

City of Belmont

Urban Forest Strategy

August 2014



Creating opportunities



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CITY OF BELMONT – CITY OF OPPORTUNITY; OUR VISION

The City of Belmont is home to a diverse and harmonious community, thriving from the opportunities of our unique, riverside City.

The City's Urban Forest Strategy will secure the urban forest as a sustainable asset, which further contributes to the City becoming one of Western Australia's most liveable and desirable inner-city municipalities for current and future generations.

A thriving urban forest should be seen as a desirable quality that supports sustainable growth in population, property and industry and therefore the livelihoods, lifestyles and health of the City's diverse communities.

The retention and enhancement of green infrastructure will not only add to the urban liveability of current generations but sets the precursor for healthy communities for decades to come.



***“At first I thought I was fighting to save the rubber trees;
then I thought I was fighting to save the Amazon rainforest.
Now I realize I am fighting for humanity”***

Francisco Alves Mendes Filho
A.K.A. *Chico Mendes*
1944 – 1988

Brazilian rubber tapper, trade union leader, environmentalist and social activist



A mixture of trees surrounding Tomato Lake, creating a refuge from the built environment for local fauna and visitors



Riverside Eucalypts on the banks of the Swan River at Ascot Waters, providing contrast and a sense of place



A consistent planting of Jacaranda trees providing human scale, colour and shade

1 PREFACE

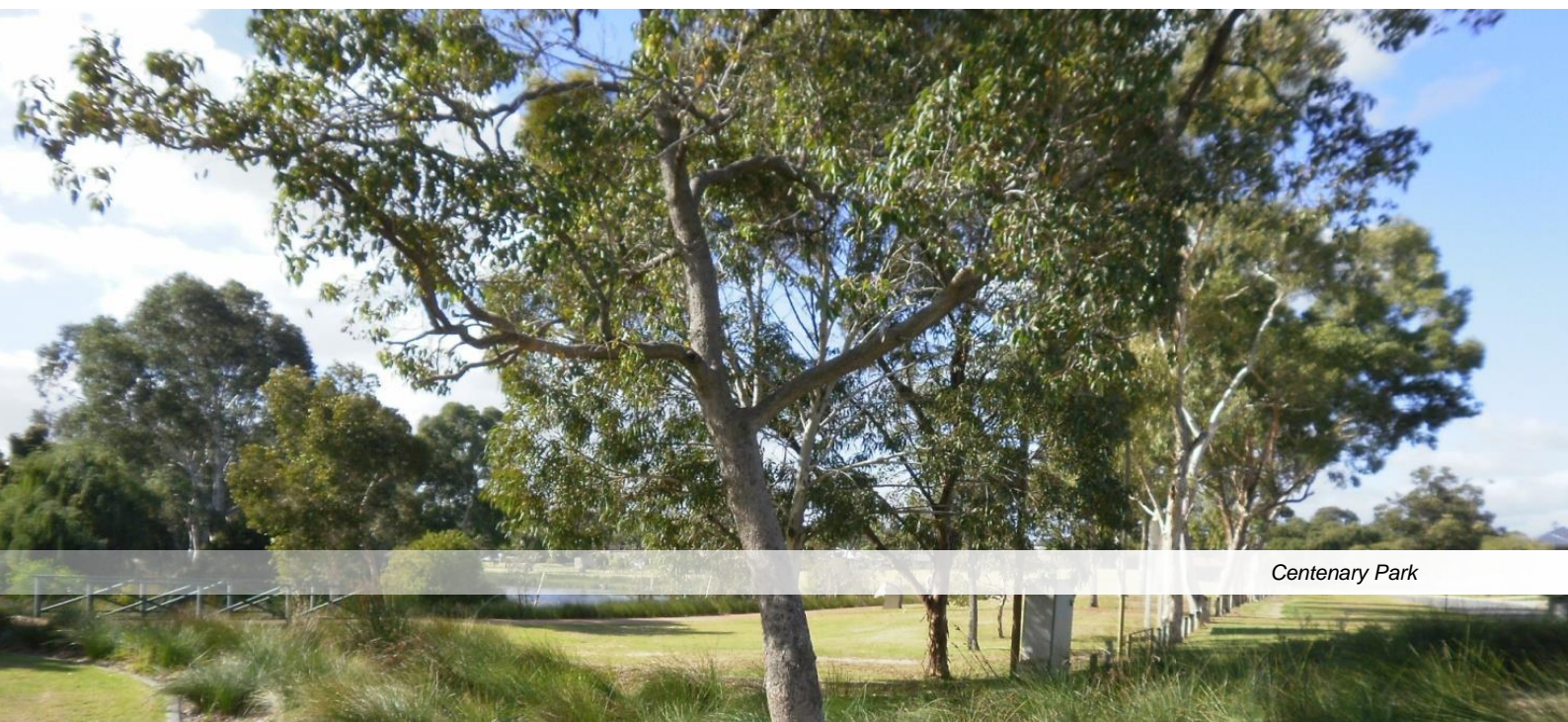
Urban liveability is directly proportional to, and underpinned by, the presence of green infrastructure within the urban environment. This is a result of the demonstrated cumulative benefits it has on the health and sustainability of communities. However, population growth within Western Australia has progressed with significant urban densification, which often coincides with the clearing of our trees. Consequently, there is increased pressure on those qualities and values, which underpin the liveability of our City.

The presence of canopy coverage provides a multitude of benefits. It supports mental wellbeing and contributes to physical health, whilst creating environments, which are calming and enjoyable to occupy. Whilst providing a range of direct benefits to individuals, canopy coverage also enhances the local environment through cleaner air and reduces stormwater runoff, which adds value to both commercial and residential areas.

To accommodate sustainable and continued population growth, historically treed lots are often cleared for development and consequently, canopy cover is lost. Wide scale removal of canopy in the urban environment often results in any remnant trees being isolated and segmented, leaving many square kilometres of hard surfaces, including roads, car parks, driveways, and built structures. These are hot and harsh urban environments that detract from the previously discussed benefits of canopy coverage.

As a result, the absence of canopy coverage in an urban environment can exacerbate health, sociological and financial issues which would otherwise be compensated for or removed through the presence of canopy cover. Green infrastructure and canopy coverage reduce health complications caused by heat and ultraviolet radiation exposure; increase social cohesion and shade. This helps to extend built infrastructure asset life, reducing the overall financial burden often encountered through mitigating these consequences.

The City is therefore working towards the retention and enhancement of the urban forest to secure the many environmental, aesthetic, economic and social values it provides. The Strategy will progress the City's management of the urban forest so that it upholds the City's vision and continues to support the community's identity, its sense of place and enhances quality of life.



