by the city were upheld and any attempt to “privatise” open space was held at bay.

Committees with community members were used to provide some community views to the CoM. However, there was a feeling that the groups were not overly representative of the community. They tended to be comprised of elderly members of the City’s population, typically retired and with time to spend attending meetings. It was felt that the groups would benefit from greater diversity in membership, including younger representatives and more females, although it was recognised that time and financial pressures were reasons why people were less willing to become involved in these groups. At times, the City struggled to fill the spaces on the committee and people sometimes pushed their own agendas. There was concern that committee members did not fully understand the constraints of the planning system and needed greater expertise in the environmental area. CM4 believed that expectations in Mandurah were different to smaller rural towns; people were more willing to get involved in fund raising for local sporting groups and help achieve club aims in improving local sporting reserves in the small towns, but Mandurah residents felt it was government’s responsibility.

UP1 believed that volunteer groups could be utilised to oversee local parks and reserves, but they had to be supported by Council and their roles had to be clearly outlined. There was a recognition that when a developer handed over new open space there was no guarantee that Council would be allocated extra resources to manage those spaces. This pressure meant that the residents could become a valuable tool to be utilised by Council.

A comment was made that highlighted possible lack of interest from residents in inner Mandurah to increase open space opportunities. It was suggested that this might be due to the large number of rental properties in the area with property investors not wanting to spend any more money than necessary and widely held view that open space was a government responsibility.

The CoC had actively fostered community groups (some of which were formed more than fifty years ago) in all suburbs across the City. The community groups developed ideas and Council worked with them to bring these ideas to fruition. The City helped them apply for

grants to fund some of their projects. There had been dialogue between the City and these groups about service levels and infrastructure in parks. There were also "Friends of" and Bushcare and Coastcare groups that were encouraged to take care of local parks and coastal areas, respectively. They were involved in collecting rubbish and cleaning up local lakes located within reserves, as well as planting vegetation and spraying for weeds. School groups and indigenous groups had also participated in planting vegetation on sites targeted for rehabilitation. There was also a children's reference group, an Aboriginal reference group and a disability inclusion group that had the potential to provide input into better open spaces.

The various groups helped to build ownership of parks and could act as "the eyes and ears for local open spaces" by reporting vandalism and broken infrastructure. It was stated that usually a limited number of people were involved in these community groups and once these people left, the group often lost momentum and became inactive. In some cases, work of a community group had resulted in improvements being undertaken in some reserves. Interestingly, infrastructure was normally installed by contractors (not volunteers) to ensure that the City reduced its exposure to public liability. The City demanded that contractors had appropriate qualifications and could complete the projects they had been awarded. The City was happy to help volunteer groups by providing financial and technical support, but it had to be actively promoted by Council officers. Without that support, the group often failed. According to one officer the hardest part was getting people involved in volunteer groups.

Most residents' associations had regular meetings. Council representatives attended, to provide information and act as a liaison between Council and the community and keep Council informed about happenings in communities.

An urban planner (UP8) said;

> *"We definitely have a lot of "Friends of" groups - we try to encourage our network of community groups to be thinking about running activities in areas of open space and maybe having a theme about rejuvenation - a bit of a clean-up…..getting rid of litter generally - reporting damage - reporting vandalism - reporting issues in terms of broken infrastructure."*

It was stated by one interviewee (EM12) that

> *"The days of the local Rotary Club or Lions Club completing the project over a weekend are long gone."*

Community consultation was undertaken prior to revitalisation strategies being undertaken (and residential dwellings densities were set to increase) in parts of Coolbellup and Hamilton Hill and the community gave feedback as to what they believed were priorities requiring attention. There was significant willingness from residents to be involved because the development was in "their backyard." Feedback was received stating that streetscapes needed to be improved and better infrastructure was required in open space. It was recognised that people moved out of an area, so comments received from community consultation were only relevant at a certain point in time. As new residents arrived in a suburb, priorities might change. It was recognised that the expectations of all residents in the community could not be met all the time.

Open space was seen by some residents as a way of doing something valuable for the community. Most functions of local government were covered by departments with specific areas of expertise. The community had little control over many activities carried out by Council and many people were not interested in the operations of Council. Roads were managed by the engineering department, building permits were issued by the building department, rubbish was collected by waste management and rates were dealt with by the finance department. However, community members could influence what happened at a local park.

EM9 stated;

> *"They see that as the panacea of doing something for their community because they can't do anything with the road -they can't do anything on a building ….. I suppose rates and rubbish is an area they can't get involved in - but open space is the only bastion I suppose they can leap into."*

There was concern that many community groups and their members did not understand Council, and its processes, including the budgetary and funding processes. Funding of certain projects often became an issue, so the City had an officer help community groups apply for grants.

A recreation advisory group had been established in the past, but it no longer operated. It was felt that the group had made decisions that favoured certain sporting groups and

members had been overly influenced by their allegiance to the sporting group they represented. At the same time decisions were made that did not reflect broader community views and contravened decisions made by Council administration. As a result, the City moved away from such a model.

At Cockburn Central Landcorp initiated a community group with the City's help to ensure that there was a voice for open spaces in that area.

A community development officer CS11 stated;

> *"Some of the onus is put back onto the developer now for them to create some sort of community instead of just building buildings - so out at Cockburn Central there is a group called Creating Communities - they've been brought on board by Landcorp trying to help the local residents association…..and advocate for those spaces."*

CS11 believed that communication with residents was the key. Failure to communicate or poorly targeted communication increased the likelihood that people would have negative views of urban consolidation and changes to open space.

The view of the CoSP was different to Mandurah and Cockburn. There was a view expressed by UP14 that the local government was not receptive to allowing the community to get involved in the management of open space. In instances where the community had become involved it was because people had wanted to improve the relationship between residents and Council. Although Council decision-makers might be supportive of the idea there was sometimes a failure to provide sufficient resources to ensure that community groups were a success and support was tokenistic. A view was expressed that there was the potential for the community to be more involved in broader planning of open space through an advisory group within the local government.

Nonetheless, there were examples of successful community groups working on open space in South Perth. Some were less formal than others. In Karawara certain projects were identified that could include an element of participation by the community. Lemon trees and herbs were planted next to a childcare centre, which voluntarily agreed to water the plants. People walking past the garden were encouraged to pick the produce. Informal meetings were held to engage the community in the project.

More formal arrangements were made for the community garden at McDougall Park. A community group supported by the CoSP was created to manage a portion of Council controlled land within a large POS. There was a memorandum of understanding that was created to outline the responsibilities of the parties, including the requirement that it become an incorporated body, independent of Council. The group had been successful in getting grant funding and actively encouraged visitors to walk around the gardens.

It was said to have worked at South Perth because there were many older retirees who had ample time on their hands. It was revealed by another planner that there were examples in South Perth of community gardens that had failed.

UP14 highlighted that;

> *"Community groups are by nature fluid - there is continuous change due to demographics and for social, economic and historical reasons - local government cannot expect to hand over responsibility for a project and for the residents to be a rock-solid permanent solution to problems."*

It was also highlighted by UP14 that the identical model for a community group will not work in every location. The social and demographic differences within a community are going to lead to different levels of commitment from participants in a community group and will require ongoing collaboration between the group and the local government. Having a champion within Council or the group to promote the project was essential for success. UP14 said;

> *"As a generalisation I don't think local governments are very receptive to the idea - I guess it symbolises handing over control where they've for a long time held that responsibility …. I think the reason they have gone ahead with the community participation is because people within the organisation that includes Councillors and community members have genuine reasons that they want to improve that relationship."*

UP14 took the view that open space had huge potential to help residents and local government to improve the social and environmental sustainability of the community and could be used to educate people and expand their awareness of major environmental problems.

9.17 State Government Response

State government officers were given the opportunity to respond to the same questions that were asked of local government officers as part of the research.

There was a strong view that responsibility for open space planning and management rested with local government. State government wrote the policy while local government was responsible for the planning and maintenance of the spaces.

There has not been enough focus on POS in areas undergoing urban consolidation although local governments with issues seem to be more aware than state government. There are no plans to revise existing requirements for POS provision in areas where urban consolidation is occurring. There is a view that once subdivision has been approved by the State government issues around POS have to be decided by local government yet the planning regulations around POS are better suited to greenfields development and do not consider the paradigm shift that has occurred because of the increased emphasis on urban consolidation. DC2.3 and Liveable Neighborhoods was not well suited to suburbs where urban consolidation was being undertaken.

Water availability is considered one of the most critical issues and is only going to become worse as the effects of climate change including declining rainfall and higher temperatures are felt more acutely. Some Councils are exceeding their water allocation or do not have access to enough water to provide to existing POS. There is still a prevailing view from many POS users that POS should be green. A view was expressed that people must be educated that not all open spaces should be watered heavily and be green all year round.

This was exemplified by the comment from SG18;

> *"We're trying to shift people's perceptions from where we think about putting turf grass to saying you only really need it on sports sites you don't really need it anywhere else unless you are using for drainage and it doesn't need reticulation but I don't think we are going to get away from turf in recreation reserves."*

The arguments about how much open space should be allocated to sport and recreation versus conservation and whether smaller passive open spaces are better than larger recreational POS is still contentious and areas that are subject to flooding during periods of high rainfall is still a concern for interviewees. Questions such as whether it will be viable to play certain sports like cricket all day in summer as temperatures rise are increasingly being asked.

Wear and tear on turf surfaces is an emerging issue which is not easily solved. Turf needs a break from people to recover from heavy use. There appears to be opposition to artificial surfaces due to the cost and practicalities of such surfaces including heat, cost, and user friendliness of such surfaces. Nematodes in the soil under turf surfaces was also seen as a new problem that was difficult to address.

It was recognised that open spaces including sporting ovals should cater for a range of functions to satisfy many people with varying recreational interests. SG18 stated;

> *"Provide multiple functions so it's accessible to lots of different people for lots of different reasons - if you have an oval just for AFL you are only catering to AFL players but if you've got an oval which caters for lots of different sports ….. and you've got a playground next door and a picnic area and a nature reserve for people to walk around the one site using the same amount of space ….. you are catering for lots of people."*

There was a view that open space strategies should be prepared by local governments to enable better planning and management of POS. There was a view expressed by one planner that the political process interfered with better open space outcomes, although another planner believed that open space strategies helped to prevent open space demands being manipulated by local sporting groups that overstated their open space requirements and captured local government decision-making processes.

There was a recognition that small open spaces and parklets could serve a valuable purpose in areas where density was increasing. However, there was a belief that inflexible approaches from local government, particularly parks departments who were too worried about costs or the difficulty of maintaining such spaces. One planner stated that local governments had to become more "malleable" to achieve better open space outcomes while another stated that local government planners had become too reactive and not proactive enough. It was recognised that smaller open spaces are considerably more expensive and consume more time and resources as part of their maintenance. SG19 stated;

> *"You have to be a little bit more malleable I think in local governments especially in infill situations because often the streets become your open space - it's where the kids play - it's where they do everything - people walk along the street - provision of sidewalks - provision of street trees so necessary - undergrounding your power - these are all things that local government are supposed to do - we don't do that."*

ROS was seen to be neglected by the state government. There was a view that state government had allocated ROS, but there were funding constraints. Nonetheless allocating land further from the city centre for ROS is easier to justify than paying for expensive land in inner areas for local POS.

The Covid-19 pandemic that swept across the world in 2020 - 2021 has re-emphasised the importance of POS in areas that are undergoing densification. Residents of higher density developments particularly apartments require POS for exercise and relaxation when they do not have significant private open space of their own. POS seemed to become more important when lockdowns were imposed by governments as part of Covid management plans. SG20 said;

> *"Covid has affected how space has been used and thinking what open space is about because of Covid….. I think people more and more value open space now in the last 12 months ….. that might be the impetus for policy about open space to be looked at."*

There was concern that state government was placing more emphasis on having government departments provide less policy expertise and act in a role that assesses and awards grant applications and money that the state government increasingly emphasizes to allocate funds across the community. Policy is increasingly originating closer to the respective ministers and their direct advisers and unless a minister has a specific interest in POS then it is unlikely that any policy measures will be formulated that address the issues that are the subject of this thesis. Government departments are being slimmed down and reformed and restructured to generate economic benefits, but this means that functions are being sacrificed including the ability to draw from experts in policy making.

There is the potential for alternative open space solutions like reclaiming roads and utilising verges for parklets and community gardens and play spaces for children but there is the ever-present threat of communities opposing such developments particularly if they are noisy (such as basketball courts) or attract anti-social behaviour (skateparks). It is recognised that these issues must be addressed by local government rather than state government. It is also recognised that local government is closer to the communities that they deal with and state government is too far removed from communities that they serve.

School ovals are a potential source of open space for local communities but there is often a lot of resistance from the school administration and the Education Department because of potential risk and the cost implications for the school and the Education Department. There

is also concern that schools are being expanded through the construction of new classrooms on school ovals which reduces recreation space for the local community. There is a view that fences around schools also prevent local communities from accessing what could be additional open space in areas with low levels of POS. SG19 stated;

> *"A lot of the time the open spaces in these denser areas is around a school or an existing park so it makes sense to get those groups on board and work with them to improve their open space."*

One way that there is more use of streets and public spaces that are not traditional open spaces is through street festivals and cafes spilling onto the footpath. Car parks may prove to be a means to generate new areas for open space but that is yet to be seen. SG20 made the following comment;

> *"We do notice with some local governments streets are becoming seen as public spaces so we are seeing more and more street type of festivals closing streets off and just managing some of our main roads so that they are more pedestrian friendly so they start to feel not like a road …. but actually open space and that it becomes a useable space."*

Purchasing additional land through the resumption of properties is unlikely to be adopted due to the cost of land. The future might lie in developing ROS across the metropolitan area, but these spaces are significant distance from the populations that are demanding the space from inner city areas.

Covered areas including gyms are seen as being too expensive and in a warming climate potentially must be airconditioned which makes them even more expensive propositions to provide more recreation space in those areas that have open space constraints.

There is a recognition that it is not just about provision of space but also sense of space around higher density areas to give aesthetic relief from large areas of built-up surfaces. There are mental health and liveability benefits of open spaces even if the residents do not use the space because it gives a feeling of spaciousness and breaks up the built environment.

Structural reforms being undertaken within state government including restructuring of government departments is having an impact on capacity for state government to respond to issues around POS. It was claimed that unless there is a champion within state

government promoting the idea that POS is important then there will not be significant change in the policy or processes around POS allocation. SG21 stated;

> *"Solutions will be community and market driven unless people are going to speak loud enough and advocate loud enough we'll do the best we can but because you've got competing interests so within the state government system as administrators we can do what we can but if economic development is going to be louder and preferred more by the community and our politicians are getting hounded about that then we will have to deal with that."*

The vertical fiscal imbalance was considered an issue. Local government which has considerable responsibilities dealing with a range of issues including POS does not have the financial capacity to deal with many issues it faces without state and federal government assistance. SG20 said;

> *"It is the classical fiscal imbalance - state government has a bit more money than local government and they set the policy - commonwealth government has a shitload of money but have no policy interest in it but they have got all the dough - it's a fiscal imbalance - until you make the Commonwealth government realise that it's an issue."*

Solutions may have to be community and market driven rather than led by government. People and communities will have to be consulted with to help solve some of the problems. State and Federal government is often insulated from communities where there are problems. Local government is much closer to their communities and probably has a much better idea of what they want but they are financially limited because of the vertical fiscal balance.

9.18 Conclusion

This chapter has described the views of the local government officers, as well as responses from state government officers, towards the planning and management of open spaces. There were many topics which officers were willing to discuss including;

- The impact of higher population densities on open space provision,
- The effect of climate change on open space maintenance,
- Collaboration within Council,
- The funding of open space provision and maintenance,
- Concerns relating to legal liability,

- The effects of urban consolidation on the urban forest,
- The State government policy responses to changing urban form,
- The management of open space demands from community and sporting groups.
- Consideration of artificial surfaces as a substitute for traditional turf surfaces.
- The role of development contributions.
- The use of school ovals, road verges and parklets.
- Community involvement in open space planning and management.

