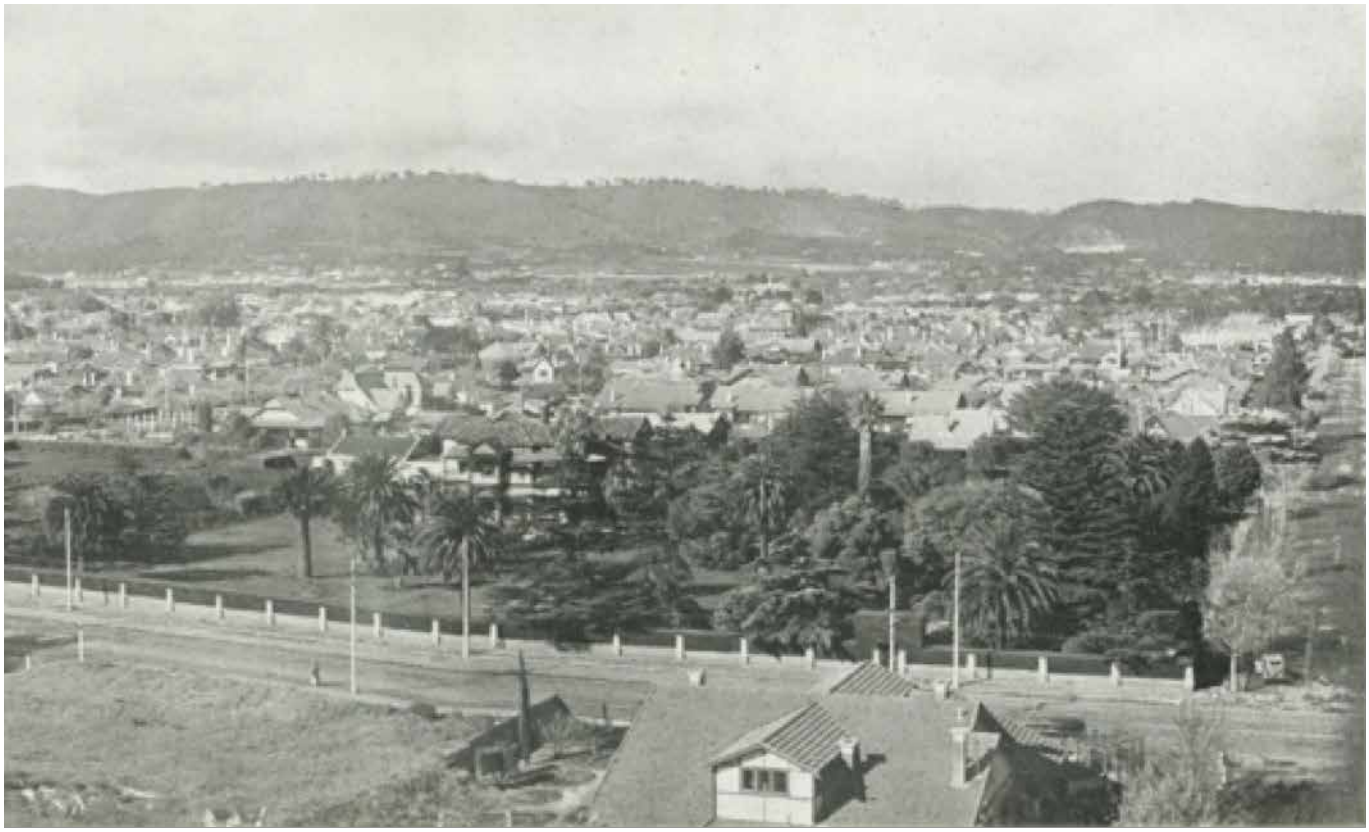
# CITY OF BURNSIDE ATTUNGA GARDENS MANAGEMENT PLAN

16 March 2017
City of Burnside

# CONTENTS





# EXECUTIVE SUMMARY

Attunga house and garden is one of the few remaining examples in Adelaide of a large house in its original garden setting dating from the early Federation period. The building and grounds were donated by Otto van Reiben to the Burnside community and Council in 1944 for use as a hospital. The garden was intended 'for the peaceful recreation of hospital patients and the community'. Attunga garden is important for a number of reasons including its historical and cultural significance, its 'arboretum' character with a large collection of palms, and its role as a local open space within the Toorak Gardens area.