Centenary Park

2 THE VALUE OF AN URBAN FOREST STRATEGY

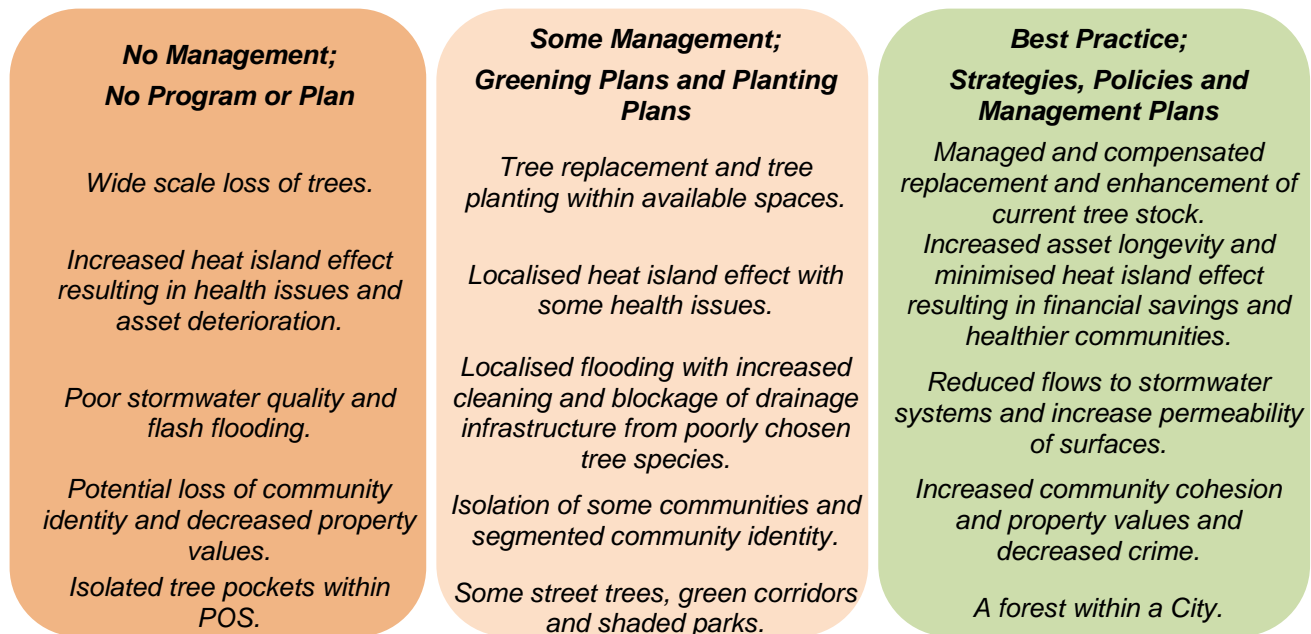
Programs similar to the Urban Forest Strategy are often simplistic in nature and simplify “*cause and effect*”; one is the consequence of the other and the solution is working with the cause. However, the management and enhancement of an urban forest is not as easily defined.

Trees within the urban environment are viewed and treated differently depending on an individual’s circumstances. Some demographic groups may see the overall value of trees in an urban environment, whilst some may focus on the issues posed by them. As such, a program must not just focus on “*cause and effect*”, but also engage, educate and provide management solutions to a multitude of issues. This is the primary reason the City has focused on the development of a Strategy rather than simply on planting programs or greening plans.

The Strategy is a Best Practice framework and acknowledges the requirement for policy, financial and resourcing considerations. It supports the activities of the City and provides a wide range of management options for the urban forest.

This is seen as critical due to the previously discussed compounding values of trees in the urban environment. With no or minimal management, the only remaining trees within the urban environment will likely be within parks and recreational reserves, segmented and isolated by built infrastructure. With some management, trees may be replaced however, there is likely no security for those trees and ongoing loss may result in further reduction in canopy coverage. However, through applying best management practices the urban forest can be sustainable and enhanced so that the canopy coverage is maintained or increased and result in the continued provision of health, economic and social benefits to the community. It is the City’s view that the implementation of this Strategy will result in best management practices and secure the City’s urban forest.

Figure 1: Paradigm of management options and their supposed impacts on the Urban Forest, Urban Liveability and Environment



2.1 Policy Context

With global population rising and the impacts of climatic extremes being felt, the benefits of urban forests are becoming widely recognised nationally and internationally. However, in an urban environment, which is increasing in density, the management of the urban forest should not be undertaken in isolation and not without the application of innovative and integrated strategies and policies.

The compounding value of urban forests is often lost in simplified plans that do not deploy an integrated and holistic approach to all facets of urban forestry management. The setting of canopy targets and the preservation of the urban forest is not solely to meet aesthetic ambitions and it is not often realised that a healthy urban forest can assist in achieving other urban objectives. Synergies can be identified between canopy cover and climate change mitigation, reducing urban heat, increasing community health and wellbeing, incorporating Water Sensitive Urban Design into urban environments and supporting land use planning and development. As such, the City's Urban Forest Strategy puts emphasis on an integrated approach to realise the urban forests full potential whilst upholding many other associated values.

Healthy and adequate canopy coverage with appropriate species selection can influence local microclimates and reduce daily maximum temperatures, which is invaluable during extreme heat events. This is achievable through green infrastructure, ideally integrated with Water Sensitive Urban Design or irrigation, as it creates areas that cool the local environment. Green infrastructure and canopy coverage should also be recognised as supporting elements in achieving other objectives, such as water quality improvement, drainage and permeability, biodiversity conservation and general aesthetics. "Greener environments" are also calming and reduce the burden of mental illnesses whilst increasing social cohesion and sense of place. Therefore, green infrastructure and canopy coverage should be seen as enabling features, particularly for the health, wellbeing and sustainability of communities and urban environments.

Research undertaken by Monash University suggests that for Perth, over two consecutive days with an average temperature of 44°C, heat related mortality may increase by 30%. However, this mortality rate can reduce by 20% through a reduction of air temperature by 1 to 2°C (Tapper, 2014). This may assist Local Governments and the State Government in reducing some dependency on emergency plans such as *WESTPLAN Heatwave* (Department of Health, 2012), which comes into effect during extreme heat events to minimise the loss of life. Canopy coverage and green infrastructure can therefore reduce the impact of extreme heat events experienced during future shifts in climate and reduce mortality rates associated with these events.

The City and the Western Australian Government encourage and support physically and mentally healthy communities, through the promotion of physical activities, community engagement ("*Act. Belong. Commit*") and sustainable transport. These are covered through a range of strategies and plans, in particular, the City's TravelSmart Plan, the State's Bike Network Plan & TravelSmart Program and local and state community wellbeing plans. Conversely, a key barrier in encouraging these activities is the urban environment itself. Surveys have shown that people are less likely to engage in physical activity such as walking or cycling in urban environments that are devoid of vegetation and green infrastructure as opposed to "treed" environments. Shaded, tree lined streets and paths are therefore conducive to these healthy activities, and hence by infill planting we can support the objectives of varying policies through one action.