An impression was formed that local government officers approached urban consolidation and open space planning and management from the point of view of the dominant discourse within the profession that they worked and often did not consider the bigger picture when making decisions around open space. There was a tendency to focus on operational problems, adopt reactive, rather than pro-active solutions to problems and a tendency towards cautious responses and maintaining the status quo. There was significant resistance to increased community involvement in open space planning and management processes, although there may have been either inclusion in community groups that seemed to have broader and more general focus on neighbourhoods or involvement in open space that could be monitored and limited to specific local government objectives. The State government was often viewed negatively in terms of imposing increased requirements on local government, making decisions that served their purposes, including a focus on wanting to drive economic outcomes, while ignoring social objectives and the requirements of local communities.

It was striking that officers were acutely aware of solutions to many problems faced by local government when dealing with open space planning and management, but significant hesitation in acting too quickly or actively seeking answers and help from the community. Community engagement was treated suspiciously by some officers, particularly those that appeared to be task oriented, and concerned that expectations would be created within the community about how much authority residents might gain. There was a strongly held view that planning and management of POS might be compromised by residents' efforts to help, either because they engage in activities that are unproductive or not in alignment with local government policy.

State government officers tended to have broader views around open space planning and management, but recognised that there were issues with the current POS policies in areas undergoing urban consolidation.

The following chapter discusses the results of the data collection undertaken in this thesis. There is a focus on how liveability and governance can be applied to the results. A view is adopted that liveability is not the only priority of those making decisions around the open space policy field, but nonetheless it is a worthy avenue of investigation despite its limitations. Governance is considered a means to progress change in open space planning and management and improve liveability for those in areas undergoing urban consolidation.

Chapter 10 Discussion

10.1 Introduction

This research began with the initial question "How does the changing nature of urban form, with a focus on urban consolidation and densification, impact on the planning and management of open space in urban areas?" In order to answer this a number of key topics were examined including;

- The choices in open space planning and management.
- The impact of planning intervention on open space provision.
- The relationship between urban consolidation and open space provision including the differentiation between public and private open space.
- The consequences of planning interventions, changing housing forms and the change in public or private open space on liveability.
- The effectiveness of governance frameworks in delivering increased housing density and effective open space provision.

The link between open space, density and liveability was developed and the governance processes around open spaces were discussed in relation to these concepts.

10.2 Impact of Planning Intervention on Open Space

Planning interventions can include a range of measures taken by the governing authorities of urban areas to regulate and manage development within towns and cities. Intervention can be by way of legislation and policy that imposes requirements on the landowners and managers of land and development to achieve desired outcomes. Intervention may be in the form of increased regulation and penalties for failure to comply, economic subsidies and stimuli, marketing, and promotion of certain urban planning ideas, or alternatively it may see reduced levels of regulation or even deregulation and the removal of planning constraints.

Open spaces are one element of liveability that government have control over and can influence as development occurs. They have the power within the planning regulatory framework to impose requirements on development proponents that ensure that a minimum standard of open space provision occurs (WAPC 2002; Department of Planning 2015a).

Open space provision, in the case study areas where urban consolidation was being undertaken, was not identified as a major issue. There were considerable areas of open space of various forms close to the residents in the selected suburbs. In terms of

percentage allocations only Cockburn Central had an allocation that was below the 10 per cent level set by *DC2.3* and *LN*. All the suburbs achieved POS allocations above 33.6 square metres per person which was the level set in the *SH Plan* in 1955, and well above many European, American, and Asian cities (see Table 5.3). It could be argued that the POS allocation system that was established in 1955 continues to be effective in supplying generous amounts of open space. The standards that have been in place in WA since the 1950s do guarantee a minimum area of open space, but say nothing about the quality of those spaces, although it is recognised that many local governments have introduced operational policies that dictate to open space requirements beyond surface area.

It is essential to recognise that simple open space standards based solely on area of open space provided per person are not sufficient to achieve a broader measure of the quality, accessibility, and functionality of open space. Liveability cannot be measured from area of open space alone.

Open space provision in areas where densification occurred was flagged as a future problem if the authorities did not respond to the negative connotations associated with denser urban environments, particularly in nations like Australia, where there is a long history of low-density suburban living.

Over time as the form of housing changes to smaller, higher density dwellings it is expected that population densities will increase. The population increases are a result of several factors including economic growth, employment and income levels, affordability of housing and suitability of the dwelling to the buyers. As WA has found economies can both expand and contract, and this has an impact on local populations and population densities. During the contraction of the mining industry (2016 -2018) the population growth rate of the state slowed as employment opportunities declined and the housing industry also went into decline. It would be expected that there is the potential for population densities in some suburbs to fall since housing may now be vacant as people leave for elsewhere looking for work.

All the case study LGAs had ocean or estuaries adjacent to their boundaries which meant they had beach and foreshore reserves to complement traditional open spaces. These foreshore reserves act as a pressure valve providing significant additional recreation space.

The beach and river foreshore can be a more attractive alternative to traditional POS during hotter periods for those suburbs that are close to rivers or oceans. In light of climate

change the demand for such spaces may increase as the climate warms. For those suburbs that are not close to water (like Cockburn Central) residents still rely on traditional POS.

In the case of Silver Sands approximately 60 per cent of the open space is provided by the beach. Excluding the beach, however, the suburb still provides more than 10 per cent of the area as POS. If there was an increase in the dwelling and population density of the Silver Sands it could be argued that there was sufficient open space, although it is not in a form that would allow formal sporting activities to be played. The open spaces, other than the beach, are heavily vegetated linear parks adjacent to an entry road into the Mandurah CBD that serve aesthetic and environmental roles.

Cockburn Central is ten kilometres in distance and a 15 minute drive by car from the coast. Unless people are prepared to travel some distance to visit the beach the open space alternatives are limited to traditional open spaces which could potentially increase the pressure on those spaces.

However, the open space allocation for Cockburn Central is deceptive. Although the open space in Cockburn Central is well below the 10 per cent set by *LN* and *DC2.3*, it requires further explanation. Firstly, the suburb consists of land uses other than residential. There is a large industrial area to the west of the higher density residential development (City of Cockburn 2017a). There is no requirement in *LN* or *DC2.3* to provide POS in industrial areas (Department of Planning 2015a; WAPC 2002). There is some open space in the industrial sections of the suburb, but this is comprised of fenced drainage areas not accessible to the public (City of Cockburn 2017a). The other suburbs that were examined were predominantly residential, with areas combining residential and commercial uses.

To the north of the developed residential area in Cockburn Central, there is an approved structure plan for further higher density residential development. Currently there are large rural lifestyle lots which have low population densities and no traditional POS areas. Residential development as laid down in the Muriel Court Local Structure Plan will see population densities rise and the total area allocated to POS increase as part of the requirements of new residential development (City of Cockburn 2014).

There are additional open spaces in suburbs adjacent to Cockburn Central that are preserved bushland that serve conservation purposes (and include land set aside as Bush Forever, in accordance with state environmental requirements) (Department of Environmental Protection 2000; City of Cockburn 2017a). Like the beaches, these spaces

serve informal recreational uses, and an environmental role, but are closer to Cockburn Central than the beach. They serve as a pressure valve for the provision of open space and give users alternatives to traditional POS.

It was argued by many interview respondents that it was difficult to justify the purchase of additional land for POS due to the cost of land and the view that the money was better spent on other projects. However, as Mandurah demonstrated land reclamation can be utilised to gain open space area. There were two projects that increased the area of open space: the Mandurah Ocean Marina and the Eastern Foreshore.

Much of the land that is now comprised of the Mandurah Ocean Marina was reclaimed. It was originally a State government project (under the control of Landcorp) that combined many aims including the creation of a marina, higher density residential and tourist accommodation and redevelopment of blighted and polluted sites nearby. As part of the residential component of the project, POS in accordance with *LN* and *DC2.3* was created. The sale of the land within the development was able to offset the cost of establishment of beaches and POS and provide non-POS based recreational opportunities, including fishing and sailing (Willcock and Holt 2011).

The Eastern Foreshore in central Mandurah has seen a new seawall constructed in the estuary waters adjacent to the existing foreshore park that expanded open space available to the public. It simultaneously added a higher seawall able to protect the CBD from the threat of sea-level rise caused by high tides and climate change (City of Mandurah 2013a).

In both examples open space expansion was a result of other objectives. By focussing on open space alone, the challenges related to POS area and quality would not have been addressed. For resources to be allocated to open space, links had to be made to other projects and open space improvements could be leveraged off this.

Land reclamation allows open space opportunities to be expanded in areas adjacent to waterways. For those areas that are landlocked and distant to waterways such opportunities are not available and authorities have to rely on other measures to achieve increases in areas dedicated to open space.

It was maintained that people were prepared to travel considerable distance to take advantage of better POS elsewhere, if local options did not meet user requirements, in accordance with the compensation hypothesis (Maat and de Vries 2006; Byrne, Sipe and

Searle 2010). It suggested that lower accessibility to open space was an acceptable policy trade-off for improved provision.

If such a response becomes embedded within open space planning, then people with low mobility due to age, disability or income may be denied experiences that improve liveability. Social justice problems are created (Gilliland et al 2006; Veitch et al 2013) because of decisions taken by local governments to favour POS quality or area over accessibility. If local government does favour the quality of POS rather than accessibility, then there are potentially large numbers of people who are unable to travel the greater distances required because accessibility is sacrificed to quality. As was noted by many interviewees not everyone is going to be able to have POS at the end of the street, but the question remains as to how those who are unable to access POS can be provided for. In Godschalk's view a liveability-equity (social justice) conflict exists (see Figure 3.3).

Both *D2031* and *P&P@3.5M* talked of identifying sites that are appropriate for urban consolidation. The surface area and accessibility of open spaces is a critical consideration to maximise the liveability of those areas being densified. Local governments must respond by ensuring that the marginalised are not disadvantaged by urban consolidation plans that provide affordable housing in densified environments, minus elements of liveability.

CM4 made it clear that there are problems around equity within cities like Mandurah;

> "*The problem in places like Mandurah is that we have the old tale of two cities - we have a very affluent and a very poor almost underclass - it is very easy on one level to say it is only a fifteen or twenty minute drive but on another level there is a heck of a lot of people without a car or if they have a car they can't afford the fuel."*

The people who actively inhabit space as a part of their daily life are those that should be drawn into urban processes to de-alienate urban space. Property rights have separated land from inhabitants. Lefebvre saw a role for appropriating the street so the inhabitants can use the space for their own requirements (Lefebvre 1996; Purcell 2002).

The boundaries of the study areas are not a limit to the open spaces that people travel to or use. People are potentially only limited by their unwillingness or inability to travel further to utilise open spaces elsewhere. Areas that have high levels of well-equipped open space will potentially be popular with people from outside the area (Maat and de Vries 2006; Byrne, Sipe and Searle 2010). If popular public events are held in these open spaces, then they can

have significant pressures placed on them by visitors from outside the local area and detract from the perceptions of liveability for local people.

Expansive parkland that stretches along the banks of the Swan River is a popular attraction for many people across Perth. It adds to the liveability of CoSP residents, as well as the liveability of people that travel significant distances to enjoy the open space. The South Perth foreshore attracts thousands of additional users for events like the Australia Day Fireworks. However, the crowds, noise and waste produced at the event, as well as the inconvenience created by the event may detract from the liveability of the area for permanent residents.

Likewise, the eastern foreshore park in Mandurah that provides recreation opportunities for people across the region attracts large numbers of visitors to events like “Crabfest” and weekly markets, along with more traditional park functions. More people and increased utilisation of spaces potentially makes the POS less attractive to locals and those living in the nearby denser housing, while those visiting the space from outside the area experience rises in liveability.

If there is a predominant view that local government attention will be focussed on more popular areas and ignore other smaller, local open spaces then the liveability of residents may suffer.

It may appear that these matters might be solved through better open space management rather than planning. Better management of open spaces may solve more localised issues, but it does not help to solve the problem that sees local resident liveability sacrificed for improved visitor liveability. Open space planning can ensure that a broader variety of open spaces are provided that allow people to utilise alternative open spaces to escape crowding and busy open spaces created by commercial or community events. This problem becomes more acute if there are higher population densities. Planning interventions, such as the creation of pocket parks and woonerfs can increase the opportunities for access to open space where it may be constrained.

There are additional social justice questions attached to the promotion of local government provided recreation centres in place of more traditional open spaces in higher density areas. Paid entry to these facilities excludes those who cannot afford the fee to utilise the facility, although the quasi-privatisation of recreation can offset the cost of provision of the facility, unlike POS.

A challenge is presented if planning goes on without taking into consideration the voices of those that are marginalised and have less power within the planning framework. By failing to engage in deep and meaningful discussion with a broad cross-section of the population (including youth, disabled, aged and those on lower incomes) during the planning of open space then there is the real possibility that the open spaces that are created will only cater for able bodied, wealthier adults who understand the planning system and are willing to leverage the system to serve their purposes and ignore the requirements of the marginalised.

10.3 Open Space and Density

As was discussed in Chapter 6 Perth is representative of many cities across the world that have a history of suburbanisation, but in more recent times have readily adopted the urban densification mantra to address the considerable environmental and sustainability issues that have been identified by various stakeholders. As the city is at the early stages of the urban consolidation process there are lessons that can be learnt from Perth that can be applied to other cities with similar characteristics before they become intractable issues that are difficult or impossible to correct. Open space policy in the suburban setting is well established in Perth and as a result there is relatively generous open space provision. There is concern that as the urban consolidation process progresses there will potentially be arguments as to whether the reliance on POS compared to private open space will cause a decline in open space provision and liveability of these higher density areas will deteriorate. There is the additional concern that the policy linked to provision of open space has not been adapted to areas where urban consolidation has been undertaken and this lag may create significant issues in the future.

This research has revealed that the imposition of higher densities in existing urban areas with fixed open space allocations can lead to negative outcomes. People may be deprived of open space opportunities if the facilities are allocated to uses that limit utilisation of the space. There may be increased pressures on the existing open spaces given the increased number of people that live in an area. There is the possibility of conflict between users of open spaces if there are more people with a greater variety of requirements.

While there is evidence that a large percentage of residents are using a variety of public and private spaces to meet their recreational needs, there are also many people that do not use open space in a physical sense. They may not visit the space, but derive aesthetic and health benefits from the spaciousness, nature, and greenery that the open space provides

(Ozguner and Kendle 2006; Gidlof-Gunnarsson and Ohrstrom 2007; Francis et al 2012; Lachowycz and Jones 2013; Wood et al 2017).

There are several problems with the current open space policies in WA. The open space allocation standards that are in place in WA are not based on dwelling or population density data, although this was the basis upon which the *SH Plan* originally allocated open space (Town Planning Department 1981). Surface area alone is the key driver when assessing proposed developments and POS allocation. There may be considerable variation in dwelling and population densities across suburbs and regions, but little variation in the provision of open space. Given a suburb with a fixed area dedicated to residential zoning the allocation of POS in percentage terms will remain constant. However, as the dwelling density, and the population density rises, then the surface area allocation per person of POS within the same suburb will decline. This may be further complicated by declines in private open space because of development occurring in backyards, the subdivision of large lots into smaller lots, pressure to allow greater site coverage, and greater areas dedicated to driveways and car parking (Hall 2007; Brunner and Cozens 2012).

Densities can be increased with no open space response from the developer. Development with five or fewer lots promotes a form of consolidation that has few obligations to address liveability requirements. Residential subdivision is approved by the WAPC and the POS requirement is set by the State government, but other development requirements including site coverage and the provision of private open space and outdoor living areas are enforced by local government. The lack of a coordinated approach from two levels of government results in urban consolidation being favoured without liveability being taken into consideration which is in alignment with the findings of McCrae and Walters (2012).

State and local government policy is geared towards providing guidance for the provision of open space in greenfield developments, or where more than five dwellings are developed simultaneously. The development of individual lots where there are fewer than six lots, typically does not require the provision of POS or the payment of a development contribution fee for open space, unless specifically required by local government (Department of Planning 2015a; WAPC 2002). The current policy settings allow smaller developers to shift the increased costs of open space provision and maintenance onto local government. The current policy is counter to improving liveability in areas being densified.