Attunga house and garden were included in the State Heritage Register in 1985. Since 1997 the garden has been managed by the Burnside War Memorial Hospital; however the garden and grounds have now reverted to council care and maintenance. A management plan for the garden has been prepared which aims to conserve the cultural and heritage values of the historic garden, and to manage the garden using sound horticultural practices, to ensure it remains viable in the future.

The management plan was developed using the principles set out in the Australia ICOMOS Burra Charter 1999. The first step involved developing an understanding the significance of Attunga garden including:

- A review of historic documents and photos to understand the significance of different elements of the garden and how it has changed over time.
- Physical documentation describing the present physical nature and use of the garden. Effective management of the garden needs to be based on the present state of the garden and changes in its use.
- The collection of old trees forms the historic 'foundation' of the garden, however trees are living things that change and decline over time. An arboricultural survey of 93 trees on the site was undertaken by Tree Environs to provide a sound basis for their future management.

Policies were then developed to guide the future management of the garden by Council, to retain is significance into the future. Key policies include:

- Attunga is an aged garden; not just another Council reserve or open space and needs to be managed as such, to meet both heritage listing requirements and community expectations.
- Sound management of the garden will require skilled staff and it is recommended that two dedicated full-time staff be allocated to the garden.
    - The mature trees in the garden need to be managed in a way that will promote their longevity, and be replaced with the same species or an appropriate species when trees reach the end of their useful life.
    - The health of trees in garden beds has been affected by root competition from dense clumping perennials, which need to be managed.
    - Trees in the lawns are surrounded by small circular garden beds with competition form the surrounding turf. These beds need to be enlarged in a consistent manner.
    - Irrigation and site drainage is a key issue impacting on tree health, with the current system based on watering of the lawns. A priority is the development of a modified system which meets the needs of lawn, trees and garden beds.
    - Although the garden has high levels of use by hospital staff and others, no additional pathways are recommended for the garden, to avoid further fragmentation of the existing lawns.
- While the original layout of garden beds remains generally intact, many beds have become overgrown and require increased maintenance to thin perennials and prune overgrown shrubs.
    - Council should also develop a long term strategy to rebuild some garden beds, which will require additional resources. Growing conditions in the garden however have changed considerable in the last 50 years and it may not be possible to return them to their original state.
- The garden bed along the Hewitt Avenue frontage also needs attention as some of the more recent tree plantings have not been effective, and the three remaining Cypress trees have a limited life expectancy.
- In some instances it is recommended to consolidate isolated trees in a single garden bed for improved management and tree health.
- The management of the old Weeping Elm is a priority, including removal of the recent scoria landscaping and reinstatement to conditions shown in early photographs.
    - The driveway with its brick edging is an important element of the original garden and requires some repair and modifications to reinstate its historic character. In the longer term Council could consider closing the gates to remove vehicle traffic, and returning the driveway to its original gravel surface.
- The heritage wall and gates are part of the heritage listing for the site and should be protected and restored in accordance with the 2016 Conservation Management Plan by McDougall & Vines.
- Consideration should be given to the installation of new interpretive signage covering the history of the garden and of Otto von Rieben, including the use of early images of the garden.

# INTRODUCTION

## BACKGROUND

Burnside Council has engaged Tree Environs to prepare a management plan for the historic Attunga Garden at Burnside War Memorial Hospital, Kensington Road Toorak Gardens.

Attunga House, built in 1900, is an historic 'picturesque Queen Anne' style gentleman's residence. The building and grounds were donated by Otto van Reiben to the Burnside community and Council in 1944 for use as a hospital. The garden was intended 'for the peaceful recreation of hospital patients and the community'.

Attunga house and garden is one of the few remaining examples in Adelaide of a large house in its original garden setting dating from the early Federation period. Attunga house and garden were included in the State Heritage Register in 1985.

Since 1997 the garden has been managed by the Burnside War Memorial Hospital; however the garden and grounds have now reverted to council care and maintenance.

## THE STUDY AREA

The study area comprises the western section of the Burnside War Memorial Hospital site, bounded by the hospital buildings, Kensington Road, Giles Street and Hewitt Avenue (Refer to aerial photo).

## AIMS OF THE STUDY

The study aims to provide a framework which will allow Council to:

- Conserve and enhance the cultural and heritage values of the historic garden.
- Manage the garden based on sound horticultural practices, to ensure it will remain viable in the future.