However, regardless of these values, green infrastructure and canopy cover is often irreversibly lost through population growth and the demands for affordable housing at higher densities. It is predicted that Australia will be home to 35.5 million people by 2056 whereby 10% (3.5 million) of this will be housed in Perth (Commonwealth of Australia, 2010). To accommodate this increase in population, and to cope with a migration rate of 1,000 people into WA per week (State of Western Australia, 2013), the Western Australian Government and the Western Australian Planning

Commission (WAPC) released their guidance document, *Directions 2031 and beyond - metropolitan planning beyond the horizon*, to guide and consolidate the State's development.

Directions 2031 acts as a spatial framework for Perth and Peel and replaces all previous Metropolitan planning strategies. It ultimately seeks a 50% improvement on current residential infill trends of 30 to 35% with an infill target of 47% (Western Australian Planning Commission, 2010), which is initially achievable through increased density and associated housing types, such as apartment living, walk-up multistorey, semi-detached houses, row or terrace house and townhouse residential. Consequently, these density targets are often contributing factors in the removal of urban vegetation. Notwithstanding this, whilst it may appear that the loss of green infrastructure is the product of high density, and for the majority of cases it is, it should not be viewed as such and with appropriate planning strategies development can occur at high levels of density without being to the detriment of green infrastructure. High-density areas can result in innovative challenges to retain or incorporate green infrastructure into the overall design. However, the real contributor to the loss of green infrastructure exists within a paradox between planning and peoples lifestyle choices and house-type preferences.

A study undertaken for Perth and Peel on house-type preferences in 2013, *The Housing we'd Choose*, identified an inconsistency between Directions 2031 and residential housing preferences, which indicated that our population's housing-type preferences may exacerbate the loss of green infrastructure further. Whilst an objective of Directions 2031 is to increase residential density, 79% of survey respondents preferred a separate (detached) house. This paradox between house-type preferences and high-density is then demonstrated by a minor proportion of respondents opting for high-density house-types, with only 13% preferring semi-detached houses (semi-detached, row or terrace house, townhouse) and 7% in preference of flats, units or apartments. The survey also identified that, of those participants who were currently occupying a flat, unit or apartment, 64% would prefer a separate (detached) house (State of Western Australia, 2013). However, house-type preferences are generally due to our population's desired amenities and lifestyle, which standalone houses generally provide. The majority of participants idealised house-types that included three or more bedrooms, two or more bathrooms, two or more entertaining areas and private open spaces (front and back yards).

Albeit a large proportion of respondents preferred a separate house, affordability was a key determining factor. Where constrained by affordability, most respondents chose a housing-type trade off in preference for semi-detached type dwellings in preferable locations, mainly within the inner central metropolitan area (State of Western Australia, 2013). However, their preference for high-density semi-detached houses was also dependent on achieving the amenities of a standalone house. This market demand has otherwise resulted in a housing market which focuses on inner city residential developments consisting of semi-detached houses, which otherwise consume as much as 95% of the available space to provide market demanded house types. As this occurs, the space for green infrastructure and private open spaces diminishes.

It could be suggested that the loss of green infrastructure is exacerbated by residential infill and people's perceived value of green infrastructure. The need for a strong planning platform to guide land use planning into the future should not be dismissed and is imperative, however surveys suggest that the desirable density is not initially achievable unless it offers house-type trade-offs or incentives. Higher densities are passively attained through market forces (building "what sells" and "what people can afford") and as such, the majority of development continues as semi-detached housing. This does meet density objectives however also results in the removal of green infrastructure on private land and also puts further pressure on green infrastructure on public land, for example within the road verge. It is therefore a strategic objective of this Strategy to advocate the full potential of our urban forest, so that it is realised, preserved and enhanced and by doing so continues to support the health and sustainability of communities living in an urban environment.

3 “URBAN FOREST” AND “URBAN FORESTRY”

An “urban forest” is comprised of all the trees within the urban or built environment. It includes those within street verges, parks, private lands, green belts and remnant bushland. As such, the urban forest is primarily defined by the urban nature and location of trees.

The term “urban forestry” emerged in the mid 1960’s and has grown to encompass a multitude of disciplines, including arboriculture, forestry, ecology, hydrology, atmospheric and physical sciences, stormwater control and a range of environmental and engineering sciences that interact within cities. Urban forestry is therefore the management of the trees within an urban location so they function as an urban forest.

3.1 *Benefits of the Urban Forest - Importance of City Trees*

When considering the benefits of trees, it is necessary to consider the cumulative or compounding benefits provided to an urban environment through its green infrastructure and forest resources. Over the past decade, there have been tremendous advances in our knowledge of the value of urban trees, and specifically, the extent to which they contribute to the liveability of our City.

An urban forest provides to communities, both human and natural, an endless supply of “free” benefits, which make cities more liveable. These benefits can be categorised into four groups, which are explained in further detail over page in Figure 2. These groups are:

- Environmental (Natural Belmont)
- Aesthetic (Built Belmont)
- Economic (Business Belmont) and
- Social (Social Belmont).

It is commonplace for the value of trees to be overlooked and it is for this reason the retention and enhancement of the urban forest and the application of urban forestry management principles are critical. Without green infrastructure and appropriate management, the environmental, economic and social issues related to, and generally caused by, living in an urban environment are increased to the point of the creation of near uninhabitable urban environments.