If private open space is reduced in areas undergoing urban consolidation, then increased pressures may fall on POS. Potentially users are forced into utilising a space that may be

more crowded, and thus in need of more maintenance and expenditure by the local government. It is a legitimate concern for planners to ask whether there is sufficient open space, particularly where there are multiple landowners and new development is piecemeal and concentrated on smaller, individual lots. It is not unreasonable to suggest the removal of the exemption for smaller developers. This would ensure that developments are treated equally in terms of open space requirements and may improve people's perceptions of higher density development.

There has been an increasing tendency to allow surplus land to be consumed to aid in the achievement of the urban consolidation targets. The private open spaces that are utilised for dwellings are a means to achieve high rates of return for investors and ignore the consequences for liveability. It is possible that private open space will be lost due to the construction of new dwellings as existing lots are divided into smaller lots or lots are amalgamated, and larger multi-storey dwellings are developed (Hall 2007; Brunner and Cozens 2012). This loss of private open space sees people resort to using local POS to offset the reductions in private open spaces. Planners need to make it their business to analyse the total allocation of public and private open space, as well as other spaces that could provide similar opportunities. There are consequences from failing to link the total areas of public and private open space together in areas undergoing densification. Local governments have the power to ensure that private open spaces are protected and not reduced when higher density developments are proposed.

Of course, there are a few provisos to this. Firstly, the new residents in a newly densified area may not be interested in using POS or may be satisfied with facilities within their suburb. As a result, there is no increased pressure on the local open space. Alternatively, they may utilise the local open space in which case they add to the existing residents using the space. Thirdly, they may use open spaces beyond their own suburb and travel to access the open spaces that fulfil their requirements in accordance with the compensation hypothesis (Maat and de Vries 2006; Byrne, Sipe and Searle 2010). The fact that private open space reductions where densification occurs are being limited does not in itself guarantee that people will reduce their consumption of POS, and likewise provision of private open space will not necessarily have people using the space in the way planners predict.

10.4 Consequences of Planning Interventions, Changing Housing Forms and Changes in Open Space on Liveability

Assuming that liveability is a "product of the social and physical features of the urban environment" (Gough 2015, 147), and such characteristics "make a place desirable for people to live" (WAPC 2015, 70) then open spaces are a vital element of the urban environment. They can have a significant impact on liveability regardless of economic status, mobility, or recreation preferences.

Although open space is not the sole driver of the decision by people to locate in a certain area, it may have some influence over their decision. People often seek to purchase or rent in locations that have higher levels of liveability and may be willing to pay higher property prices for areas with better open space (CABE Space 2007; Crompton 2001; Walton, Murray and Thomas 2008).

The sense of liveability of a place will not be the same in everyone, and may change over time depending on personal circumstances, the characteristics that an individual believes is a driver of the liveability of a place and how people interact with features of the urban environment (Pacione 1990; Buys et al 2013). Infrastructure within open spaces wears out over time and people's preferences and tastes for utilising features of POS changes. If people moved homes regularly, then what people believe is essential for improved liveability in one location may change depending on the profile of the people experiencing urban environments.

If residents within an area are satisfied that the provision of open space is in accordance with their lifestyle, then it might be suggested that liveability is high and no change in open space policy is necessary. If, however, the spaces that are available are not meeting the requirements of residents it could be argued that liveability is low and there is a problem that needs to be addressed.

If you are accustomed to large open spaces and low dwelling densities, then a change to such an environment brought on by urban consolidation policies may be confronting (Yeh and Yuen 2011). People may feel that existing amenity[18] will be affected by the addition of higher density dwellings, and liveability will suffer due to problems like crowding (McCrea and Walters 2012). By promoting sustainability through urban consolidation, perceptions of liveability may suffer and the tensions between sustainability and liveability are increased (Godschalk 2004).

Opposition to higher densities is often aimed at the height and mass of the proposed development and the potential loss of amenity that may be suffered by people living near such developments. The buildings represent significant change to low-density urban environments and provide cues to people that perceived density has increased, although in reality it may not have (Rapoport 1975). People who have bought into low-density environments could argue that they have bought a type of liveability that is derived from their type of home and the surrounding built environment. Their perception of liveability may decline because of urban consolidation in the surrounding area. They may suffer a loss of amenity from their local open space becoming more crowded, from not being able to utilise the open space in the same way or at the same times. The increased population in areas being densified may make the open spaces less attractive to the existing residents while new residents may be encouraged by the presence of generous open spaces near their home.

The lived experience may see people adopt a negative view of densification and this can be reflected in political values and action. If these beliefs become strong enough local governments may have to face residents (and Council voters) who support the retention of lower dwelling and population densities, even though dwelling and population densities may not be significantly higher.

For people that have become accustomed to greener suburbs with high tree counts there is a distinct change in the nature of the locality and appreciation for the feeling and ambience created by tree lined streetscapes and backyards. There is the threat that relatively permanent changes will be imposed on lower density urban environments that still have space and trees and generate a type of liveability for existing residents that has shown to have positive outcomes for human living.

Over time there has been an increasing tendency to permit the development on a greater portion of development sites with private open space being sacrificed. Large trees are often removed and replaced with impermeable surfaces and easy-care gardens. On smaller lots tree clearing may be permitted because of the limitations that it places on building structures (City of Mandurah 2018). It is also recognised that it is difficult to plant large trees and shrubs on small lots where the dwelling consumes most of the site.

The loss of trees in areas undergoing urban consolidation represents an incremental destruction of ecological features from the urban environment. Unless the local government responds by maintaining and expanding tree planting in open spaces under its

control there will be an overall decline in total tree numbers which has a significant impact on the urban environments being densified (Hall 2007; 2010; Brunner and Cozens 2012). Such environments become hotter, due to the urban heat island effect and habitats for wildlife disappear (Brunner and Cozens 2012; Brown et al 2013). It may be necessary to utilise formal open spaces, as well as verges and additional spaces controlled by local government to offset vegetation removed from private open spaces.

Open space may be used to counter the view that higher dwelling and population densities affect the liveability of urban areas. Promoting higher densities in areas close to well-equipped and generous open space improves the perceptions of liveability and may help ameliorate opposition to densification. The inclusion of generous public and private open spaces in higher density developments could reduce negative responses to higher density by softening hard surfaces in built environments and reducing perceptions of crowding (Coley, Kuo and Sullivan 1997; Kearney 2006). Open space is one element of liveability. However, it is a visible element that can be influenced significantly by developers and local government. When there is little input by the local community, residents are placing their faith in both groups to ensure that the public interest is served and matters that influence liveability are dealt with in an appropriate manner. Even state government officers recognised that local government was closer to local communities and as a result better suited to connecting to residents and understanding their needs.

Van Dorst (2014) stated that there are often contradictory outcomes due to the pursuit of liveability. The creation of new or improved open spaces in areas undergoing densification may produce highly liveable spaces that sacrifice sustainability values. It was stated by representatives from CoC that some decisions relating to the new regional recreation facility in Cockburn Central were at the expense of the natural environment and by allowing vegetation to be removed and natural swamps to become drainage at proposed open spaces liveability was emphasised over sustainability. Likewise, the decision to not implement vegetation programs in parks to maintain river views from residential dwellings in areas like South Perth demonstrated the tendency to favour liveability over sustainability.

It was stated by some interviewees that access to nature spaces was critical to help educate people and if it meant that people could enjoy the environment then it would potentially allow both liveability and sustainability challenges to be addressed. However, access by

people to conservation spaces was often limited, so liveability was sacrificed for environmental sustainability reasons.

Open space strategies provide the public with open space planning and management decisions by local governments into the future. However, there is often a focus on financial sustainability, rather than liveability (City of Cockburn 2018). The adoption of POS strategies with a focus on providing sporting spaces suggests that one group of people within an LGA are having their liveability concerns addressed over others. As de Haan (2014) highlighted the push to meet the needs of the whole of society does not necessarily mean that an individual's requirements for liveability are met. Conversely if an individual's liveability requirements are met it may mean that society's requirements are not met.

The concept of presumed liveability as discussed in Chapter 3 could lead to poor decisions relating to open spaces and a mismatch between what is provided by local government and what people want. Local government officers make decisions everyday relating to what they believe is appropriate for urban spaces and do not always consult (or are unable to consult because future residents have not moved in yet) with the resident population that is affected by the decisions.

While it was maintained by many interviewees that community consultation does occur, local governments make assumptions about users of open spaces in areas being densified. These assumptions have implications for the credibility and responsiveness of governance structures.

10.5 Effectiveness of Governance Frameworks in Delivering Increased Housing Density and Effective Open Space Provision

There are both horizontal and vertical elements to the planning and implementation of urban planning policy. Governance processes in relation to open space are still typically hierarchical, and top-down decision-making typifies the WA planning system. There is still a heavy reliance on State government bodies creating most of the key planning policies, and local government implementing these policies. In some cases, there are policies that are imposed on local government that may be detrimental to both liveability and governance.

Although the State government supposedly acts in the public interest, it is recognised that the land development industry is a highly influential political group that ensures that its views are heard by State government. Despite criticism for taking power away from local government there has been a willingness by the State government to acquiesce to the pro-development view that high worth development projects should not be held up by local

governments. High value, high-density developments are often assessed and given approval by development assessment panels separate from local government that make decisions divorced from the surrounding urban environment and do not consider open space or liveability unless explicitly required by policy. Such a situation is not new and has been part of the urban planning environment since the 1980s (Hedgcock and Yiftachel 1994).

Changes at the state government level can significantly vary the form of urban areas. Change has occurred in processes around development assessments, but failed to acknowledge the need to modify policies linked to public and private open space to ensure that liveability of urban spaces is not detrimentally affected by higher density development. The reforms that have been imposed on the planning system in WA appear to have bypassed open space policy (Department of Planning 2015a; WAPC 2002). There was an admission from one State government officer that POS policy overlooked open space in areas undergoing urban consolidation and there was no intention of modifying the current policies.

Information collected from interviews suggests that there does not appear to be any overt pressure to change the current POS allocation system. This might be because the channels local government used to gather data on residents' views of open space were not effective, or their views were filtered so those that complained were not heard or ignored. There was also the possibility that people were not interested, or too busy to become involved.

It could be surmised that the system suits the government bureaucracies and developers. The minimum 10 per cent allocation of POS could be equated to a social welfare safety net. The minimum standard was easy to understand and implement, required lower skill sets from those regulating open space and guaranteed a minimum level of provision. Certainty is built into the open space allocation irrespective of population density and without consideration for liveability which reduces the need for deeper engagement with residents in areas undergoing urban consolidation.

It could be argued that the current open space allocation system suits the elites within society that have the most to benefit and the least to lose from maintenance of the current system (Higley 2012; Lopez 2013). It suggests that local government is typically located in the urban regime quadrant from the model created by Hendriks (2014).

A form of path dependency and institutional inertia has become a feature of POS planning and management because the spaces were designed for specific activities like formal sports, and creation and maintenance processes were established by local governments

that were unlikely to change quickly. If there was adequate POS, no change was likely, until external pressures intervened to pressure local government to change the open space format or function. These pressures might come from sporting or community groups, individuals, or higher levels of government.

Local government in WA still appears to act in a regulation mode with regards to planning and management of POS. As indicated by Figure 10.2 the case study local governments are positioned at the "governance by government" extremity of the governance continuum Local government is the dominant player when dealing with open space, and decision-making is carried out in a formal hierarchical manner with minimal community involvement (Arnouts, Van der Zouwen and Arts 2012). There is evidence of some deviation from this with the creation of community groups, however, the responsibilities of these groups are limited. There are only minimal shifts towards an approach advocated by Lefebvre in power being given to urban residents to appropriate urban spaces including private spaces to improve their lived experience (Purcell 2002; 2012).

It was stated that there was increasing collaboration between departments involved in open space planning and management within the same local government, although the area of specialisation of the interviewees often demonstrated views that were supportive of the department they worked within and acrimony towards other departments. Certain departments gained power relative to other departments because they gained Council support for policy or expenditure that promoted certain types of open space. This was in alignment with Greive (2015) who found that it was not unusual for government departments to have conflicting goals with other departments.

Local government is focussed on the provision of open spaces in a manner that ensures that the budgets of departments responsible for open space are kept under control. Planning departments are required to approve structure plans showing proposed development and are typically responsible for assessing the allocation of POS area. Planners lose responsibility for POS after this as it is handed over to other departments within local government. Even if there is a significant increase in population density, there is no requirement to consider this. Planners are not specifically involved in the design of open space design; this is typically the work of landscape architects and others from elsewhere within Council.

Table 10.1 demonstrates the silos that can develop around open space planning and management. These silos may develop for a range of reasons including the different

objectives of each department and various external influences. Although liveability may be derived from open space, different departmental approaches may lead to outcomes that result in liveability being compromised. It was suggested that open space strategies ensure that departments within a local government understand the goals of open space planning, and this reduces the possibility of silos developing. However, if the strategy has an emphasis on solving problems related to POS designed for sport, then ultimately the silos may be reinforced, and the liveability outcomes may be compromised for people living in areas undergoing densification.

Despite statements to the contrary by some local government officers there was the presence of silos that prevented an integrated approach towards the delivery of open spaces that increase liveability in areas undergoing urban consolidation. The demarcation of responsibilities between local government departments results in a system with a tendency for certain departments to focus on their area of expertise. Responses were often more in alignment with the most pressing problems from that department's perspective. Officers from within the parks and landscaping area were concerned with operational matters relating to creation, maintenance, and cost of upkeep of open space. Environmental officers were worried about the protection of native vegetation and biodiversity in open spaces. Recreation officers were focussed on scheduling and requirements of formally organised sports on existing open space. Planners were looking at both active and passive open spaces, but formal sports were given priority. There was a view from state government planners that local governments tended to be too reactive, rather than proactive.

In many cases local government officers responded in a manner that reflected their educational and professional backgrounds. There are discourses around the professions of planning, engineering, recreation planning, community development, and finance that result in people in those professions behaving in a way that is generally in alignment with the ideologies and educational stances of the schools of thought in those fields. They may find it difficult to see other professions' points of view, or even understand the problems that each profession faces. This makes breaking down the organisational silos difficult and points to the need to have managers and supervisors within the organisation break down professional and occupational barriers that work against achieving better open space outcomes.

There is significant focus on financial viability and cost containment within local government. They are financially constrained and expected to do more with less.

There are significant political pressures. They must deliver services to residents. While elected councillors are accountable to the voters, local government officers are accountable to the local government administration that may have different aims. There is always the threat of suspension if local government acts in a manner that does not comply with State government requirements (Dollery, Crase and Johnson 2006). Innovation is linked more closely to operational, rather than urban planning matters because of the nature of the planning system. Planning is embedded in systems that originate from State government, whereas maintenance and care decisions can be taken directly by local government departments without having to defer to state policy.

Table 10.1 Table Demonstrating Horizontal Coordination within Local Government

Local Government Department	Planning	Recreation	Parks and Gardens	Engineering (Roads and Drainage)	Community Services
Key Objectives	• Do plans comply with strategic policy, state planning policies, local planning schemes and local planning policies? • Has the 10 per cent POS allocation been achieved?	• Do open spaces provide sporting and recreation spaces required by sporting groups and other interest groups?	• Are open spaces neat and tidy? • Is open space provision and maintenance being achieved within budget? • Do we have the resources necessary to complete open space provision and maintenance? • Are the current practises minimising the legal risks associated with the provision of public infrastructure?	• Are the roads coping with existing road traffic? • Can congestion and traffic incidents be reduced through better and greater road provision? • Is there sufficient drainage to remove from roads and residential areas? • Is there sufficient parking on the streets? • Are waste collection vehicles able to access rubbish bins? • Are utilities able to be provided without impairment to dwellings along streets?	• Are we creating communities that people want to live in? • Are facilities being provided that build better communities?
Department Responsibility	POS, ROS	Sporting fields	Parks, gardens, verges	Road reserves	Not responsible for spaces other than those with community facilities
Group that Pressures this Department	Development proponents	Sporting groups comprised of residents Sporting associations	Residents Tourists	Road users	Residents Poor, aged, disabled, children and marginalised
State Government Department with Regulatory Links	Planning Sport and Recreation Local Government	Sport and Recreation Local Government		Department of Transport Main Roads	Family and Community Services Local Government

A number of models of governance illustrated local government's approach to open space planning and management including those by Arnouts, Van der Zouwen and Arts (2012), Hendriks (2014) and Buizer et al (2015) as discussed in Chapter 4.