## SCOPE AND LIMITATIONS

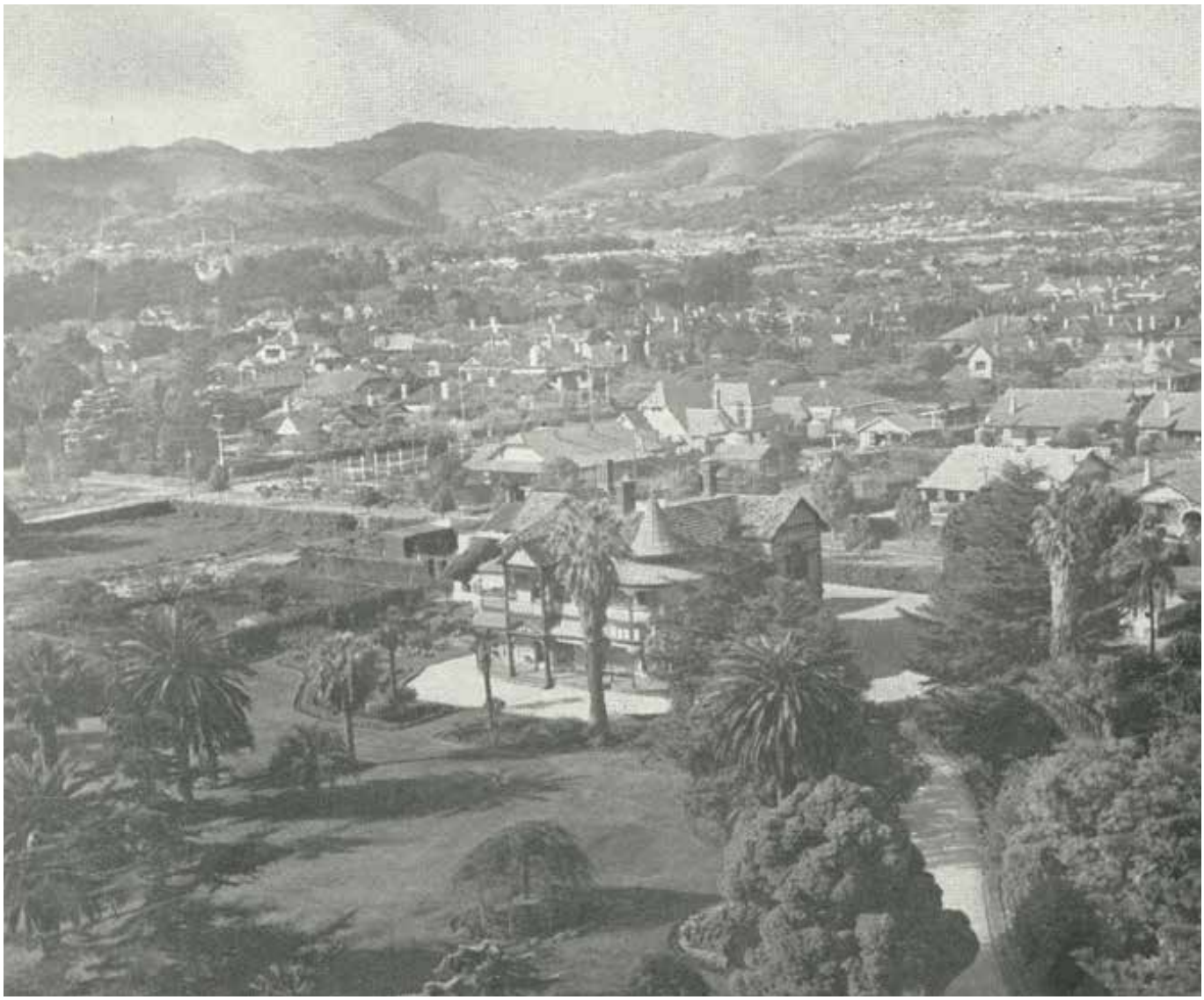
The study focuses on the 'soft landscape' of the garden and the future management of trees, shrubs, garden beds and lawn areas.

Heritage and management aspects of the 'hard landscape' including garden structures and paths are also commented on.