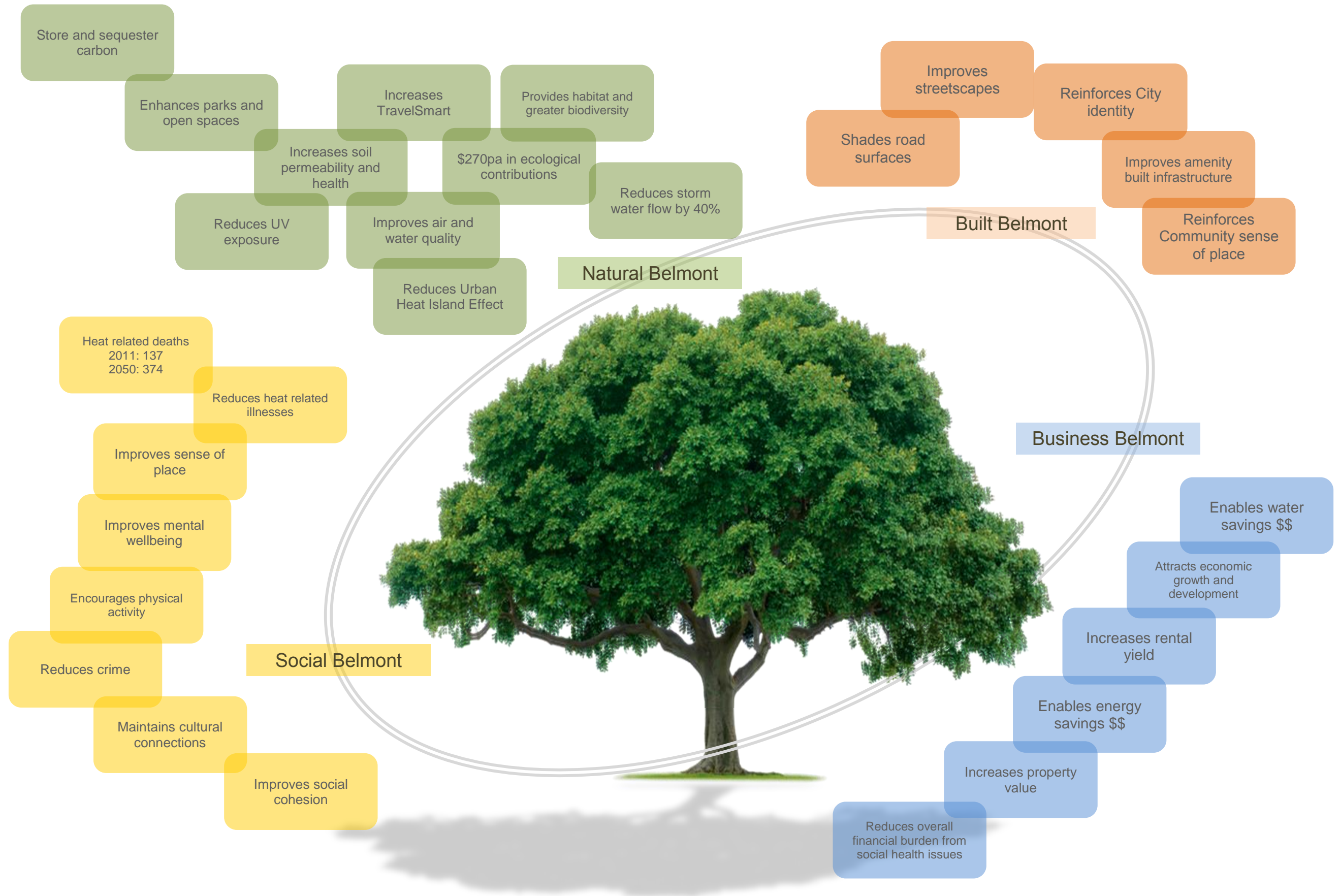


Figure 2: The value of trees and canopy coverage in the urban environment

4 THE CITY'S URBAN FOREST STRATEGY

The development of the Urban Forest Strategy has been undertaken as a multidisciplinary approach, expanding across various internal City departments. This is primarily due to the compounding benefits a healthy urban forest returns and how it complements what the City already does. The Strategy aims to enhance the urban liveability aspects of the following documents:

- Community Development Plan
- Community Wellbeing Plan
- Community Safety and Crime Prevention Plan
- Environment Plan
- Local Bike Plan
- Local Biodiversity Strategy
- Local Planning Scheme
- Physical Activity and Healthy Eating Plan
- Related Asset Management Plans
- Street Tree Plan
- Stormwater Management Plan
- TravelSmart Plan

The Strategy is an important step towards achieving a sustainable urban forest. It broadly outlines what we want to achieve through management or canopy plans. However, “*what we want to achieve*” needs some guidance and as such, the Strategy has adopted a milestone approach to guide its development.

4.1 A Milestone Approach

To formalise the ongoing implementation of the Strategy and subsidiary documents, the City has adopted a five-milestone structure, similar to what has been used in Western Australia for the ICLEI Water Campaign™ and Western Australia's Waterwise Council program (Department of Water and the Water Corporation).

The five milestones of the Strategy are:

- **Milestone 1** Undertake mapping of the City of Belmont's urban forest canopy coverage and analyse for trends
- **Milestone 2** Develop an Urban Forest Strategy with strategic objectives and an initial canopy target
- **Milestone 3** Develop the Canopy Plan with formalised targets and commence implementation of the actions to achieve the strategy objectives
- **Milestone 4** Ongoing implementation of the Canopy Plan, its subsidiary documents and progress towards targets
- **Milestone 5** Review and evaluate progress towards the canopy target in regards to strategic objectives.

Milestone 5 will assist in identifying any gaps, or indicate areas of improvement towards the target. At Milestone 5, it may also be identified that the targets set at Milestone 2 and 3 require amendment to either further enhance the canopy coverage or maintain it. On completion of Milestone 5, the City can revise the original Strategic Objectives in comparison to what has been achieved. This process ensures the City is continuously improving its management of the urban forest by adopting a “Plan-Do-Check-Act” process as recognised by the City's ISO14001 and ISO9001 certifications.



Figure 3: Milestone Structure to the Urban Forest Strategy

5 MAPPING OUR URBAN FOREST AND OUR URBAN FOREST CHALLENGE (MILESTONE 1)

The City undertook aerial imagery mapping in 2013 of the City's urban forest canopy, which illustrated a loss of some 161,800 m² of canopy area between 2001 and 2012. On further assessment of canopy by suburb, Ascot and Redcliffe had experienced a growth in canopy area by 36% and 6% respectively, while Belmont, Cloverdale, Kewdale and Rivervale have experienced canopy reductions by 9%, 12%, 13% and 19% respectively (Figure 4). It was also identified that the largest proportion of canopy loss occurred on private lands however has increased in road reserves and public open space (Figure 5).