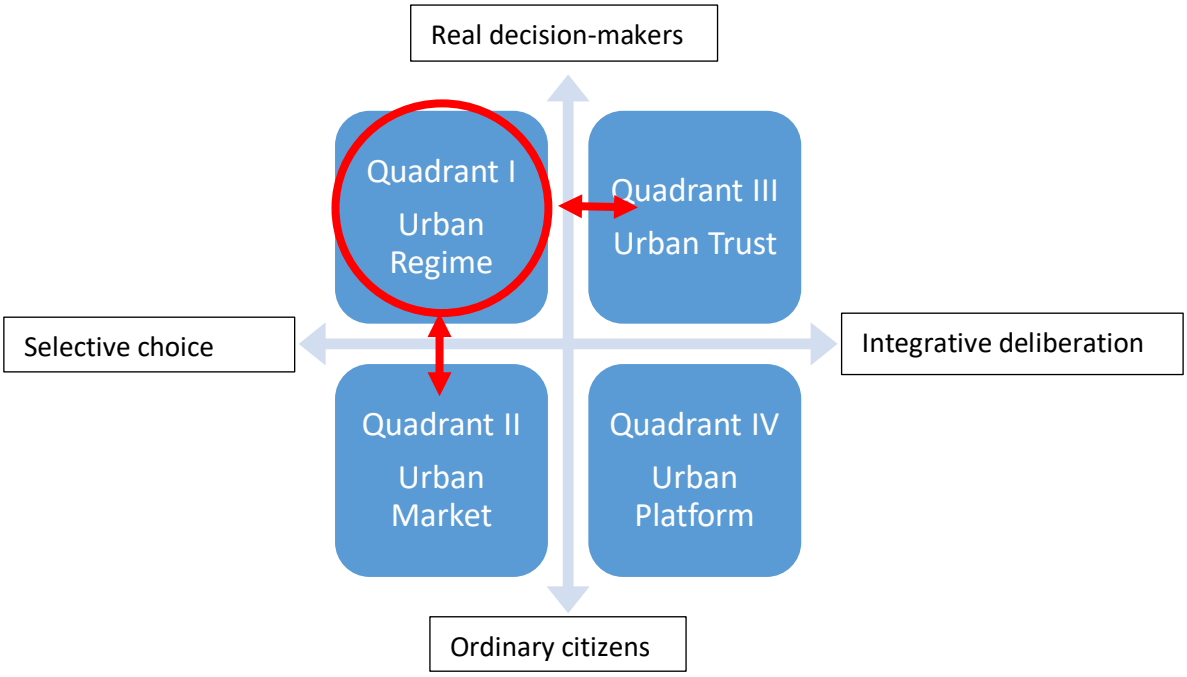


Figure 10.1 Position of Case Study Local Government in the Quadrants of Governance
Source: Adapted from Hendriks (2014, 558)

The interviews suggest that reticence in allowing greater involvement in open space planning and management and a desire for the elites within local government to make most decisions relating to open space and urban consolidation would locate local government within the urban regime quadrant of Hendriks' model of governance as seen in Figure 10.1 (Hendriks 2014). Although local government wanted the public to express their views about open space and there were many avenues for this (including traditional mail, email, Facebook, face to face meetings and telephone), there were limits to the amount of involvement that they were prepared to cede to community members.

It was recognised that community members providing their time and labour at open spaces was a valuable resource that should be actively promoted. However, involvement was often limited to volunteers working on waste clean-ups, weeding, and planting vegetation. It was stated that people that became involved did not represent a broad cross-section of the community and were people with time on their hands, or those that were not participating for the "right" reasons. There were fears that the public did not have the expertise to carry out some of the open space tasks. It was believed that participants in

advisory meetings often did not have a full understanding of the complexities of local government and were not able to make decisions that contributed positively to the process. There were concerns that advisory groups tended to contradict the decisions made by local government and it was better if council officers could make decisions unhindered.

There was concern that local government might have to relinquish control of open space to community members and work would not be carried out to local government standards if community participation was extended. The view was expressed that once certain tasks were handed over to the public an expectation was created that community members had input into POS operations. It would be difficult to regain control of the open space agenda in the future. There are indications of resistance to increased democratisation of urban areas under the control of local government that resembles the experiences described by Jacobs (1992).

The use of community groups by local government would suggest there is some willingness to allow communities to be involved and depending on the level of involvement, may result in the position being more fluid than Hendrik's model suggests. Over the course of time the governance position may shift from the urban regime quadrant towards the urban trust quadrant, if there are greater attempts at communicative and deliberative decision-making processes with the community around open space. Similarly, if consumers are making consumption decisions linked to the goods and services that are provided by the local government (like use of local open space), then there may be a move from the urban regime quadrant towards the urban market quadrant. These movements from one quadrant to another are represented in Figure 10.1. The success of community gardens within open spaces suggests that there is a willingness for local government to listen to the market (the participants in these activities).

Community participation in open space planning, provision and maintenance could be in many forms as suggested by Buizer et al (2015). However, the fact that there are limited forms of involvement from community groups would suggest that local governments typically operate in the regulation mode with some outsourcing of physical tasks (to community groups) and some planning consultation, but it is generally limited. The establishment of community gardens that operate independently of local government suggests the possibility of allowing the community greater involvement in open space governance (or at least part of it) and moving away from the regulation mode towards self-governance and self-initiated participation (Buizer et al 2015).

The CoC had established “Friends of” groups for certain reserves and had resident associations of suburbs that were formally recognised by the City. Regular meetings were held with the residents’ associations that had a Council representative present to report back to Council and ensure communication was maintained between the groups. Resident associations had limited roles with regards to POS, but helped Council stay in touch with local communities. It could be argued that such groups were demonstrative of a form of collaborative co-governance of Figure 10.2; there are many actors, the government supports the groups and mutual learning processes are occurring with members of the group learning about government activities, while the government is discovering what residents are saying about their communities. They can mobilise other resources for greater community involvement with this two-way flow of information between the groups and the local government.

In Mandurah there was a reluctance to relinquish control to community groups involved in POS, but it was recognised by some officers that there were benefits in encouraging people with the time and skills to be involved in community groups that can watch over POS. There were Bushcare and Coastcare groups that successfully engaged in tree planting activities within the Mandurah LGA, but they were actively managed by the CoM. The groups were in the regulation mode of the governance spectrum from Figure 10.2. Concerns around loss of control of POS management to residents acting in their own self-interest meant that the groups were limited to carrying out physical tasks like tree planting.

Community gardens located in open spaces were supported to make open spaces more appealing to people who may not normally utilise POS, had an interest in gardening, or wanted to become involved in a community group. They allowed residents of higher density dwellings, possibly without a garden, to engage in gardening activities. There was opposition to community gardens from some officers who believed that local government would have to clean up the community garden sites if the groups failed. State government officers stated that local government had to support community gardens and make it easy for groups to establish such spaces.

South Perth had permitted the formation of a community farm group at McDougall Park. The group was set up as an incorporated body that had a formally structured committee with clear boundaries of operation. A formal agreement was created between the CoSP and the community group to outline how the organisation would operate and the responsibilities of each party. It was granted exclusive control over the garden with support

provided by CoSP. The group was acting within the closed co-governance mode as shown in Figure 10.2.

Local Government	***Governance by government***		***Collaborative governance***	***Governance without government***
	Regulation	**Closed co-governance**	**Open co-governance**	**Self-governance**
	Closest to traditional government, government is dominant and at top of hierarchy of control, government sets policy	Government acts as a partner to other groups, clear boundaries of responsibility, network with limited access by actors outside established participants	Many actors, government in supporting role, mutual learning processes	Self-regulation by actors, decision-making by participants, government has minimal or no role to play
Mandurah	Coastcare, Bushcare groups			
Cockburn			"Friends of" groups	
South Perth		McDougall Park Community Farm		

Figure 10.2 Location of Case Study Local Governments on Governance Continuum
Source: Adapted from Arnouts, Van der Zouwen and Arts (2012)

10.6 Choices in Open Space Planning and Management

The research data highlighted the large number of binary choices that confront open space planning and management.

There was recognition that increases in dwelling and population density caused by urban consolidation might require changes in open space policy, but there was a reluctance to argue for more open space. Many interview participants felt that this was not the most pressing issue facing open space planning or management.

There was a strongly held view across the case study local governments that it was unlikely that additional land would be purchased for POS. Many interviewees felt that purchasing additional land for open space was a waste of scarce financial resources. Improving the quality of existing open spaces was more important. There was concern that increased areas of open space would have to be maintained, and this would impose greater financial pressures. There was significant focus on operational concerns relating to POS, although it was acknowledged that the creation of open space strategies had forced local governments to think strategically about open space.

In an era that demanded cost containment and financial viability of government operations POS had become a major financial burden for local government, although it was a requirement to provide open space as part of new residential development. Although it was never implicitly articulated it was understood that a fundamental role of local government was to maintain the liveability of urban environments. In many cases the economic viability of open space (in terms of cost of provision and maintenance) came into conflict with the social or environmental values derived from its provision in alignment with Godschalk's Sustainability-Liveability Prism (Godschalk 2004).

Larger, rather than smaller open spaces were preferred, so multiple functions could be fulfilled in the same space, while allowing economies of scale to be achieved in relation to open space maintenance. The interviews revealed that multipurpose open spaces were preferred over single function open spaces, and accessibility to POS was less important than functionality. There was an acceptance that open spaces must remain open to the public, but all the case study local governments had community recreation facilities that required payment for use and competed against private operators. Some local governments had allowed parts of open spaces to be quasi-privatised, with some professional sporting clubs gaining control of certain facilities. State government planners believed that indoor facilities may help to alleviate some of the issues around POS including water shortages and scheduling constraints although they were considered an expensive solution to the problem of open space shortages.

There was a perceived need to accommodate sporting groups that pressured Councils for open space and facilities that served their specific purposes. It was recognised that the requirements of certain sports increased the cost of provision of POS and stretched the resources of local government. Some sporting clubs had been granted the right to use larger open spaces over their playing season via a licensing system, but with an expectation that passive users could use underutilised areas within the same POS. It was recognised that the influence of these groups had to be tempered by Council Officers making decisions that benefitted the broader community. Certain stakeholders had utilised politics to influence bureaucratic or technocratic processes and decisions and in turn obtain a favourable outcome for their respective groups. State government viewed open space strategies as critical to better open space planning and held the potential to remove some of the politics and lobbying that accompanied open space planning.

It was understood that the requirements of sporting clubs did not always match the requirements of areas undergoing densification. Land was a constrained resource, but a necessary element for the expansion of recreation opportunities. Large sporting fields were unlikely to be provided in areas experiencing density increases, unless they were in place or part of new development[19] The cost of purchasing land was a major obstacle to expanding open space opportunities.

Tensions were revealed between officers that supported sporting groups and those that recognised that local government served broader interests, including social and environmental roles.

ROS provision was considered an important component in meeting local open space demands, but many local government officers felt that the State government had abrogated its responsibilities by not providing ROS in a timely manner to relieve the constraints on POS utilised for sport. There was acceptance from some state government officers that the state government had underfunded ROS over recent years and local governments were not prepared to contribute to such spaces unless they had ROS within their boundaries.

The tensions highlighted by the research were like the Sustainability-Liveability Prism (Godschalk 2004), with tensions demonstrated between local government departments responsible for open space planning and management and attempting to achieve sustainability and liveability goals. Liveability was not explicitly stated as an aim, but rather derived from different departments satisfying the interests of varied groups, including sporting clubs and environmental groups. By helping certain groups within the community achieve their aims there was the potential to improve liveability for members of these groups at the expense of other people in the community. This suggests that elite theory can be applied to open space planning (Higley 2012; Lopez 2013).

The key choices raised by the interviewees in relation to open space planning and management are summarised in Table 10.2. The listed choices are extremities of a choice spectrum that officers involved in open space planning and management may have to consider.

Table 10.2 Identified Open Space Choices

Identified Open Space Choices		Comment
Strategic	Operational	There was a tendency to focus on current operational requirements of POS, however, the adoption of open space strategies had shifted local government focus to consider future requirements.
Quality	Quantity	Better infrastructure within existing POS was preferred over additional open space.
ROS	POS	ROS tended to be larger, catered for more sports and served regional populations, with funding provided by State government, rather than local government.
Active space	Passive space	Active and passive functions could be provided simultaneously from the same open spaces assuming they were large enough.
Turf	Bushland	Bushland was considered problematic because of the cost of maintenance, fire risk, waste dumping, ability to conceal criminal activity and limited ability to become active recreational space.
Large	Small	Larger POS was preferred over smaller POS because of the ability for local government to achieve economies of scale.
State government	Local government	There was resentment from local government about the State government being slow to respond to the demands for ROS. Some officers believed that State government was disconnected from local government and tended to favour economic infrastructure over social infrastructure.
Public open space	Private open space	POS was under the control of local government while private open space can only be influenced during the development approval phase.
Paid recreation	Free recreation	POS and ROS are freely accessible to everyone, although there is a form of quasi-privatisation occurring where sporting clubs are permitted to operate facilities that service specific sports and local government will develop recreation centres that typically require payment for use.
Sporting groups	Local government	Sporting groups pressure local government to provide expensive sport specific infrastructure that sometimes must be resisted by local government.
Formal activity	Informal activity	Many activities at POS are informal and not provided by government. Government will not respond to individual demands for facilities at POS, unless large numbers of people (like a sporting club) demand change.
Monopoly user	Multiple users	There is a preference for open spaces to have multiple functions to increase use and prevent certain groups gaining permanent control of a space, however seasonal licenses are issued by local government.
Accessibility	Functionality	In areas with higher dwelling and population densities accessible open spaces may be of value, but local governments prefer fewer, larger POS to help achieve economies of scale.
Simple	Elaborate	Larger developers completed POS to a standard that was not cost effective for local government. It had set resident expectations at a level beyond what local government could afford.
Respond to climate change and water scarcity	Maintain existing policies and practises	There were increasing pressures on local government to change POS management to respond to the effects of climate change, but many open spaces were large, turf covered surfaces that relied on constrained water supplies. There were residents in some areas that did not want trees in POS to interrupt views and for open spaces to be lush and green, rather than dry and brown.

Government	Community	It was believed that there was little demand from residents for increased areas of POS.
Economy	Environment	It was revealed that financial viability and cost containment was favoured over the environment whenever decisions were taken regarding POS.
Economic	Social	It was asserted that providing economic infrastructure was favoured over social infrastructure by the State government.
Environment	Social	There was considerable tension between social and environmental benefits of POS. If the POS is provided for sport, then the social benefits are prioritised.
Planning	Engineering	The requirements of urban development, including the provision of utilities, waste collection, and street parking cannot be compromised by open spaces or verge treatments.
Recreation	Planning	Recreation was often seen to control open space use after allocation by planning.
Recreation	Environment	The environment is potentially ignored once open space is allocated for recreational purposes, although maintenance of POS must adhere to environmental requirements including limits on water consumption.

10.7 Overcoming the Challenges

The policy problems that exist in the field of open space planning and management are partly a result of organisational silos that exist within local government and between the different levels of government. As demonstrated by Table 10.2 the differing priorities, resources, and ideologies between departments within local government has created problems that are not easily solved, unless more holistic approaches are adopted. The tensions identified between different departments and professions are a result of different approaches to solving problems that sometimes ignore concerns in other fields. Planning and management of POS is the responsibility of many departments and areas of expertise within local government. Unless local government administration is prepared to adopt a more holistic approach many problems will be difficult to overcome. The policy and regulatory documents may be easier to prepare than converting policy to practise.

Changes were made to *LN* that addressed the shortfalls in sporting space within local government open space allocations. These changes were pushed by the Department of Sports and Recreation (DSR) which suggests that DSR has significant influence over planning policy (Department of Sport and Recreation 2012). It is further suggested that the failure of planning to be pro-active in responding to open space problems led to other government departments becoming involved. This could be viewed as a positive development, but it does suit the narrower (sporting) interests of DSR, rather than the broader interests that local government are expected to represent. It may improve the liveability of those involved with sporting groups at the expense of residents of higher density areas, if there is

no concession within policy documents that higher density areas require a different response to open space provision than currently provided. Elite theory could be drawn on to explain the power and authority of government bodies to influence final policy outcomes that ultimately favours specific groups within society (Higley and Pakulski 2000; Lopez 2013).