The study is to be read in conjunction with other relevant council documents including the Conservation Management Plans for Attunga House and surrounds. This includes:

- Tree Environs (2016) Tree Management Report for Attunga Garden October 2016.
- McDougall & Vines (2016) Attunga Burnside War Memorial Hospital Conservation Management Plan May 2016.

The study included an overview of the history of the garden from available primary and secondary sources. Full documentation of site history including, archival research and interviews, was beyond the scope of this project.



## STUDY METHODOLOGY

Gardens differ from buildings in the way they change over time. However, the basic management principles are the same: understanding the significant of the place, and taking action to conserve that significance.

The study has been undertaken in the following stages, in accordance with the recommendations of the Australia ICOMOS (International Council on Monuments and Sites) guidelines for the preparation of conservation plans and the principles set out in the Australia ICOMOS Burra Charter 1999.

1. Understanding the significance of the place including:
   (a) Historic documentation. To better understand the place as a whole, how it has changed over time and what actors have contributed to change.
   (b) Physical documentation. Describing the present physical nature and use of the place and its components.
   (c) Trees are a key component of the the garden, and an arboricultural survey of 93 trees on the site was undertaken by Tree Environs as part of the study.

2. Analysis of the information collected, including:
   (a) Assessment of changes to the physical fabric over time.
   (b) Identification of zones and elements with different levels of significance.
   (c) Key issues that arise from the significance of the place and other factors such as current physical condition and use.

3. Development of a management plan including:
   (a) Objectives
   (b) Policies identify what needs to be done to manage the garden to retain its significance into the future.
   (c) Identification of a number of zones to provide a framework for future management policies and actions.

4. Recommendations regarding actions by the City of Burnside for the conservation and management of Attunga garden.

5. An action plan for the implementation of policies within appropriate timeframes.

## PRINCIPLES OF HISTORIC GARDEN MANAGEMENT

Gardens are dynamic growing entities. Accordingly we must accept that growth, deterioration, death and re-planting will occur in the design and plantings; they cannot be frozen in time as in a museum' (Jones 1998).

Under the Burra Charter conservation means all the processes of looking after a place so as to retain its cultural significance.

Garden conservation implies the authentic conservation of a garden as far as available evidence suggests. Garden conservation depends upon varying considerations. These include the degree of intactness of the garden, evidence of the original garden form and composition, and judgement to undertake maintenance, adaptation, preservation, reconstruction or restoration actions.

- **Maintenance** - means the continuous protective care of a garden and its setting.
- **Preservation** – means retaining the components of the garden in their existing state and preventing further deterioration. It recognises that all places and their elements change over time at varying rates. Preservation is extremely difficult as plants grow and die and a garden will continue to evolve. In contrast, it may be possible to preserve physical garden components, together with the general design qualities of the garden in terms of the scale of spaces in the garden and period of plants.
- **Restoration** – means returning the garden to an earlier form by the removal of new additions without the introduction of new elements. Again, this is extremely difficult as plants will grow and die resulting in the need for new plants.
- **Reconstruction** – means returning the garden to an earlier known form and style, and is distinguished from restoration by the introduction of new components. Reconstruction recognises the dynamic nature of plants but the static integrity of the design and physical elements of the garden.
- **Adaptation** – means modifying the garden to accommodate new uses or management requirements.

Conservation approaches were originally devised for buildings which are static objects. Their application to gardens and landscapes, which are dynamic places, is therefore extremely difficult.

Gardens require maintenance more frequently than buildings. They differ also in that they contain elements which change with the seasons, grow and die.

Many historic gardens feature mature trees planted as avenues, border plantings or specimens. These trees may define the original design and character of the garden, and correct management is essential to maintain the significance of the garden.

# HISTORIC DOCUMENTATION

Historic documentation has been undertaken to assists in understanding the place as a whole, how it has changed over time and what factors have contributed to that change.