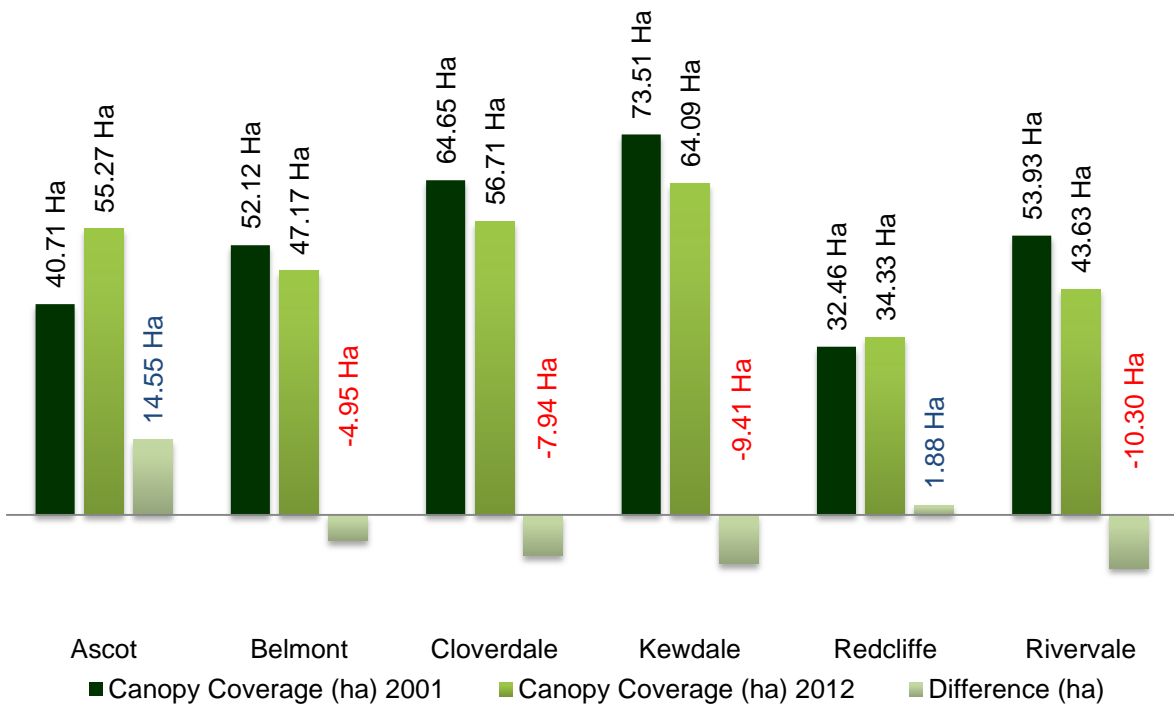


Figure 4: Canopy Coverage (hectares) change between the baseline year of 2001 and 2012 for each suburb

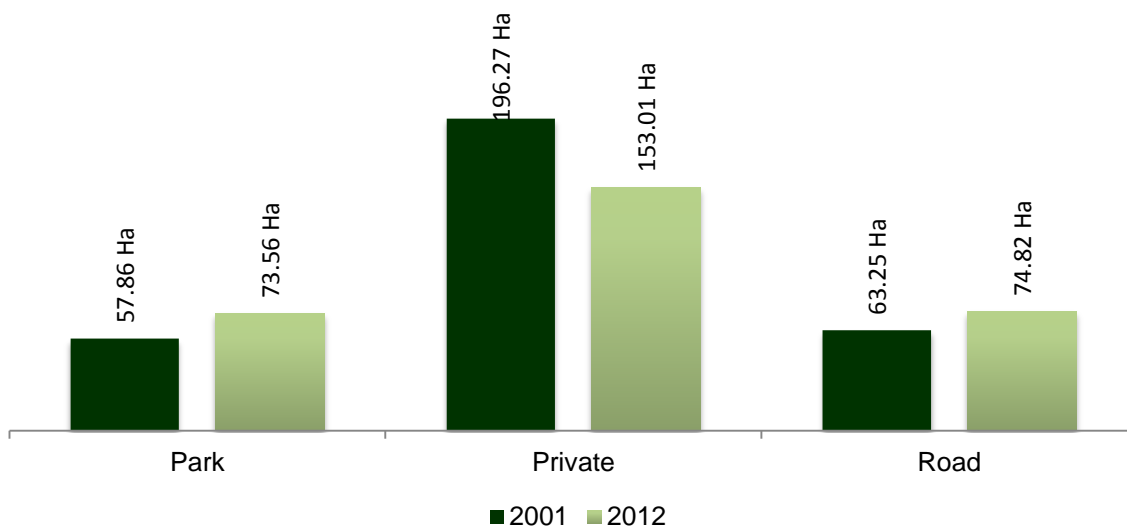


Figure 5: Canopy Coverage (hectares) change between the baseline year of 2001 and 2012 per park, private and road reserve land uses

Critically, a breakdown of data referenced to the City’s Local Planning Scheme (LPS) Number 15, showed the majority of the City’s tree canopy in 2012 existed in the category “Other”, this being areas not zoned under the City’s planning scheme and includes road reserves, the river foreshore and some areas that are classified under the Perth Metropolitan Regional Scheme (Figure 6).

The mapping (graphed below) illustrated a general declining trend across all zones, excluding areas zoned “Parks and Recreation”, “Residential & Stables”, “Major Distribution Roads”, “Civic and Cultural” and the City’s “Town Centre”, which have all experienced an increase in canopy coverage. An increase within these zones is likely as a result of increased tree planting and the maturation of existing (2001) tree stock.

The City of Belmont, as an inner city municipality, has received substantial growth in its residential sector since the 90’s and early 2000’s. This has resulted in a significant decline in canopy coverage in areas zoned “Residential”, where a decline of 28% can be attributed to urban infill and densification.