It was suggested by some interviewees that greater emphasis on whole of government approaches to open space was necessary to break down knowledge and organisational silos and overcome barriers to improved open space policy and planning. Departments that pursued their own interests at the expense of the broader public interest, fought over control of the open space agenda or promoted outcomes that favoured certain aspects of open space policy at the expense of others risked producing sub-optimal outcomes.

There may have to be an acceptance that greater expenditure will have to occur that reverses the tendency for wanting to create larger spaces to maximise economies of scale. Local governments have the power to ensure that finances are allocated to more accessible open spaces in areas being densified that currently may be less attractive to surrounding residents, but have the potential to be improved.

Budgetary constraints may be relieved through the introduction of development contributions or cash in lieu policies (if these have not been introduced) that require developers to add to local government finances to enable the creation of better open spaces that promote liveability in areas where ad hoc and piecemeal urban consolidation is undertaken. There was broad acceptance from state government officers that the vertical fiscal imbalance resulted in local government always being under financial pressure as it had to rely on significant grants from State and Federal government to achieve its goals.

There may have to be a change in attitude with regards to POS. There is the potential for the use of alternative facilities for some activities that may make POS as a formal recreation space irrelevant to some people. Private and local government funded recreation centres, gyms, swimming pools, as well as private golf courses, tennis clubs and bowling greens are popular alternative recreation and socialisation spaces, for those with the capacity to pay for entrance to use such facilities. Recreation centres and gyms may be a more attractive option than traditional open space, where specialised recreation facilities are required, and greater climatic extremes are experienced (Dahmann et al 2010).

There are limitations to the availability of spaces based on daylight hours, (unless additional lighting infrastructure is provided or people carry out activities in the dark) and the possibility that certain features within open spaces may be more attractive than other elements, resulting in highly variable utilisation levels at different open spaces.

Increased lighting at night may be a means to expand the availability of open space where there is greater demand for the space. Although lighting is considered expensive to install and operate an expansion of the time available will be beneficial for those wanting additional open space. By utilising the open spaces at night, it can reduce antisocial and criminal behaviour that may occur in these spaces if left dark and deserted. In light of climate change, with higher daytime temperatures expected to become a feature of weather in many cities, activities can be carried out in the cooler evening temperatures and free from the dangers of sunlight.

Many local governments across Australia have recognised the benefit of introducing tree strategies to respond to densification. If there is to be a decline in private open spaces and a corresponding reduction in vegetation cover then local government must respond by planting more trees on Council controlled land including POS.

Alternatively, local government can limit building site coverage and protect trees in private open spaces to prevent the incremental loss of private open space and increased pressure on POS.

There is often a view that once private developments have been approved by local government tree removal on building sites should be a decision left to property owners. Unless there are specific requirements imposed by local government, developers will often remove all vegetation on a building site as part of the development process. If the issue of declining private open space and reduced tree cover is considered a matter worthy of addressing, then local governments may have to impose regulations that limit tree removal and require replacement trees to be planted on private or public land to offset trees lost to development processes. Suggestions of tree taxes or bonds imposed by local government on developers may be worthy initiatives to protect vegetation in areas being densified (Emery 2018; Hurley et al 2018).

There needs to be a genuine attempt by the local government to communicate with the community and allow residents to have input into the planning and management of open spaces in higher density communities to mitigate declines in liveability.

There is greater room for community groups to become more involved in open spaces. These groups should be overseen by Council to ensure that they are not hijacked by groups who use the position to carry out changes to parks that only benefit a few. The community groups must be supported and not treated as a hindrance to, or enemy of Council thereby avoiding the problems pointed out by Mathers, Dempsey and Molin (2015). They can provide helpful advice about the community, as well as volunteer labour for projects. For Councils claiming that they are financially constrained, these volunteer groups could provide significant social capital for little cost, help build connections within local communities and identify means to overcome open space challenges in areas being densified.

The interview findings clearly showed that liveability was far from the thoughts of the interviewees that were part of this research. There was overwhelming emphasis by officers at the three (3) local governments of dealing with issues surrounding open space as part of their daily work. Rather than see open space as a tool to help promote greater levels of liveability open space was considered a problem. Open space had to be managed and maintained all within tight local government budgets. They were seen as a liability that had to be minimised. The push to reduce the liabilities of open space was acting against the achievement of more liveable urban environments. If the response of local government was to pursue a program that reduced open space area, and maintenance such that open space was less functional and less attractive to users, and less costly to local governments then it increased the incentives to privatise the open spaces. Local government might actively pursue opportunities to sell open space that was deemed to be surplus to requirements. In an environment where urban consolidation is a priority, surplus spaces become more important than ever in promoting liveability but once sold or leased to developers or investors they increase the likelihood that the urban areas that are subject to densification become less liveable.

State government officers recognised the role played by local government in the planning and management of open space. There was broad acceptance that as local government was closest to the community and as a result had a better understanding of local residents demands relating to POS.

10.8 Conclusion

This chapter has discussed a variety of topics that were at the centre of the thesis including;

- The key choices that local governments face with regards to the planning and management of open space.
- The impact of planning intervention on open space.
- The outcomes of higher densities and changing housing forms on open space including public and private open space.
- The consequences of planning interventions, changing housing forms and changes in open space on liveability.
- The effectiveness of governance frameworks in delivering increased housing density and effective open space provision.

Many choices were discovered to be at work in open space planning and management with a significant emphasis on immediate operational, rather than long-term, strategic problems. Planning has ensured that open space has been well provided at greenfield sites. However, it has failed to address open space concerns in areas where urban consolidation is occurring, particularly where existing areas have density increases that allow reductions in private open space and the opportunities for more traditional POS are limited. Although the open space provision may be in accordance with State government policy there may be a need to consider alternative forms of open space beyond traditional POS, towards more informal spaces that could serve similar functions where population densities increase, and to ensure that liveability in these areas does not suffer. This is particularly important if open space is underprovided or there are high levels of utilisation of the space such that local governments become aware that the pressures are leading to problems relating to overuse including crowding, conflict between user groups, wear and tear on the turf and gardens within the open space.

There is a recognition that the current governance processes in place in local government are typically focussed on a regulation mode of governance, with some examples of community groups involved with open space that have been given some autonomy to carry out their activities within open space, but under the scrutiny of local government. There is significant hesitation about relinquishing power to community groups or creating an expectation that residents will have increased authority around open space planning and management. By increasing the involvement of communities in open space activities it may be possible to foster the development of alternative spaces that can supplement existing open spaces in areas being densified, and prevent a deterioration in the liveability of such urban environments.

Liveability did not emerge as a primary concern of local governments or state government officers. Rather it was seen as one of many policy goals targeting the provision of open space in a broader environment of increasing residential densities. There were clearly concerns circulating around the need measures of liveability in a government culture preoccupied with regulation and control.

Chapter 11 Conclusion

This thesis has addressed the question; "How does the changing nature of urban form, with a focus on urban consolidation and densification, impact on the planning and management of open space in urban areas?"

The research was guided by several research objectives which will be reconsidered in the light of the research findings and ultimately an assessment will be made as to the degree to which they were successfully achieved. The objectives include;

1. Locate the research on urban consolidation and open space planning and management within liveability and governance frameworks.
2. Investigate how governance frameworks have adapted to denser urban environments.
3. Examine how urban planning has responded to open space planning and management under policies of urban consolidation.
4. Assess the potential effectiveness of governance frameworks in providing open space in denser urban environments.

11.1 Locate the research on urban consolidation and open space planning and management within liveability and governance frameworks.

Two key theoretical frameworks were examined in relation to urban consolidation and open space; liveability and governance. The literature revealed that there has been considerable change in attitudes toward low-density urban development in many planning jurisdictions across the Western world. As part of a determined effort to reverse problems created by such urban environments, including sustainability concerns, there was considerable research and policy promoting urban consolidation (Forster 2006; Newton and Glackin 2014). However, more recent literature has seen sustainability supplanted by liveability as the rationale advanced to support the goal of urban consolidation (Portney 2001; Gough 2015). It was noted that the enthusiasm to adopt liveability as a coordinating framework is potentially mired in difficulties. Like sustainability, liveability has evolved into a complex theoretical issue with definitional, measurement, temporal and applicability questions that are not easily answered (Ruth and Franklin 2014; van Dorst 2014; Gough 2015; Lloyd, Fullagar and Reid 2016).

While there was reference to the principle being appropriated by government and business interests in the cause of intercity competition and for their own ends, there was more widespread literature that endorsed liveability as a basis for generating debate and

discussion around “better cities and better urban environments.” It was recognised as an important concept to apply to urban environments that have been densified. In the face of fundamental changes to the built environment, liveability approaches were found to broaden the discussion. It was argued that when government bodies make decisions around features in the urban environment, like open space, they often engage the liveability lens (van Dorst 2012).

Three governance frameworks were examined to help better understand the role of local government in the implementation of policy linked to open space in denser urban areas. The models created by Arnouts, Van der Zouwen and Arts (2012), Hendriks (2014) and Buizer et al (2015) were useful in generating an understanding of the role of local government towards open space planning and management. The view was taken that governing bodies responsible for open space often display hierarchical approaches to urban planning. They are heavily influenced by neoliberal perspectives around resource management, organisational efficiency and financial viability, and there is a tendency for the development of organisational silos.

Literature revealed that where local governments were still operating in regulation mode (Arnouts, Van der Zouwen and Arts 2012) their power was increasingly being squeezed between the community demanding greater input into the control of resources, and higher levels of government asserting greater control over development and political outcomes through co-governance modes of operation (Arnouts, Van der Zouwen and Arts 2012; Mathers, Dempsey and Molin 2015).

Investigations into the literature around liveability and governance aided in identifying the problems around urban consolidation and open space planning and management, while at the same time provided the conceptual depth to ensure that the research was integrated with broader topics of urban change and management that are emerging within planning.

11.2 Investigate how governance frameworks have adapted to denser urban environments.

The literature review confirmed that governments throughout the world have had a significant role in the shape and form of cities. However, this role has changed over time. In the 1950s and 1960s there was a tendency to allow government bureaucracies with responsibility for planning and managing cities, to make decisions in the “public interest”. From the late 1960s onwards, there was increasing distrust of government bureaucracies and their tendency to impose plans and programs on cities without considering the impacts

on residential populations and users of the spaces affected by changes in the urban form (Jacobs 1992). It was argued that the government did not understand the public interest and a growing realisation that there was no consensus on what constituted the public interest. In liberal democratic nations that increasingly argued for tolerance of a range of views on many issues the shift towards acceptance of a plurality of opinions had to embrace the concept of multiple public interests (Hedgcock, Hillier and Wood 1991).

As a result, it emerged that there had been considerable debate within governments as to appropriate consultation and engagement processes. This was recognised as being a precursor to effective volunteering in a few areas of local government operations, including open space maintenance. In WA it was noted that there is a strong tradition of the State government's planning agencies formulating strategic plans for the greater Perth region and these were dissected and outlined as part of this research. It was noted that the push to increase dwelling and population densities was promoted in these documents based on improved sustainability and liveability outcomes. However, the research found that to date there is little evidence to suggest that these outcomes are being achieved. Although sustainability and liveability outcomes have been linked to urban form outcomes and embraced by all the key players in the planning and development process they are still effectively a 'work in progress' and interview responses analysed in this research repeatedly reinforced this view. A review of the literature on urban form and data on lot areas, dwelling densities and population densities was used to gain an understanding of how cities change and the influence of the authorities on such change. In the Perth situation it was shown that through the *SH Plan* and subsequent strategic plans, the city developed into a highly liveable low-density city, but over time there were both sustainability and liveability concerns related to this form. Although there were several strategies that proposed increased dwelling densities it was not until the adoption of *D2031* and *P&P@3.5M* that statutory density targets were imposed on local governments (Department of Planning 2016). It was recognised in these documents that open space challenges had to be addressed in the plans, with proposed actions to support the goals of a more sustainable and liveable city (WAPC 2010a; Department of Planning 2015a).

Utilising a brief history of the evolution of governance of open spaces in Perth, WA, and through analysis of the interviews carried out with local and state government officers, as well as examination of planning documents linked to urban consolidation and open space it was demonstrated that governance has evolved around urban form, but generally has continued to be a top-down process with community involvement at the edges of

processes. This has not always been the case in North American cities for example where there is an expectation that communities will become involved in the planning and management processes around open space.

11.3 Examine how urban planning has responded to open space planning and management in light of urban consolidation.

The research identified that as urban planning became a legitimate activity of government, opportunities emerged to formalise the place of publicly provided open space in regulatory systems across the world. In some jurisdictions, private developers were required to provide POS as a condition of development for the benefit of the resident population. It was outlined how the imposition of regulatory standards evolved into comprehensive controls over POS provision (Maruani and Amit Cohen 2007; Byrne, Sipe and Searle 2010; Veal 2013).

The research showed that in the chosen case study areas open space exceeded the minimum amounts required under WA planning regulations (with the exception of Cockburn Central). Assuming that a population density of thirty people per hectare was reached it was argued that open space policy should be reviewed in WA (Town Planning Department 1981)[20]. All the suburbs that were analysed had population densities below this and would suggest modification was not currently necessary. However, if dwelling and population densities increase there will be declines in the amount of open space per person which will potentially increase pressures on open space.

A discussion of the role of private open space in low-density suburbia was also carried out and this was followed up with an examination of academic research on the declines in private open space in denser urban environments and the potential pressures that this applies to traditional POS (Hall 2007; 2010; Brunner and Cozens 2012). However, it was also found that decisions regarding public and private open space are made independently of each other and at different stages of the planning and development process. There was no evidence found to suggest that the decline in private open space around residential buildings was being factored into planning debates around the level of provision of POS. Evidence from overseas suggests that in many North American and European jurisdictions there has been increasing focus on engaging with local communities that were concerned about declining open space. In some cases strategic plans were created to overcome these declines and included forcing developers to include additional open space as part of their development proposals or the provision of additional funding for park infrastructure.

11.4 Assess the effectiveness of governance frameworks in providing open space in denser urban environments.

Spacious suburbs with detached low-density single dwellings located on large lots was the predominant residential dwelling type for much of the twentieth century for many suburbs of large cities across the Western world. However, evidence showed that WA lot sizes have decreased significantly in response to the adoption of urban consolidation strategies and that there was an increasing willingness to accept smaller lots sizes and alternative residential dwelling types. Despite strategic policies promoting liveability and listing actions related to the provision of both public and private open spaces these objectives were not necessarily being translated into operational policy or practice. The emphasis on the promotion of higher densities and neoliberal approaches to minimising obstacles to development demonstrated that concerns around open space and the impact on liveability appear to have been relegated in importance.

Interviews carried out as part of this research revealed that the push to increase density has become a priority that is broadly accepted within local government. There are a few dissenting voices that argue that the new higher density urban environments are going to be less liveable. However, it was suggested that wherever urban consolidation was undertaken mandatory audits of the surrounding POS should be carried out to assess the quality, functionality, and accessibility of open spaces.

An examination of both the policies around open space provision, as well as local government plans showed that no changes are being considered in open space allocation policies. Yet the evidence from this research clearly showed that there was the potential for open space to come under more pressure from the increased population of users due to densification. The trade-off between accessibility and larger open spaces became a key question for planners in addressing the variety of functions that people in higher density environments demand. It was made clear that governments cannot afford to ignore the possible ramifications of higher dwelling and population densities. Open space policy that does not take into consideration the changing character of urban form will potentially undermine the liveability of these areas. However, there was little evidence of local government willingness to expand open space quantities where urban consolidation is undertaken.

It was suggested by some interviewees that increased involvement of communities in the decision-making and maintenance of open spaces can serve to increase care for open spaces. It was further suggested that the culture of bureaucracies must become more

receptive to alternative open spaces and variations to the current processes that allocate spaces in new areas. While it was noted that the open space allocation system has provided significant amounts of open space it was also recognised that ongoing management of public parks is constrained by hierarchical decision-making processes and the tendency for departments to strive to achieve their own goals independent of other departments. While it was difficult to measure how government can improve the effectiveness of the delivery of future open space local governments appeared to recognise the benefits of deeper engagement with their local communities. This was reiterated by state government officers; local government is best positioned to respond to the demands of local communities.