## REFERENCE MATERIALS

A number of sources were consulted including:

- State Library of SA (SLSA) photograph collection, including images of Attunga from 1919, 1930, 1938 and 1944. All historic photographs in the report are sourced from the SLSA photograph collection, Attunga, images 49763-49777 unless otherwise referenced.
- Burnside Council Library records, including the 1944 Deed of Gift to Council by Otto von Reiben and the George Bolton video showing Attunga c.1945.
- Records of the Burnside War Memorial Hospital including the 1945 competition brief for an architectural competition for a new hospital including aerial view of Attunga in c.1945.
- The Paddocks Beneath. A history of Burnside from the beginning by Elizabeth Warburton (1981) with information on Attunga and Prescott's Farm.
- A History of Burnside War Memorial Hospital Inc. by Robyn Taylor (1998) with research into Otto von Rieben and Attunga house and garden.
- State Heritage listing for Burnside War Memorial Hospital former dwelling 'Attunga', Fence, Gates & Garden in 1987 and specific directions for conservation by the Heritage Branch.
- The 1998 Attunga Garden Management Plan prepared for the City of Burnside and the Burnside Hospital which documented the current state of the garden in c.1997.
- Records of Burnside Historical Society Inc. including newsletters featuring Attunga garden in 1998 and 1999.
- Friends of the Attunga Garden Newsletters describing works by the Friends in maintain the gardens in the 1990's.

## SUMMARIZED CHRONOLOGY OF MAIN EVENTS

A brief history of the site from before 1900 to the present can be summarized as follows:

- Pre 1900. The Attunga site part of Prescott's Farm.
- 1900-1905. Attunga House built by Benjamin Burford.
- 1907-1944. Attunga garden developed by Otto von Rieben.
- 1944 Deed of Gift to Burnside Council.
- 1945 Burnside War Memorial Hospital Architectural Competition.
- 1944-1997. Garden in care and control of Burnside Council.
- 1985 State Heritage Listing.
- 1987 Conservation Plan for Attunga.
- 1997-2016. Burnside Hospital Board given responsibility for Attunga Garden.
- Attunga Garden Management Plan 1998.
- Friends of the Attunga Garden formed.
- 2016. Gardens revert to Council care and maintenance.

## HISTORY FROM ESTABLISHMENT TO PRESENT DAY

### PRE 1900 PRESCOTT'S FARM

Before the construction of Attunga the four and a half acre site (bounded by Kensington Road, Giles Street, Hewitt Avenue and Moore Street) was part of Prescott's Farm. Prescott's Farm was established by William Prescott in 1840 at Toorak Gardens by William Prescott who leased land from the South Australia Company. The farm produced wheat and dairy goods amid the eucalypt savannah and acacia scrub. After the turn of the century and the construction of Attunga and other large houses, the surrounding area still remained largely farm land.