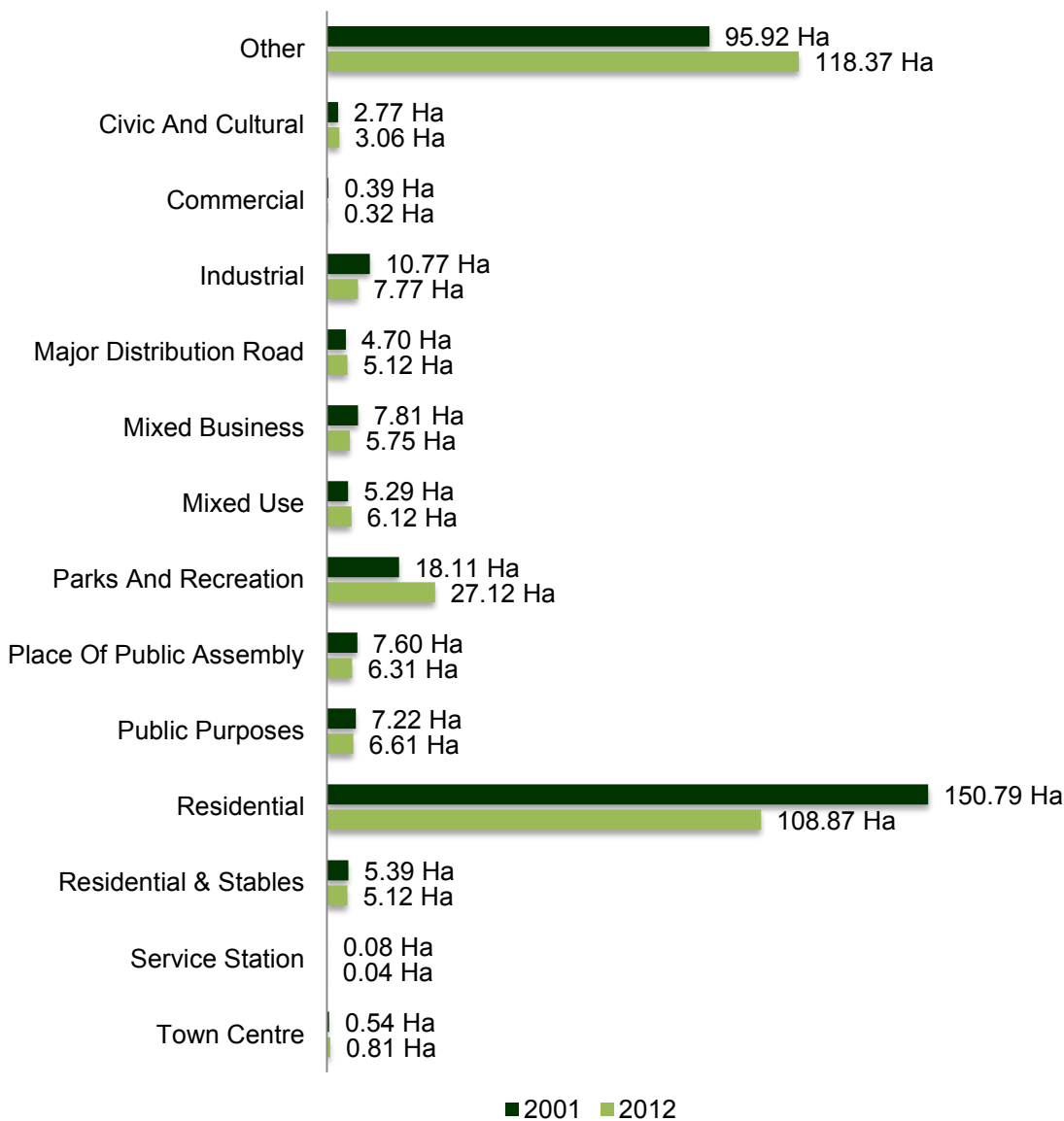


Figure 6: 2001 and 2012 Canopy Coverage results per Local Planning Scheme Number 15 land uses

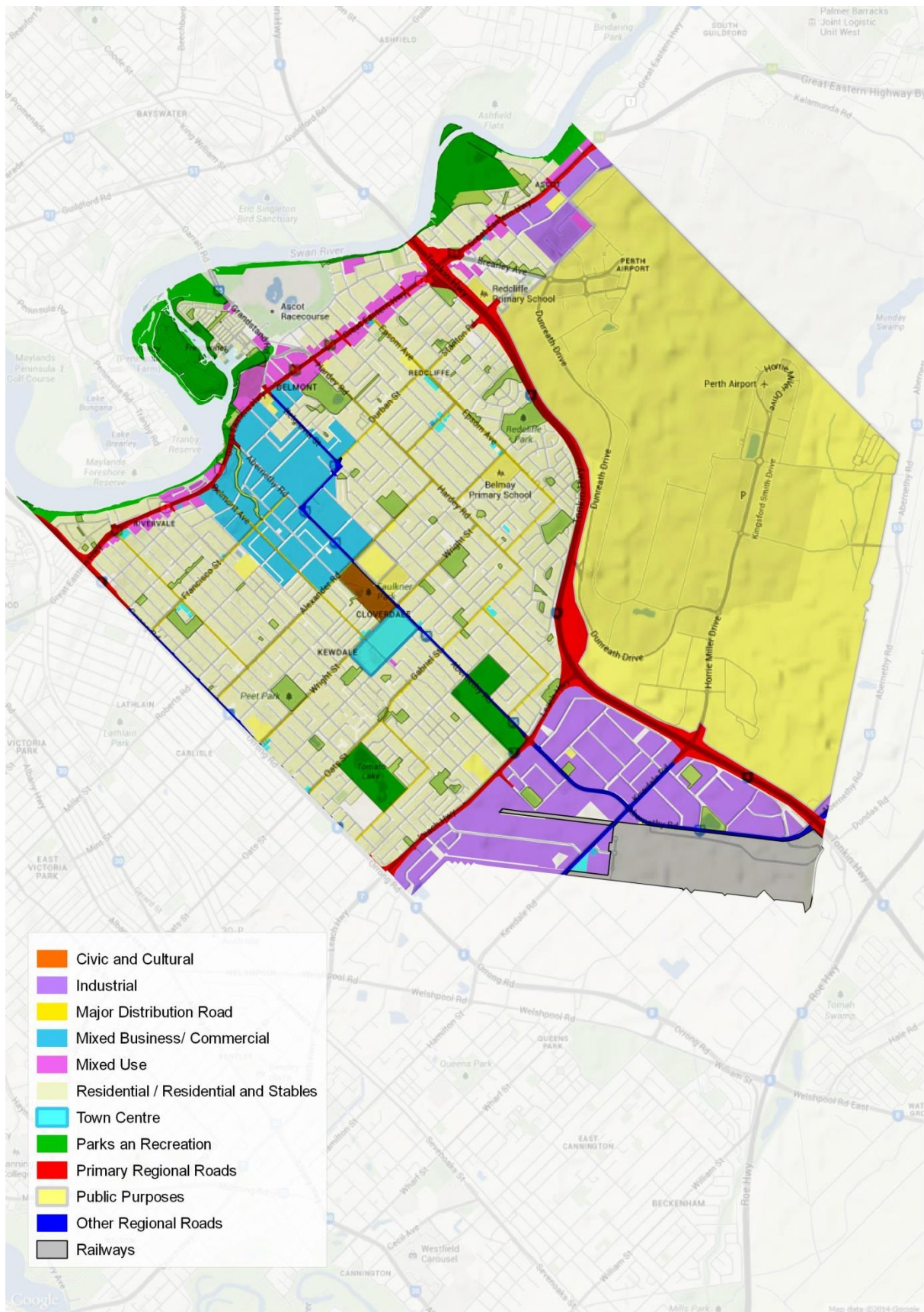


Figure 7: City of Belmont Local Planning Scheme Number 15 Land Uses

In relation to the canopy cover as a percentage of land area (excluding Perth Airport), the City of Belmont in 2001 had average canopy coverage of **12.05%**. In 2012, this had been reduced to **11.44%**. Kewdale has been identified as a suburb with the least amount of canopy coverage for its area, with 7.66% coverage in 2012, whilst Ascot and Cloverdale are considered the “greener” suburbs with 15.18% and 14.39% respectively (Figure 8).