Some community groups were encouraged to become involved in activities within open spaces, but there was significant hesitation about increasing their involvement beyond rudimentary projects. There are constraints applied to their operations including defined spatial and operational boundaries. There is bureaucratic hesitation in relinquishing authority over aspects of open space planning and management. This is despite an overwhelming concern with financial viability and cost containment in an environment where greater involvement from the community could reduce operational costs.

Some local governments have established advisory committees to provide advice from the community on a range of matters, however, they often had their operational role limited. It was felt that the groups often became captive to individuals who were acting on behalf of certain groups and attempted to influence Council decisions that were counter to accepted local government decisions.

Open space suffers from both horizontal and vertical silos. There are many levels of government and multiple groups of people within government and the private sector responsible for open space. It was recognised that these layers of regulation, governance and professionalism made holistic responses to the planning and management of open space difficult in areas undergoing consolidation. Open space planning and management falls across many departments and protection of the interests of local and State government department interests' results in considerable institutional inertia and prevents significant shifts in the open space agenda. There is recognition that State government creates open space policy and local government is responsible for planning and maintaining those spaces in accordance with these policies. However, there is a clear lack of preparation or even consideration of the potential problems created by failing to consider open space needs of areas undergoing urban consolidation.

Local government planning has the responsibility of approving future development, including decisions about open space, but once these approvals have been granted, the ongoing management of the POS is handed over to parks, recreation, or engineering departments. Members of each department tend to see their world according to their professional discourse and culture. As a result, there is the potential for the ongoing development of open space to become fragmented and discordant. There are difficulties in adopting holistic responses that run counter to departmental culture. It could be argued that planning should maintain some control over management of POS after planning approvals are given.

A vast number of problems linked to open space were highlighted by interview respondents and numerous solutions to problems were offered. There was recognition that State government open space policy had not responded to denser urban environments. There was a view that if population density increased, then a more flexible response to such environments is required and a "one size fits all" policy is no longer appropriate. In the words of one state government planner "local government has to become more malleable". Local government planners must be proactive and less reactive to urban planning problems including those related to open space.

Emphasis on economic efficiency and productivity was driving many decisions relating to open space, and concerns about open space utilisation and its impact on budgets, cost of maintenance, supply of water, keeping turf green and sporting field wear and tear were identified as key concerns for those making decisions about open space provision, development, and management. Although there have been attempts to improve links between departments within local government that have input into the planning, provision and maintenance of open space organisational silos still exist, partly due to the structure and workings of the local government itself, but also because of the processes that surround the planning of urban areas and the physical implementation of those plans.

Officers working in the open space field are often aware of possible solutions to open space problems, but adoption is slow. There appeared to be an unwillingness to relinquish power away from local government towards residents and community groups to help plan or maintain open spaces for fear that this would become an expectation within communities, people would be self-serving, local government would have to fix the problems created by failed groups and control over open spaces would be lost.

Open space solutions were often couched in terms that emphasised the requirement to be financially conservative. There was hesitation about changing existing processes and systems. In Australia there was significant evidence of institutional inertia and the development of path dependencies. There was limited adoption of alternative governance processes that challenged the traditional approach where government decides and implements policy. Globally there were some examples of alternative governance processes that drew on community expertise, however, the results of these was not always consistent or did not produce the desired results.

11.5 Review of the Research Question

Many comments can be made about the original thesis question "How does the changing nature of urban form, with a focus on urban consolidation and densification, impact on the planning and management of open space in urban areas?"

Many cities have adopted policies that promote urban consolidation. However, in the race to plan and build denser cities concepts such as liveability are sometimes forgotten. The failure of planners and managers to change open space policies in response to the urban consolidation and adopt more open and consultative approaches with stakeholders including those who live in densified environments has the potential to create unliveable, densified urban environments.

There has been a focus on the benefits of densification from those supporting urban consolidation strategies. In the process of striving to achieve higher dwelling and population densities there has been a failure to recognise that there are implications for liveability. The drive to increase dwelling densities and population densities is having profound effects on cities. Denser cities see open spaces become more valuable in the sense that they are used more intensively by the surrounding population and serve a greater number of people and potentially have a greater range of roles to perform. This is exacerbated by the potential decline in private open spaces in towns and cities as opportunities are sought to find sites for the development of additional dwellings that help meet density or urban consolidation targets that many governments utilise. The opportunity for spontaneous and informal recreation in private spaces adjacent to homes is reduced particularly in urban areas that have had a tradition of spaciousness associated with low density housing.

There is shift in reliance towards local government to provide open space solutions in denser urban environments. This brings with it many pressures in the planning and

management of POS. From a local government perspective there does not seem to be recognition from higher levels of government that an altered approach to open space planning and management is necessary. Local governments believe there is increased need for resources to adapt to a changing urban environment to supply both traditional and non-traditional open spaces to improve liveability in higher density environments. Similarly, there is a desire from local government to respond to higher density environments with open space policies that are more flexible, adaptable and do not follow the traditional open space practices suited to low density urban environments. Local government is captured in a governmental hierarchy that sees it having to provide pragmatic responses to local open space planning and management issues. Liveability, sustainability, and urban consolidation are concepts that are emphasised and promoted by higher levels of government, but the formal operationalisation of these policies is often left to local government. Liveability is relegated in importance because it is one of many aims that government strives to achieve, but the difficulty of clearly defining and measuring the concept means that like sustainability it becomes a difficult concept to implement. Local government equates liveability to ensuring that the features of denser urban environment cater for people including sufficient accessible and functional open space. Local government officers do not openly discuss liveability and it is certainly not the only priority of local government in denser urban environments.

More collaborative governance models between local government and actors in the community hold potential for improvements in the liveability of denser urban environments. There is a recognition of benefits from allowing local communities to participate more actively in open space planning and management, but hesitation in expanding opportunities for greater involvement in fear that control of the open space planning and management agenda will result. Where it has been undertaken there seems to have been mixed results. Some collaboration between local government and resident groups has yielded results that ensure open spaces enable uses that improve liveability for the participants. An unwillingness to allow increased involvement from residents, or lack of involvement from a broader section of the local population, or lack of willingness to become involved has meant that community participation has become only a limited tool to influence open space outcomes that can improve liveability.

11.6 Implications of Findings

It is contended that there needs to be more attention paid to areas that are undergoing urban consolidation to ensure that liveability is not sacrificed to the mantra of

densification. Imposing higher dwelling densities on urban areas will not necessarily be more liveable unless certain criteria are met, and policies are adapted to changed circumstances (Massey 2005; Gough 2015). History is littered with well-intentioned plans that made heroic projections and failed to produce the promised outcomes (Hall 2002; Block et al 2012). Where the market is producing urban environments that threaten the quality of liveability it is incumbent upon urban planners within local government to learn from past mistakes and promote alternative solutions to urban problems, even if they are unpalatable to certain groups within government or society.

Perth is representative of other cities around the world (primarily in Australia, Western Europe, and North America) which are undergoing a change in urban form. They have a long history of suburbanisation and have adopted densification policies often without considering the ramifications on open space provision and the impact on liveability for residents living in these newly consolidated urban areas. It is essential that these cities learn from the mistakes that have been made in cities with very high densities which potentially have few open space opportunities and limited means to improve liveability because policymakers permitted high density urban development to be undertaken without consideration of liveability or the provision on one of its elements namely open space. Cities such as Hong Kong, Shanghai, Djakarta, and New Delhi have extremely high population densities and open spaces are constrained or non-existent (particularly in the latter two cities). Liveability does suffer because of the lack of open space and the high intensity of use of these spaces when they are available.

There is a need to consider modifications to open space policy where dwelling and population densities increase, and to ensure that liveability in these areas does not decline. The requirement for developers to contribute to POS development contribution schemes, cash in lieu contributions or land buy back schemes would allow governments to expand or improve existing open spaces and would relieve local governments of some of the financial constraints regarding open space provision and maintenance. An alternative approach that considers less traditional solutions beyond a formulaic standards-based approach to the provision of open space should be considered. Future open space could include more multiple purpose spaces that are not a part of the traditional open space hierarchy (Kamvasinou 2011), as well as new types of open spaces being created from areas of land within the public realm (Gehl 1987; Harnik 2009; Rhinehart 2009; Biddulph 2010; Lee and Anderson 2013; Montgomery 2013; Newell et al 2013; Saumel, Weber and Kowarik 2016; Moore 2017; MVRDV 2017).

The predominant view that roads are only for cars is a remnant of modernist thought. Local governments should adopt approaches that allow roads to become flexible open spaces that are utilised for a wider variety of recreational activity. The utilisation of the existing streetscapes into pedestrian friendly open spaces in higher density areas, without sacrificing car access has already been adopted in some cities (Ben-Joseph 1995; Biddulph 2010).

Public and private school playing fields represent an opportunity to provide additional open space where densities are increasing and there are limited opportunities to increase the open space allocation. Shared use arrangements have proven beneficial for schools, the local governments involved and the surrounding neighbourhood. While the research recognised that there were legitimate reasons for the use of security fences around schools, governments must ensure that school ovals are kept open to the public in areas undergoing densification (Purcell 2012).

Local government needs to be more open minded and innovative in how open space is designed and used in response to changing community expectations. Local governments can support residents' interests in activities such as community gardens, urban agriculture, tree planting and bush management (Middle et al 2014) and has the potential to increase the use of POS by people that may not have previously utilised these spaces.

The emphasis on financial viability of open space has been found to be misguided. There are numerous non-monetary benefits that are derived from POS. The value of parks and reserves should not be measured in the same manner as residential or commercial property. If a financial approach is adopted, then the social and environmental values derived from POS (including liveability) need to be included in any analysis of the impost imposed on local government by POS. As Lefebvre argued the economic cannot be isolated from the social (Lefebvre 1996; Purcell 2012). The Covid-19 pandemic has highlighted how important open spaces are for those confined to their high density residences with limited private open space opportunities.

Open space strategies have been shown to improve decision-making by local government officers, as well as improve communication with stakeholders regarding the direction of open space provision and policy. Local government need to consider engaging in deeper communication with residents in denser urban environments by having advisory groups that meet regularly, consist of a diverse range of members from the community and local government and have genuine input into POS activities. For those local governments that

have minimal engagement with residents it would mean moving from a regulation mode typical of closed governance models, towards more open co-governance models (Arnouts, Van der Zouwen and Arts 2012). Planning systems have been shown to tend to rely on quantitative standards and procedural responses in matters relating to open space and density. There is no guarantee that the outcomes that are derived from such practices are producing "good" cities that embrace liveability objectives. A standards-based approach that follows procedural and legal requirements may be less suited to the spatial complexity of higher density environments.

Performance appraisals of the liveability of urban environments that includes audits of POS in areas being densified is a worthy exercise for local governments. It is incumbent upon planners to move to a more holistic system that recognises liveability and governance requirements for local governments to adhere to, including adequate provision of accessible and functional POS and the inclusion of community participation in the planning and management of open spaces. As noted earlier in Chapter 3 government may have to move away from the over-reliance on policy statements that talk of promoting liveability, but fail to put in place clear measures of how liveability is to be achieved. These measures may have to be a hybrid of measures to ensure that more nuanced responses are adopted in areas being densified.

Semi-structured interviews which were a significant part of this research gave an insight into problems that currently remain in bureaucratic shadows. In democratic countries there should be an expectation that people will be able to discuss and debate topics related to the urban environment that they live in. Even if development rights are built into the planning system and the mantra of urban consolidation is widely adopted there is no reason why residents of areas being densified should not be brought into the conversation about how liveable, denser urban environments can be created. The idea that residents of areas being densified should rely heavily on local government officers working in the field of open space planning and management to make all the decisions about open space based on local government views of liveability is misguided. Recognising that the liveability requirements of residents in areas undergoing urban consolidation may not match the views of government, and reassessing policies and practises around open space and urban consolidation increases the likelihood that denser urban environments would also be more liveable.

The examination of open space in greater Perth has broader applicability as it demonstrates how countries with a history of low density suburbanisation and few open space issues may see open space eroded incrementally. Liveability may be sacrificed if alternative governance practices are not adopted.

The threat of the privatisation of open space looms where local governments view open space as a liability that must be mitigated. The willingness of local government to contract out services including maintenance of open spaces and selling open space deemed to be surplus to requirements points to a willingness to solve genuine problems faced by local government that may have far reaching consequences in terms of the loss of liveability, particularly in areas undergoing densification.

The acceptance of the alienation of open space through privatisation and quasi-privatisation has the potential to erode open space area, functionality, and accessibility in areas where densification is undertaken. This may happen in an incremental fashion that could be difficult to reverse, unless planning systems in countries such as Canada, the UK and Australia adopt more holistic measures that counter these detrimental changes. Departments within local governments that are involved in planning and managing open space often revert to achieving daily, weekly, and monthly organisational goals, but fail to recognise the broader implications of their actions in the longer term. There may be a need to undertake more frequent assessment of open space provision in areas undergoing urban consolidation and consideration of the how declines in area, functionality and accessibility will impact on liveability. This may include involving local communities in the planning and management process. It could be suggested that generous open space provision leads to apathy among the population, and it is only when it is threatened that communities want to become involved in open space planning. There are many jurisdictions in North America where communities have become more active in the open space field because they feel they cannot rely on local or state government to guarantee open space provision. As the effects of climate change intensify access to high quality open space will become essential to maintain urban liveability.

The long-term implications of policy change need to be recognised when applying urban planning policies that impose profound change on the urban form of cities. If low density urban areas are being re-zoned such that their dwelling and population densities increase markedly then the policies linked to liveability and open space should not be compromised or sacrificed. It might be time for governments at all levels to consider a total government

approach to the issue such that the challenges identified in this research can be reversed or mitigated. Champions within government at both a State and local level can ensure that open space as an issue does not disappear from the policy agenda.

11.7 Recommendations for Further Research

Several areas for further research and investigation were revealed in the process of completing this thesis including;

- Review the role that residents can play in the planning and management of open spaces in areas undergoing urban consolidation to overcome problems around liveability.
- Compare and contrast perceptions of liveability by residents in new and existing urban areas where dwelling densities are being increased and identify elements that could improve liveability.
- The creation and testing of audit documents that consider liveability in the assessment of plans for open spaces in areas being densified.
- An analysis of the costs and benefits of alternative open spaces in areas undergoing urban consolidation compared to open spaces in lower density environments.
- Investigate the recreation preferences of residents living in higher density urban environments and identify the extent to which these can be accommodated on existing open space and whether significant changes are required to meet their needs.
- Identify the individuals and groups that are using POS in denser urban areas and analyse their preferences for and against using these spaces.

11.8 Concluding Comments

Cities across the world are adopting urban consolidation policies. Improved liveability may be a selling point for the process, and a measure of the success or failure of these densification policies. However, liveability is a fluid concept that changes over time according to location, individual preferences, and socio-cultural influences. The existence of policy documents dedicated to liveability does not guarantee enhanced liveability. The fact that liveability was not explicitly mentioned by officers interviewed as part of this research suggests that the concept of liveability is not central to those making decisions around open space planning and management. There may be considerable energy dedicated to achieving liveability through urban planning and open space policy, but it may be more difficult to achieve in practise.

Governments frequently make assumptions about the characteristics of the urban environment that make spaces liveable. This presumed liveability leads to decisions that are

imposed by authorities. If there is little consultation with the affected communities a mismatch may emerge between what is delivered and residents' perceptions of liveability. In many cases there are existing systems and processes in place that establish and maintain the liveability of the environment by allocating features like POS. These may come under pressure from the increased population density where governing authorities find it difficult to quickly change policies suited to different urban contexts. Simultaneously, the development of alternative approaches to open space provision that may relieve some of the liveability concerns in densified urban environments are stifled or slowed by institutional inertia and path dependency. Government bureaucracies may also suffer from departmental silos that see departments work towards aims irrespective of conflicting objectives of other departments.

There is suspicion from local government in regard to emerging governance models that accommodate greater community involvement in open space planning and management. It has the potential to give local government a greater insight into residents' liveability requirements. Examples were identified where limited co-governance operates within tightly controlled constraints.