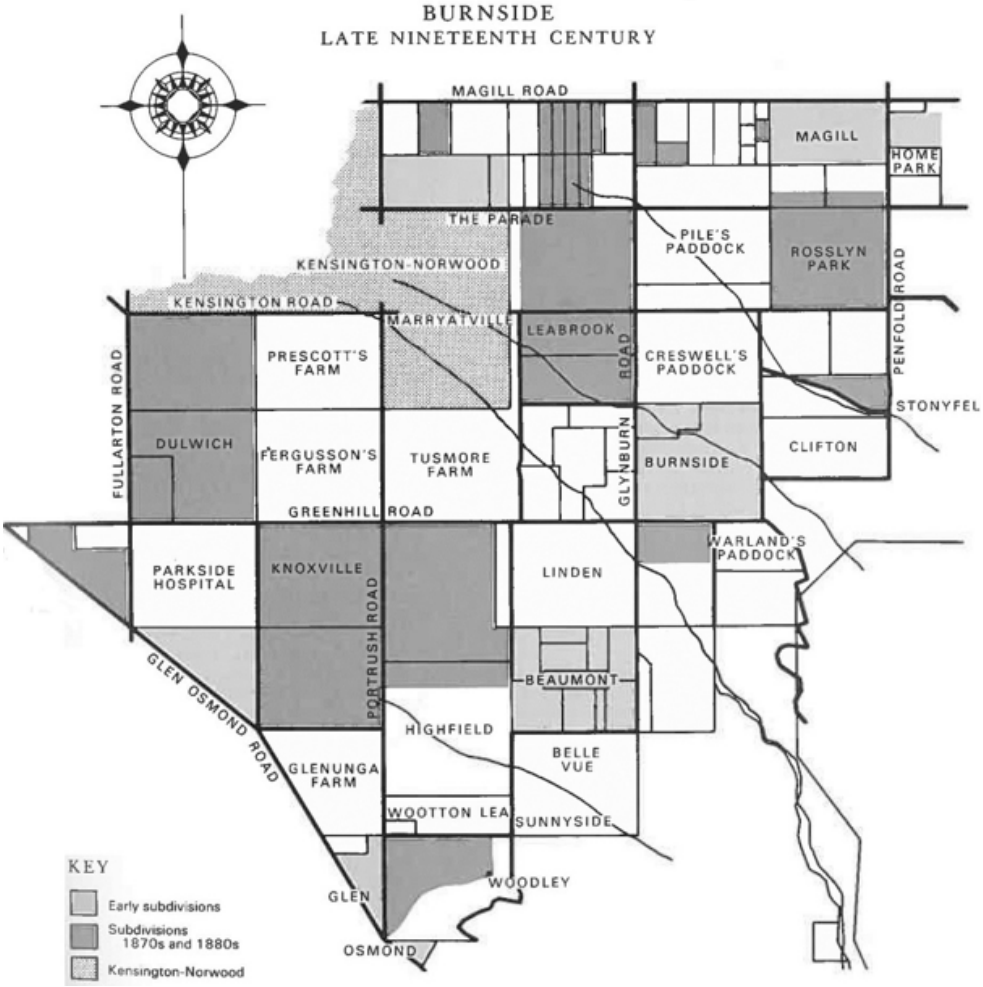
### 1900-1907 BENJAMIN BURFORD

Attunga House was built in 1900 by Benjamin Burford, a member of the family who owned W.H. Burford and Sons, the well-known South Australian soap makers.

Adelaide architect F.W. Danker designed the house, built on 4.5 acres of paddock which was previously part of Prescott's Farm. The original extent of the grounds of Attunga was the whole of the block bounded by Kensington Road, Giles Street, Hewitt Avenue and Moore Street. At the time it was the largest house in Toorak Gardens.

View from corner of Kensington Road & Prescott Terrace c.1890 (SLSA)

Attunga c.1900 (SLSA)




Burnside late nineteenth century showing Prescott's Farm (Warburton 1981)

1907-1944 OTTO VON RIEBEN

Otto von Rieben was born in Morgan on the River Murray in 1863, his father coming to Australia from Germany in 1849 to escape political unrest in Europe. The von Riebens were licensees of the Nor'West Bend hotel in what is now Morgan.

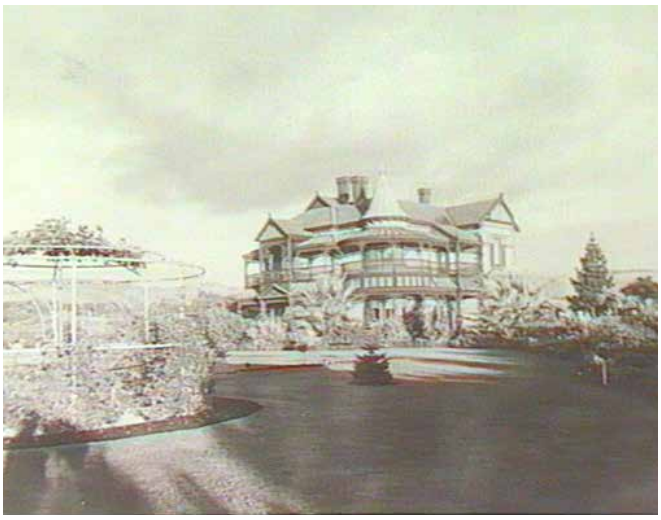
Otto von Rieben was raised in the area and in the late 1880s joined the shipping and customs business of William McCulloch and Company Ltd. In 1877 he was transferred to their Broken Hill office and in 1891 joined the Barrier Miner daily newspaper as a partner. He prospered and built upon his wealth and in 1907 returned to Adelaide having acquired an interest in several pastoral properties. He was also the director of a number of public companies including Alaska Ice Cream and Horwood Bagshaw Ltd.

Benjamin Burford died in 1905 and Otto von Rieben purchased Attunga in 1907.

Before moving to Adelaide Otto von Rieben was recorded as being the Honorary Secretary of the Barrier Ranges Horticultural Society in Broken Hill. His interest included birds as well as gardens and his collection of cars.

> *The garden was laid out under the personal guidance of von Rieben. There is ample evidence that one of von Rieben's passions in life was gardening (Taylor 1998).*

Attunga c.1910 (SLSA)



Attunga c.1910 (SLSA)

The boundary masonry wall to Kensington Road and Giles Street, and Cypress hedge inside it, were erected at this time. The iron Art Nouveau gates were installed later in the 1930's.