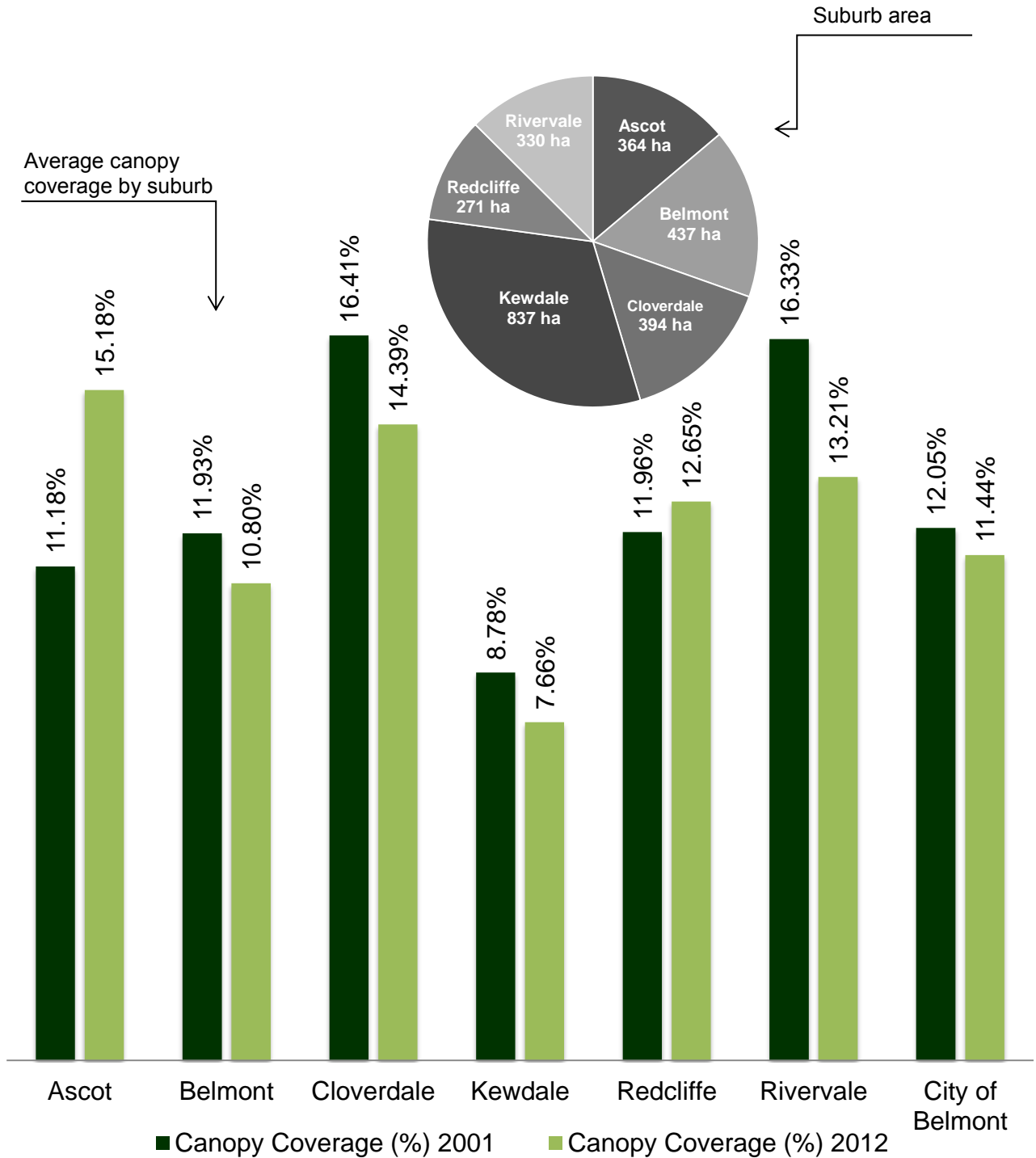


Figure 8: Canopy Coverage as a percentage (%) of suburb area comparing 2001 and 2012

Forecast canopy coverage based on estimated population growth, extrapolated from previously observed trends (refer figure 8), illustrates a widening gap between canopy and population. Increased housing density is contributing towards this gap, resulting in a loss of connection between people and their natural environment. As a society and a community, we are living in an increasingly controlled and “conditioned” world, which is predominantly indoors and one that ignores the compounding value of urban trees and urban forests.

It is for these reasons, the loss of canopy and loss of associated value, that an Urban Forest Strategy with the application of forestry principles is required.

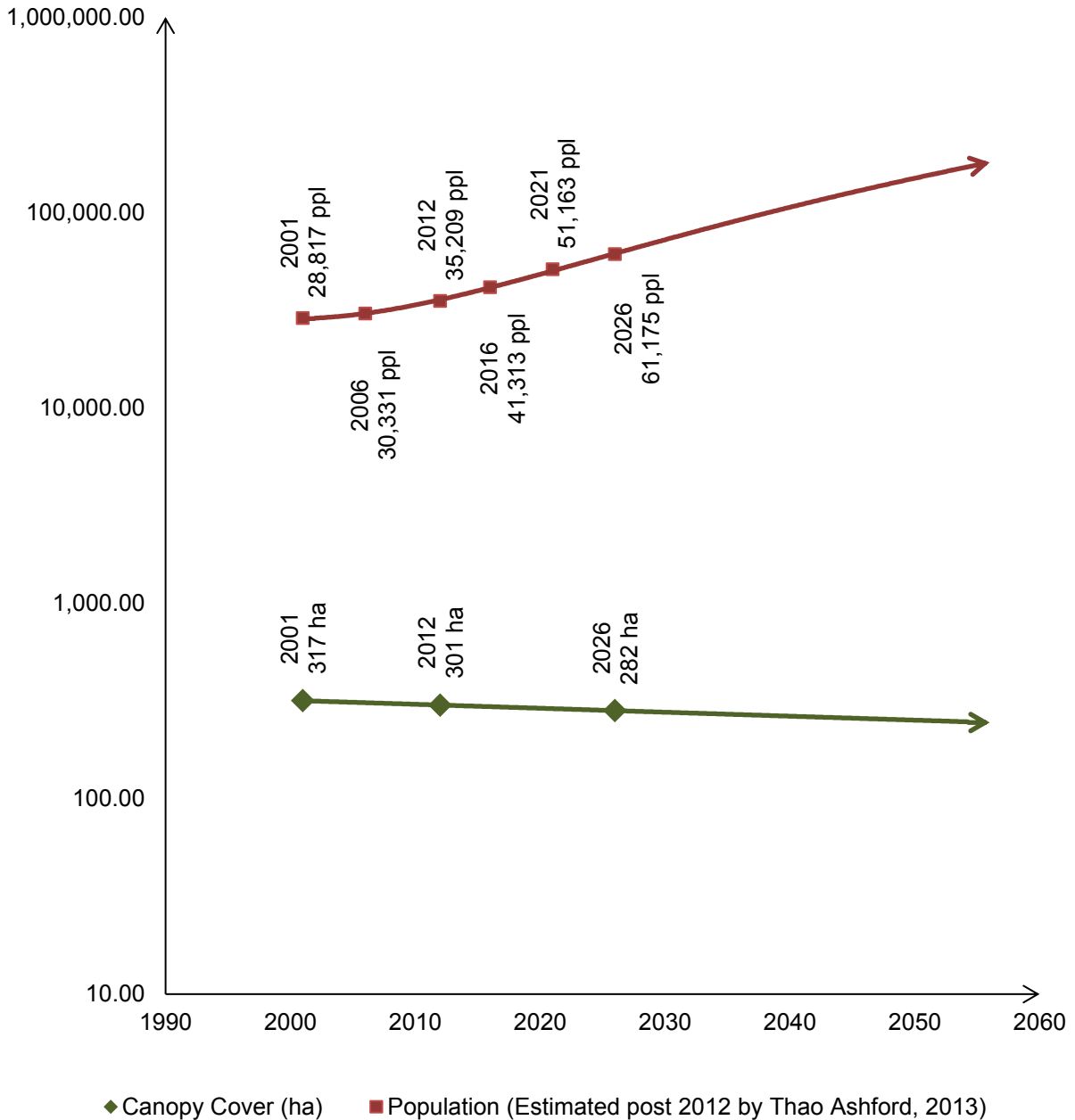


Figure 9: Forecast and actual Canopy Cover with estimated and actual population growth

6 A STRATEGY TOWARDS OUR FUTURE FOREST (MILESTONE 2)

A strategy towards our future forest is a strategy to assist in maintaining a liveable city. Once constructed, the fabric and footprint of the urban environment remains inert for hundreds of years. The consequence of this is that if poor decisions are made early in the planning stages, these remain for a long time. The development of the Urban Forest Strategy and associated documents work to maintain a liveable city by ensuring that the urban forest is acknowledged as paramount to the liveability, health and sustainability of a city and that it is maintained through the City's works. Lost canopy is replaced and the city remains an attractive and inviting place to live.