Residents often want what are perceived as highly liveable urban environments protected and regulated. If the urban environment has problems such as poor liveability, then urban planners can play a role by modifying policy and practises to improve these urban environments including those concerned with open space. However, in countries like Australia, the US and the UK urban planners are often working within significant constraints where they are required to maintain a balance between the interests of multiple groups within urban areas, including residents, landowners, businesses, and developers and in so doing may attempt to deliver technocratic or bureaucratic responses that comply with the given regulations, but fail to completely satisfy anyone. It is also recognised that planning systems like those in Australia are subject to the influence of politics where the rules and regulations established by the bureaucracy are modified through the influence of elected officials.

The failure to actively monitor the effect of increased density on aspects of liveability such as open space is a failing of government and points to the need for increased participation from those most affected by deteriorating urban environments. It is governance frameworks that hold the potential to improve the outcomes of densified urban environments by allowing participation from those that are most affected and ensuring that

it is not just government that is making decisions in relation to matters like urban density or open space planning and management. Rather, marginalised groups must be considered when making decisions on policy related to urban density. Promoting greater involvement from interested community members may protect those areas that suffer from open space deficits.

This thesis goes to the heart of what urban planning is about. In the words of Taylor (1998, 167) “town planning exists to improve the world not just understand it.” When urban planning started, its aim was to improve the living conditions of urban populations residing in crowded cities. While modern cities do not necessarily have these same problems, liveability and governance continue to impact on the qualities of urban experience. Additionally, there are now planning systems with a capacity to intervene in the development process and to engage with the governance responsibilities under which they operate. While it is acknowledged that there are limits to the power of urban planning to control and intervene (Murphy 2008), there are still opportunities to propose improvements to a system that is central to the condition of urban life.

Urban planning has a role to play in denser urban environments but must be prepared to be more critical of urban planning and development processes. Developments are being approved in a regulatory framework and socio-economic system that is weighted towards the right of development and the creation of a pro-growth atmosphere. Whereas many obstacles to development have been removed as part of regular, systematic reviews of the planning system there are no similar reviews of liveability in higher density environments. Many planners promoted urban consolidation in the hope that it would improve sustainability, and liveability outcomes. It must be accompanied by changes in open space planning and management policies and practises, including expansion of consultation and collaboration with residents to produce improved liveability outcomes.

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Appendices

A.1 Endnotes

1. Greater Perth is defined as the Perth metropolitan region and the Peel region as defined by the Perth Metropolitan Region Scheme and the Peel Region Scheme. Western Australian state government has combined the two regions for planning purposes in recent times.

2. Note that liveability is also spelt livability. The former spelling has been adopted for this thesis (see Chapter 1).

3. In this thesis liveability is spelt using an "e". This is the British spelling which contrasts with the American form of the word which does not have an "e" as in "livability."

4. Population densities were between seven hundred and one thousand people per acre in the city of New York in the 1890s (Hall 2002 38). This is equivalent to population densities of between one thousand seven hundred and thirty and two thousand four hundred and seventy people per hectare which is higher than the densest cities today. See Table 6.3 for a comparison of population densities.

5. Governments utilised Keynesian economic policies that manipulated taxation and spending to promote economic growth, reduce unemployment and in the process expanded the role and size of government and the associated bureaucracy which had budgetary implications and impacts on unemployment, inflation and productivity within the economy (Thompson 2008; McTaggart, Findlay and Parkin 2013).

6. Merit goods (otherwise known as mixed goods or quasi-public goods) can be provided by either the government or the private sector, but it is recognised that under provision of such goods may have serious consequences for the general population. The best example of merit goods are immunisation and education (Fenna 2004). In both cases the good is provided free of charge by government or subsidised so price is lower, and consumption is higher than it would otherwise be. Spillover benefits are generated (Jackson et al 1999; McTaggart, Findlay and Parkin 2013).

7. Note that the Arnouts, Van der Zouwen and Arts (2012, 45-47) types of governance does not include market governance. The market is seen to operate irrespective of the type of governance, and businesses and those operating in the market are considered actors in the model. It is one representation of many different modes of governance that were highlighted in Kooiman (1993).

8. Approximately 82% of total taxation revenue is collected by the Australian Federal government (Australian Treasury 2010).

9. For example, in WA the State government requires local governments across the state to implement and enforce laws relating to the *Dog Act (1976)* and *Cat Act (2011)*, as well as the collection of the Emergency Services Levy in accordance with the *Fire and Emergency Services Act (1998)*. The collection of fees and enforcement of the laws can be onerous, and revenue generated from such services has no correlation to providing the service (Dollery, Crase and Johnson 2006).

10. In the state of Victoria (Australia), the Kennett government (1992-1999) adopted local government reforms similar to those introduced in the UK which forced competition to be introduced to many local government processes including open space maintenance.

11. The decline in popularity of certain sports has shown that clubs and their control of open spaces is not guaranteed forever. A good example of this is the decline of lawn bowls across

Australia. Some spaces have been converted into beach volleyball courts, urban farms, or redeveloped for housing and businesses (Pike 2015).

12. Note that population is an estimate, population density is an approximation, areas of cities vary depending on the legal, definitional and census differences and data does not consider spatial variations in population density and the figures for Perth do not include the Peel region.

13. Population densities had decreased in many parts of Perth when the Town Planning Department reported on the system of POS allocation, but believed that it should be reviewed (with the possibility of increased contributions from those that subdivide land) if population densities rose and private open space declined in area (Town Planning Department 1981).

14. The SH requirement of 3.36 hectares per thousand population equates to 33.6 square metres per person. The 6.5 square metres per person recommendation represents approximately 20% of this figure (i.e. 6.5/33.6 x 100).

15. All 3 case study areas from this research abut estuaries or the Indian Ocean. The City of Mandurah (and the suburbs of Mandurah and Silver Sands) is adjacent to the Peel Harvey Estuary and Indian Ocean. The City of Cockburn is adjacent to the Indian Ocean, although Cockburn Central and Success are up to ten kilometres from the coast. The City of South Perth, and the suburbs of South Perth and Como, adjoin the Swan and Canning Rivers.

16. The Peel region covers five local government areas including the City of Mandurah, Shire of Waroona, Shire of Boddington, Shire of Murray and the Shire of Serpentine-Jarrahdale. It is south of Perth, west of the Wheatbelt region and north of the South-West region and is formally recognised in WA state government urban planning policy documents including the *Peel Region Scheme* and *Perth and Peel@3.5Million*. It is also the basis upon which many state government departments are organised and means by which resources are allocated. The City of Mandurah is the largest city within the region (Peel Development Commission nd).

17. This is calculated in the following manner;
168 hours = 7 days * 24 hours, 33.9% = 57 hours/168 hours*100 of total time available.

18. Amenity has many definitions, including a set of local attributes providing a range of benefits (including aesthetics, recreation, health) that enhances quality of life. It has both natural and man-made elements some of which can be modified, but not displaced to another location and has local impacts. It should not be confused with liveability, although there are many similarities. It is often used by economists (Schaeffer and Dissart 2018).

19. Cockburn Central and central Mandurah had new regional recreational facilities with indoor sports facilities, gyms and swimming pools.

20. This figure was based on gross residential densities that were utilised by the *SH Plan* in 1955 to establish open space allocations (Town Planning Department 1981).

A.2 Open Space/Park/Reserve Allocation in Selected Suburbs

Table A.1 Cockburn Central

Cockburn Central	**Open Space/Park/Reserve Name**	**Comment**	**Area (m^2)**
	The Siding	Hard surfaced, adjacent to train station and bus interchange	1804
	Regional Public Recreation Facility and Fremantle Football Club Training Facility	Limited public access to facility, yet to open	56530
	Poletti Road	Local reserve	4290
	Cooper Reserve	Local reserve	8739
	Lakeridge Reserve	Local reserve	3268
	Hammond Road and Buckley Street	Drainage	4243
	Tamara Drive	Drainage	6560
Total area open space/park/reserve			85440
% allocation			3.0
m^2 per person			67.8
Population			1260
Total area suburb			2800000m^2 (2.8 hectares)
Population density			4.5 people per hectare

Source: Adapted from ABS (2016p); City of Cockburn (2017a)

Table A.2 Atwell

Atwell	Open Space/Park/Reserve Name	Comment	Area (m^2)
	Tapper Park	Parks and recreation	34307
	Freshwater Reserve	Parks and recreation	43868
	Lydon Park	Parks and recreation	5498
	Mosedale Park	Parks and recreation	16687
	Carl Hausen Park	Parks and recreation	2581
	Atwell Community Centre	Parks and recreation	5909
	Lombe Park	Parks and recreation	1924
	Pipeline Reserve	Parks and recreation	11726.3
	Brenchley Park	Parks and recreation	954
	Atwell Reserve	Parks and recreation	67040.6
	Kennack Park	Parks and recreation	3291
	Tozer Park	Parks and recreation	1746
	Jakovich Park	Parks and recreation	6419
	Zodiac Park	Parks and recreation	2547
	Eco Park	Parks and recreation	19675.3
	Solace Park	Parks and recreation	2814
	Kurrajong Park	Parks and recreation	21841
	Aurora Drive Drainage Swale	Drainage swale	942
	Harmony Park	Lake comprises significant proportion of park	27734
	Tranquil Park	Parks and recreation	2780
	Congenial Park	Parks and recreation	6684
	Kinship Park	Parks and recreation	8400
	Goodwill Park	Parks and recreation	18010
	Chorus Park	Parks and recreation	3544
	Flourish Park		2202
Total area open space/park/reserve		Not including item 1	319124.2
% allocation			9.1
m^2 per person			35.2
	1. Harmony Primary School		37804
Total area open space/park/reserve		Including item 1	356928.2
% allocation			10.2
m^2 per person			39.4
Population			9063
Total area suburb			3500000m^2 (3.5 hectares)
Population density			25.5 people per hectare

Source: Adapted from ABS (2016b); City of Cockburn (2017a)

Table A.3 Success

Success	Open Space/Park/Reserve Name	Comment	Area (m²)
	Michigan Park	Parks and recreation	968
	Jubilee Park	Parks and recreation	18544
	Gandossi Park	Parks and recreation	4300
	Carnegie Park	Parks and recreation	2401
	Steiner Park	Parks and recreation	7597
	David Gregg Park	Parks and recreation	130030
	Denise Oates Park	Parks and recreation	3014
	Hanlon Park	Parks and recreation	3655
	Richmond Park	Parks and recreation	1657
	Magnolia Reserve	Parks and recreation	3742
	Beaumont Park	Parks and recreation	39230
	Wentworth Park	Parks and recreation	30818.4
	Blue Squill Park	Parks and recreation	4001
	Success Reserve	Success recreational facility, adjacent to Success Primary School	274292
	Milwort Park	Parks and recreation	4415
	Boronia Park	Parks and recreation	34992.4
	Purslane Park	Parks and recreation	12444
	Grasstree Park	Parks and recreation	2246
	Evelyn Massey Park	Parks and recreation	9107
	Rush Park	Parks and recreation	1231
	Starbush Park	Parks and recreation	13905
	Waterbuttons Park	Parks and recreation	21171
	Horse Hire Park	Parks and recreation	19471
	Banbar Park	Parks and recreation	2263
	Condil Park	Parks and recreation	1676
	Goojong Park	Parks and recreation	10506
Total area open space/park/reserve		Not including item 1	657676.8
% allocation			10.7%
m² per person			64.8
	1. Success Primary School and Oval	Adjacent to Success Recreational Facility	34208
Total area open space/park/reserve		Including item 1	691884.8
% allocation			11.3
m² per person			68.2
Population			10148
Total area suburb			6100000m² (610 hectares)
Population density			16.6 people per hectare

Source: Adapted from ABS (2016q); City of Cockburn (2017a)

Table A.4 Como

Como	Open Space/Park/Reserve Name	Comment	Area (m^2)
	Bill Grayden Reserve		42475.5
	Collins Oval	Parks and recreation (metro scheme reserve)	50785
	Collier Reserve	Parks and recreation (metro scheme reserve)	28755
	Como Beach Reserve Melville Parade South	Parks and recreation (metro scheme reserve)	43448.45
	Combined small lots abutting Swan River	Parks and recreation (metro scheme reserve)	3848.44
	Barker and Axford Street Reserve	Parks and recreation (local scheme reserve)	2166
	Neil McDougall Park	Parks and recreation (local scheme reserve)	83720
	Coolidge Street Reserve	Parks and recreation (local scheme reserve)	13345
	Ryrie Avenue Reserve	Parks and recreation (local scheme reserve)	31282
	Canavan Crescent Reserve and McDougall Park Community Kindergarten	Parks and recreation (local scheme reserve)	4469
	Land adjacent to Kwinana Freeway south of Olive's Reserve	Parks and recreation (local scheme reserve)	7421
	Bickley Reserve	Parks and recreation (local scheme reserve)	416
	Olive's Reserve	Parks and recreation (local scheme reserve)	13244
	Comer Reserve	Parks and recreation (local scheme reserve)	22634
Total area open space/park/reserve			348009.39
% allocation			5.4
m^2 per person			23.0
	1. Collier Park Golf Course	Parks and recreation (metro scheme reserve)	724149
	2. Como Secondary College	Public purpose, with oval	137951
	3. Collier Primary School	Public purpose, with oval	28224
	4. Como Primary School	Public purpose, with oval	19309
	5. South Perth Lawn Tennis Club	Private institution, surrounded by vegetated bushland	40805
	6. Penrhos College	Private institution, with ovals	81468.3
Total area open space/park/reserve			1031906.3
% allocation			16.1

m² per person			68.3
Population			15103
Total area suburb			6390000m²
Population density			23.6 people per hectare

Source: ABS (2016n); City of South Perth (2017)

Table A.5 Salter Point

Salter Point	**Open Space/Park/Reserve Name**	**Comment**	**Area(m²)**
	Swan River foreshore reserve		92197.3
	Canning Cloister Reserve		17203.6
	Sandon Park		83542
	Redmond Street Reserve		3430.4
	Hogg Avenue Reserve		7942
	Mount Henry Road Reserve		3961
	Jan Doo Park 1 & 2		5548
	Hope Avenue Reserve		7923
Total area open space/park/reserve			221647.3
% allocation			12.0
m² per person			73.4
Population			3018
Total area suburb			1850000m² (185 hectares)
Population density			16.3 people per hectare

Source: ABS (2016c); City of South Perth (2017)

Table A.6 Kensington

Kensington	**Open Space/Park/Reserve Name**	**Comment**	**Area (m²)**
	Moresby Street Reserve		4111
	David Street Reserve		643
	George Gwenyfred Reserve		623
	George Street Reserve		3152.83
	Bill McGrath Reserve		4573
	David Vincent Park		10293
	Makic Street Reserve		2197.05
	Morris Mundy Reserve		32083.4
Total area open space/park/reserve			57676.28
% allocation			2.9
m² per person			12.8
Population			4525
Total area suburb			2010000m² (201 hectares)
Population density			22.5 people per hectare

Source: ABS (2016f); City of South Perth (2017)

Table A.7 Karawara

Karawara	Open Space/Park/Reserve Name	Comment	Area (m^2)
	George Burnett Park		234973.2
	Karawara Greenways		72563.7
Total area open space/park/reserve			307536.9
% allocation			30.7
m^2 per person			149.2
Population			2061
Total area suburb			1000000m^2 (100 hectares)
Population density			20.6 people per hectare

Source: ABS (2016e); City of South Perth (2017)

Table A.8 South Perth

South Perth	Open Space/Park/Reserve Name	Comment	Area (m^2)
	Brandon Darling Reserve		808
	Swanview Terrace Reserve		1609
	Meadowvale Avenue Reserve		364
	Richardson Park		75907
	Clydesdale Park		21661
	Sir James Mitchell Park		613000.2
	Old Mill Park		9131
	Melville Parade North		10599.29
	Foreshore adjacent to Melville Parade North		49691.2
	Windsor Park Mends Street Precinct		21650
Total area open space/park/reserve		Not including items 1-5	804420.7
% allocation			15.4
m^2 per person			62.6
	1. South Perth Primary School		18938
	2. South Perth Tennis Club		13211
	3. Perth Zoo		190466
	4. Royal Perth Golf Course		336444
	5. Wesley College		78608.9
Total area open space/park/reserve		Including items 1-5	637127.9
% allocation			27.5
m^2 per person			112.2
Population			12848
Total area suburb			5240000m^2 (524 hectares)
Population density			24.5 people per hectare

Source: ABS (2016o); City of South Perth (2017)

Table A.9 Manning

Manning	Open Space/Park/Reserve Name	Comment	Area (m^2)
	Isabella/Craigie Reserve Manning Pre-School		4530
	Challenger Reserve		80946
	Bradshaw/Conochie Reserve		9333
	Elderfield Road Reserve		2289
	Marsh Avenue Reserve		4698
	Davilak Crescent Reserve		24693
Total area open space/park/reserve		Not including item 1-2	126489
% allocation			7.5
m^2 per person			30.5
	1. Curtin Primary School		46842
	2. Trinity Playing Fields		141944
Total area open space/park/reserve		Including item 1-2	315275
% allocation			18.7
m^2 per person			75.9
Population			4153
Total area suburb			1690000m^2 (169 hectares)
Population density			24.6 people per hectare

Source: ABS (2016d); City of South Perth (2017)

Table A.10 Silver Sands

Silver Sands	Open Space/Park/Reserve Name	Comment	Area (m²)
	16 Asteria Court	Precinct development, drainage sump, fenced, vegetation located inside fenced area	1740
	20 Orion Court	Community purpose	704
	3F Shaw Street	Community purpose	90
	12 Nestor Way	Community purpose	809
	18 Priam Road	Community purpose	911
	4 Petina Court	Community purpose	370
	Adonis Road	Local recreation	49685
	32 Orion Road	Local recreation	26995
	Lot 2942 Watersun Drive	Local recreation	29035
	51 Watersun	Local recreation	17024
	Reserve 355281 Maritime Road	Local recreation	7960
	2D Seawind Drive	Local recreation	1031
	2C Seawind Drive	Local recreation	1546
	Lot 149 Ormsby Terrace	ROS- Silver Sands Reserve	17149
Total area open space/park/reserve		Not including items 1-7	150425
% allocation			12.5
m² per person			119.6
	1. Lot 90517 206 Ormsby Terrace	ROS, foreshore reserve	66584
	2. Lot 4151 Ormsby Terrace	ROS, foreshore reserve	33994
	3. Lot 2094 Ormsby Terrace	ROS, foreshore reserve	3085
	4. Lot 90684 Ormsby Terrace	ROS, foreshore reserve	2982
	5. Lot 4150 Ormsby Terrace	ROS, foreshore reserve	18703
	6. Lot 166 290 Ormsby Terrace	ROS, foreshore reserve	15247
	7. Lot 150 Ormsby Terrace	ROS, foreshore reserve	36930
Total area open space/park/reserve		Including items 1-7	332574
% allocation			27.7
m² per person			264.4
Population			1258
Total area suburb			1200000 (120 hectares)
Population density			10.5 people per hectare

Source: ABS (2016m); City of Mandurah (2017)

Table A.11 Mandurah

Mandurah	Open Space/Park/Reserve Name	Comment	Area (m²)
	Lot 326 Gallileo Loop	Mandurah Ocean Marina Development	4772
	Lot 5044 Florian Mews	Mandurah Ocean Marina Development	3550
	Lot 5043 Cannaregio Square	Mandurah Ocean Marina Development	304
	Lot 5042 Cannaregio Square	Mandurah Ocean Marina Development	421
	Lot 316 The Palladio	Mandurah Ocean Marina Development	430
	Lot 288 Vivaldi Drive	Mandurah Ocean Marina Development	2182
	Lot 323 Vivaldi Drive	Mandurah Ocean Marina Development	3216
	Lot 325 Vivaldi Drive	Mandurah Ocean Marina Development	2627
	Lot 204 Treviso Mews	Mandurah Ocean Marina Development	305
	Lot 3012 2-20 Ormsby Terrace	Mandurah Ocean Marina Development	1003
	Lot 318 The Palladio	Mandurah Ocean Marina Development	2483
	Lot 4738 Dolphin Drive	Mandurah Ocean Marina Development	88689
	Lot 4999 16 Breakwater Drive	Mandurah Ocean Marina Development	1012
	Lot 3009 2-20 Ormsby Terrace	Mandurah Ocean Marina Development	2888
	Lot 5054 The Lido	Mandurah Ocean Marina Development	25554
	Lot 4740 13 Dolphin Drive	Mandurah Ocean Marina Development	12441
	Lot 18 1 Spinnaker Quays	Mandurah Ocean Marina Development	3633
	Lot 99 Regatta Turn	Mandurah Ocean Marina Development	1745
	Lot 123 Henson Street	ROS	9729
	Lot 0 Ormsby Terrace	ROS	17332
	Lot 90760 21 Mandurah Terrace	ROS	14493
	Lot 2050 Mandurah Terrace	ROS	5465
	Lot 1743 11L Mandurah Terrace	ROS	690
	Lot 2027 Mandurah Road	ROS	197
	Lot 90702 9L Mandurah Terrace	ROS	196
	Lot 2025 Mandurah Terrace	ROS	111

	Lot 503 Mandurah Terrace	ROS	298
	Lot 90751 1 Pinjarra Road	ROS	159
	Lot 90763 1A Pinjarra Road	ROS	1661
	Lot 2105 Pinjarra Road	ROS	160
	Lot 2974 241 Mandurah Terrace	District recreation	24377
	Lot 2974 241 Mandurah Terrace	District recreation	14848
	Lot 90349 91A Park Road	District recreation	11546
	Lot 90635 90 Milgar Street	District recreation	29544
	89 Allnut Street	District recreation	18398
	Lot 101 87 Dower Street	District recreation	57968
	Lot 501 70 Thomson Street	District recreation	19631
	Lot 90757 20 Thomson Street	District recreation	51113
	Lot 90692 21 Dower Street	District recreation	5367
	Lot 90758 20 Thomson Street	District recreation	3575
	Lot 90752 303 Pinjarra Road	District recreation	44676
	Lot 90743 25 Adana Street	District recreation	11129
	Lot 3054 241 Mandurah Terrace	Local recreation	5374
	241 Mandurah Terrace	Local recreation	38731
	Lot 90662 28 Hennessy Place	Local recreation	2719
	Lot 90739 86 Boundary Road	Local recreation	6146
	Lot 90609 2 Tickner Place	Local recreation	13096
	Lot 90646 15 Palmer Way	Local recreation	10876
	Mandurah Junction POS	Local recreation	26905
	205 Mandurah Terrace	Local recreation	14242
	Lot 500 Gray Road	Local recreation	10531
	60 Milgar Street	Local recreation	2525
	Tindale Street	Local recreation	2428
	28 Rockford Street	Local recreation	2000
	Lot 427 2-4 Allnut Street	Local recreation	5240
	Mandurah Terrace	Local recreation	1728
	75 Mandurah Terrace	City Centre Development	46820
	63 Ormsby Terrace	City Centre Development	8075
	Lot 306 8 Mandurah Terrace	City Centre development	1185

	Lot 1846 Peel Street	City Centre development	7823
	Lot 90741 18 Hackett Street	City Centre Development	20013
	Lot 90617 35 Rockford Street	Community purpose	1230
	288 Pinjarra Road	Community purpose	1262
	Lot 90400 46 Stinton Street	Community purpose	1002
	Lot 90664 75 Dower Street	Community purpose	17806
	Lot 4577 1 Cemetery Road	Community purpose	40740
	Lot 90351 28 Cemetery Road	Community purpose	2025
	Lot 90311 84 Boundary Road	Community purpose	1860
	Lot 90512 288 Pinjarra Road	Community purpose	1262
	Lot 3 3A Lanyon Street	Community purpose	476
	John Tonkin College (middle school)	Community purposes	196714
	Lot 478 12 Gibla Street	Residential	6914
	Lot 1 31 Anstruther Road	Residential	1609
	Corner of Anstruther Road, Cox Street, Allnut Street	In road reserve	887
	Lot 505 Blakely Street	Precinct development	4483
Total area open space/park/reserve			1129645
% allocation			15.7
m² per person			144.1
Population			7837
Total area suburb			7200000m² (720 hectares)
Population density			10.9 people per hectare

Source: ABS (2016l); City of Mandurah (2017)

A.3 Name and Locations of Gyms and Fitness Centres in Case Study LGAs

Table A.12 Gyms in Mandurah

Number	Name	Address
1	Snap Fitness	64 Pinjarra Road Mandurah
2	Boost Health and Fitness	4 Canton Fairway Mandurah
3	Hearts Health Club	15-19 Pinjarra Road Mandurah
4	Non-Stop Fitness	327 Mandurah Road Mandurah
5	The Cave Strength and Conditioning	2/50 Reserve Drive Mandurah
6	Jetts Fitness	Corner Lakes Road and Pinjarra Road
7	Mandurah Aquatic and Recreation Centre	303 Pinjarra Road Mandurah
8	Snap Fitness	64 Pinjarra Road Mandurah
9	Anytime Fitness	7/8 Magenta Terrace Mandurah
10	CrossFit Mandurah	2/10 Kulin Way Mandurah
11	Pitstop Fitness Studios	20 Tuckey Street Mandurah
12	Curves Mandurah	318 Pinjarra Road Mandurah
13	Quantum LifeFitness	2 The Palladio Street Mandurah
14	Bodyapeel Gym	10 Dower Street Mandurah
15	Family First Fit	56 Reserve Drive Mandurah

Source: Google (2016c); Google Maps (2016a)

Table A.13 Gyms in Cockburn Central

Number	Name	Address
1	Goodlife Health Club Success	816 Beeliar Drive Success
2	Roar Fitness / RFX CrossFit 24/7 / Roar Pole Fitness	9/49 Armadale Road Jandakot
3	Snap Fitness	22/87 Armadale Road Jandakot
4	Mayhem in Motion	Beeliar Drive Cockburn Central
5	Anytime Fitness	1/676 Beeliar Drive
6	The Body Consultants	1/22 Chullora Bend Jandakot
7	Recoyle Fitness Studio	5/6 Blackly Row
8	Beyond Limits	3/29 Biscayne Way
9	Jetts Success	816 Beeliar Drive
10	Indoor Bootcamp the Transformation Centre	35 Biscayne Way
11	CrossFit Chasing Better	1/1 Pusey Road
12	Pilates Fit Perth	3/30 Hammond Road Cockburn Central
13	Legion MMA Cockburn	Poletti Road Cockburn
14	Cockburn Aquatic and Recreation Centre	31 Veterans Parade
15	Kanga Karate Atwell	9 Lombe Gardens
16	Round 1 Fitness	1/22 Hammond Road Cockburn

Source: Google (2016a); Google Maps (2016b)

Table A.14 Gyms in South Perth

Number	Name	Address
1	Como Health and Fitness Centre	1/460 Canning Highway
2	Life Ready Physio and Pilates South Perth	240 Canning Highway
3	South Perth Yoga Shala	2 Hobbs Avenue
4	Renouf Personal Training	58 Angelo Street South Perth
5	Finetune Fitness	Amherst Street South Perth
6	George Burnett Leisure Centre	Manning Road
7	F45 Training	97 Canning Highway South Perth
8	Fine Tune Fitness	1 Amherst Street South Perth
9	Rarity Fitness	Amherst Street South Perth
10	Essence Wellness Centre	7 Hardy Street
11	XS Fitness	396 Mill Point Road South Perth
12	Health Fixation	2 Harper Terrace
13	Kensington Police and Community Youth Centre	
14	Fitness Attitudes	49 George Street Kensington
15	Perth Yoga for Everybody	53 Coode Street South Perth

Source: Google (2016b); Google Maps (2016c)

A.4 Consent Form for Interview Subjects

Curtin University

Study Title

The Impact of Urban Consolidation on the Provision and Use of Open Space; A Case Study of Mandurah, Cockburn Central and South Perth.

Study Researchers

This study (Ethics Approval BE-71-2014) will form the major component of a doctoral thesis for James Bannerman from the Department of Urban and Regional Planning at Curtin University. He can be contacted by email at james.bannerman@postgrad.curtin.edu.au .

The supervisor for this study is Shane Greive from Curtin University who can be contacted by phone on 9266 2718 or by email at S.Greive@exchange.curtin.edu.au .

Consent

- I consent to participate in this study.
- I have read the Information Sheet and understand the procedures that will be carried out.
- I have been advised of the benefits and risks associated with participation.
- The interview will be recorded on an audio recording device.
- I have had an opportunity to ask questions.
- I understand that as a participant, my privacy will be maintained and that the information obtained in this research will be used in a manner to maintain anonymity, guarantee confidentiality, respect, and personal rights.
- I give permission for the results from this study to be used in reports or research papers or thesis, on the understanding that my anonymity will be preserved.
- I understand that I may withdraw from the study at any time without prejudice.

Please provide the following details to acknowledge your consent.

Name	
Signature	
Date	
Phone Number	
Address	

A.5 Information Sheet for Research

Curtin University

Study Title

The Impact of Urban Consolidation on the Provision and Use of Open Space; A Case Study of Mandurah, Cockburn Central and South Perth.

Study Aims

The aim of this study is to;

1. Research open space demands of people living in higher density accommodation.
2. Identify other opportunities for leisure and recreation in the areas undergoing urban consolidation.
3. Explain how urban planners might facilitate changes to open space provision in the future.
4. Link the provision of open space with liveable built environments.

Study description

This study will investigate how increasing dwelling densities affects the provision and use of open space.

Study method

This study will utilise semi-structured interviews with officers from local and state government.

Role of participants

- Should you agree to be part of this study, you will undertake a face-to-face interview.
- The interviews will take no more than 60 minutes.
- Responses will be recorded on an audio recording device and used as part of this study.

Confidentiality

- The names of people making comments will not be used in the thesis. Where an individual is representing an organisation, the name of the organisation will be used along with their role in the organisation.
- The information collected in this research will be re-identifiable (coded). This means that we will collect data that can identify you, but will then remove identifying information on any data or sample and replace it with a code when we analyse the data. Only the research team have access to the code to match your child's name if it is necessary to do so. Any information we collect will be treated as confidential and used only in this project unless otherwise specified. The following people will have access to the information we collect in this research: the research team and, in the event of an audit or investigation, staff from the Curtin University Office of Research and Development.
- The information we collect in this study will be kept under secure conditions at

- Curtin University for 7 years after the research is published and then it will be destroyed.

Participation is voluntary

- Participation in this study is completely voluntary. You can withdraw at any time from the study and have any information you have provided not included in the results of the work. Any decision to withdraw from the study will be kept confidential.

Risks and benefits to participants

- The only risk to a participant in taking part in this study relates to being identified as making a particular comment. As stated above, the names of participants will be de-identified and not shown in the thesis.
- Interviews will be undertaken in accordance with the Covid 19 health and safety requirements and guidelines set by the WA State government and the organisations that interview participants belong to. The researcher will maintain social distancing and register at the place of interview using the SafeWA app.

Consent

- Prior to undertaking the proposed interviews I will email the information sheet, consent form and interview questions to participants.
- Before commencing the interviews all participants will have an opportunity to read through each document and ask questions of the interviewer.
- The interviewer will have each participant sign the consent form.
- The consent forms will be kept on record.

Contact

Data is being collected for a doctoral thesis for James Bannerman who can be contacted by email james.bannerman@postgrad.curtin.edu.au .
The supervisor for this study is Shane Greive who can be contacted by phone on 9266 2718 or S.Greive@exchange.curtin.edu.au .

Human Research Ethics Committee

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number BE 71-2014). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email hrec@curtin.edu.au .

Timeline for Study

The study commenced in November 2012, and is due for completion by end of 2021.

A.6 Questions for Interview Subjects

1. What is your role? What role do you have with regards to the use or provision of open space?
2. What do you believe are some of the main issues related to the maintenance and provision of open space?
3. What are the local/state government's priorities with regards to the provision of open space within areas where urban consolidation or redevelopment is occurring?
4. How are these priorities decided?
5. Are the policies related to the provision of open space reviewed and how often?
6. How do departments within your organisation make decisions with regards to open space?
7. What potential solutions might be considered where open space is underprovided?
8. Has your government ever been approached to establish groups from the community who might participate in the development or maintenance or management of open space?
9. If so what format might these groups take?
10. What might influence the success or failure of alternative approaches to providing and maintaining open space?
11. Do you have any further comments or questions?