6.1 Strategy Development

This Strategy, through interdepartmental consultation and consultation with elected members, sets out guiding objectives for our future urban forest. These core objectives will guide the development of actions in a management plan (Canopy Plan) and by doing so, the ongoing enhancement and sustainability of the City's urban forest.

Through a facilitated workshop, elected members felt the following should be captured in the Strategy:

- "The urban forest is very important"
- "Community engagement and educating is needed"
- "Species selection is required for the best trees"
- "Identifying planting zones"
- "Identifying partnerships and where the money comes from"
- "Advocacy to state government"
- "Talk about a target – needs to be honed more" and
- "Urban forest needs to be recognised by other plans"

6.2 Strategic Focus Areas

Four principle focus areas have been adopted which will be extended from the Strategy to the Canopy Plan. These provide the City with primary objectives in order of priority. Foremost is the ownership and recognition of the Strategy by all levels of the organisation and a commitment to the retention and enhancement of the urban forest. Once this is established the City can progress its urban forest management with community awareness and the engagement of stakeholders while continuously advancing its forestry practices through continued research.

Leadership and Governance

The City is to commit to the retention and enhancement of the urban forest by demonstrating good stewardship and adopting processes and procedures to ensure a sustainable urban forest is achieved through core business activities. As part of its leadership, the City is to advocate wherever possible the importance of a sustainable urban forest, its retention and enhancement.

Asset Retention

Whilst the Strategy does not want to be seen as “conservative” or resistant to the City’s development, protective measures are required for City assets. Without appropriate asset protection or retention mechanisms, there is no means of effective or appropriate canopy compensation for the loss of often irreplaceable canopy coverage. The strategy must acknowledge existing trees as tomorrow’s canopy coverage and work collaboratively to achieve a “*prevention is better than the cure*” approach.

Awareness, Participation and Capacity Building

The City must work with partners and its community to build awareness and capacity so the compounding value of green infrastructure and the urban forest is realised and recognised.

Public awareness may result in a reduction of trees being lost on private property. It may also result in their enhancement and incorporation into development design by the community and allow for further planting to be undertaken in public spaces (i.e. street trees).

Research, Best Practice and Adaptive Management

In order to effectively manage the City’s urban forest and to ensure that we meet current and future objectives and targets of the Strategy, continued research is required.

This will enable best practice to be applied to City works, particularly for the retention and advancement of the urban forest and the City needs to remain adaptive in its management.

6.3 Strategic Objectives

Extending from the Strategy's preliminary development, the following strategic objectives have been identified. The Urban Forest Strategy and its subsidiary documents will:

- *"Identify the urban forest and its canopy as paramount to the urban liveability and vision of the City"*
- *"Identify the Urban Forest Strategy as one that complements and is recognised by other City policies, plans, strategies and objectives"*
- *"Recognise the urban forest canopy as a tangible asset which requires ongoing asset management and protection"*
- *"Secure funding, resource and policy commitments for the effective implementation of the Strategy"*
- *"Identify, utilise and enhance available space for the planting of appropriate tree species within the City to allow the advancement of the urban forest's canopy coverage"*
- *"Communicate, educate, consult and engage with the community, stakeholders and potential partners on the City's urban forest"*
- *"Identify and deploy technologies which enhance the urban forest and improve the condition and sustainability of the urban forest"*
- *"Identify the need for trees to be recognised in all developments throughout the City and that removal of canopy for any purpose is appropriately compensated"*

Actions under these key focus areas will work towards the vision and objectives of this Strategy, ensuring the City achieves a sustainable urban forest.

6.4 Initial Target

In progressing Milestone 2, an initial canopy target has been set to *"replace lost canopy to a coverage which meets and exceeds that of the baseline year of 2001"*.

While the setting of an initial target is relatively simple, progress towards the target and implementation of procedures needs to be documented comprehensively in a Canopy Plan. Given the nature of urban forests and them being regarded as "living" and "growing", the time period where this is achievable needs further investigation. The period in which the City can achieve a canopy coverage which is equivalent to that of 2001, will need to take into account the current canopy decline and growth/ replacement/ maturation trends.

The implementation of the Strategy and progression towards the target must also take into consideration the success of partnerships and forest development and retention on both public and private lands. This is particularly important, as the City cannot act in isolation to achieve this target. Community partnerships and alliances need to be formed to ensure that the urban forest is not segmented and isolated. Ideally, any target will achieve a City within a forest rather than a forest within a City.

7 IMPLEMENTATION FRAMEWORK, RESOURCING AND FINANCIALS (MILESTONE 3, 4 AND 5)

The full implementation of the Strategy will require the development of a detailed Canopy Plan as per Milestone 3, which will be implemented at Milestone 4 to achieve the target noted within this Strategy. The Plan will be a living document with continuous reporting and improvements to ensure that the City is working towards any target set as part of the Strategy or within the Plan.

The Plan will therefore ensure the effective implementation of sustainable urban forestry practices and will be developed in reference to this Strategy. It will detail:

- Estimate the financial implications, noting that the 2014/15 draft budget does provide for substantial funds of \$100,000 to commence works
- Determine ongoing resourcing for actions, including tree stock, staffing and information technology, and
- Estimate the timeframe for the completion of actions and achievement of Milestone 5 based on modelled or ongoing canopy cover mapping.

A major review will be undertaken at the completion of Milestone 5, whereby the goals and targets in Milestone 3 will be reevaluated.

8 CONCLUDING STATEMENT

The value of canopy cover and the urban forest should be recognised as paramount to the liveability of urban environments. Without an urban forest, the hard constructed nature of the built environment contributes to the deterioration of the communities occupying them, and in turn diminishes a community's identity, health and quality of life.

Through this Urban Forest Strategy, The City will have a best practice management plan that upholds the qualities and values provided by an urban forest and supports the health and wellbeing of communities that call the City home.

In the short term, the Strategy and Canopy Plan will work towards the initial target.

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