A large paddock to the east of the house contained an orchard and vegetable garden, pump and well, caretakers cottage, garage and sheds.

The front garden was laid out in the 'Edwardian' style with broad sweeps of lawn with curved edged beds to the paths and drive, with mature trees across the lawn areas. Aviaries, a fernery and arbour were part of the front garden.

The 'arboretum' character of the gardens was enhanced by the transplanting of many mature specimens of palms from the garden of Tusmore House when the land was subdivided. The developers who subdivided it in 1912 described it as:

> *....nestling at the foot of the beautiful hills, embowered in magnificent timber, including some of the finest red gums in South Australia...and the finest collection in this State (hardly excepting even the Botanical Gardens) of palms, cedars, firs, oaks pines and other rare and beautiful shade and foliage trees...The property is absolutely the most beautiful which has ever been offered for subdivision (Warburton 1981).*

Photographs from 1919-1930 show the palms, dragon trees, cedars and weeping elm as small young trees. Film taken by former mayor George Bolton in 1945 show a highly maintained garden with mature trees and garden beds.

Otto von Rieben and his wife (born Jane Carew) lived at Attunga for some 41 years, having no children. They also acquired another house in the Adelaide Hills, Pomona.

The von Riebens were retiring people of demonstrated generosity. In 1920 he assisted the Rose Park Improvement Society in raising funds for a memorial to soldiers who had fallen in the Great War. The society sponsored the planting of the avenue of commemorative trees in Alexandra and Prescott Terraces.

Otto von Rieben continued to live in the house after his wife's death in 1920.  He did not remarry but his widowed sister Augusta Englehardt and her daughter Gertrude came to live at Attunga. Gertrude continued to share the house after her mother's death.

The garden was a consuming interest and Sibley, the maid and Mr Sanders, the gardener were both long standing servants. Mr Sander's daughter reports the fernery, the aviaries and Mr von Riebens pleasure in the property and its household (Taylor 1998).

### 1931 SA HOMES AND GARDENS

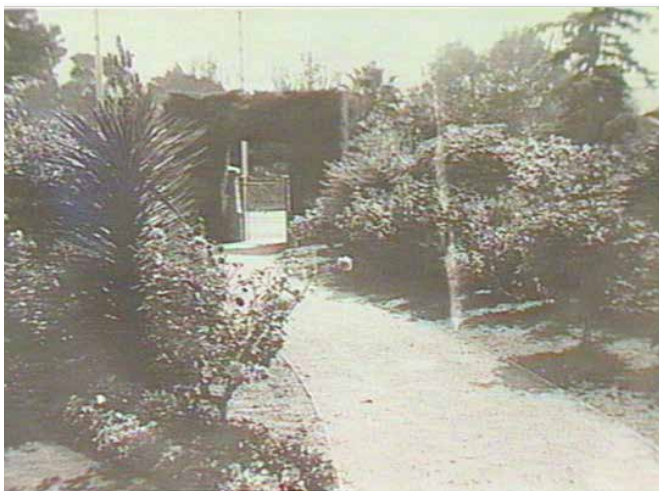
Attunga house has always been known as an historic and significant residence, and was the subject of articles in South AustralianHomes and Gardens in 1930. These articles reflected the prominence of the house in its immaculate garden setting, commenting on the mature trees in the garden and the access through the iron gates from Giles Street.

Attunga SLSA SA Homes and Gardens 1930

Otto von Rieben and Miss Gertrude Engelheart 1938 (SLSA)








Photos SA Homes and Gardens 1930 (SLSA)

**1944 DEED OF GIFT**

In 1944 von Reiben executed a Deed of Gift transferring the house and land to the Corporation of the City of Burnside for the establishment of a community hospital. The Deed of Gift (Clause 6) stated:

> *'The Corporation shall use its best endeavours so far as may be consistent with the establishment...of the said hospital to preserve in its present state and appearance the main building on the premises being the home of the Grantor also the beauty and amenities of that portion of the premises now under cultivation and in particular to maintain the trees shrubs flowerbeds lawns and plots and so far as may be practicable the layout of the existing garden'.*

The garden was intended *'for the peaceful recreation of hospital patients and the community'.*

Von Rieben and his sister remained in the house until October 1948 when he moved to Pomona. He died in 1949 at the age of 86.

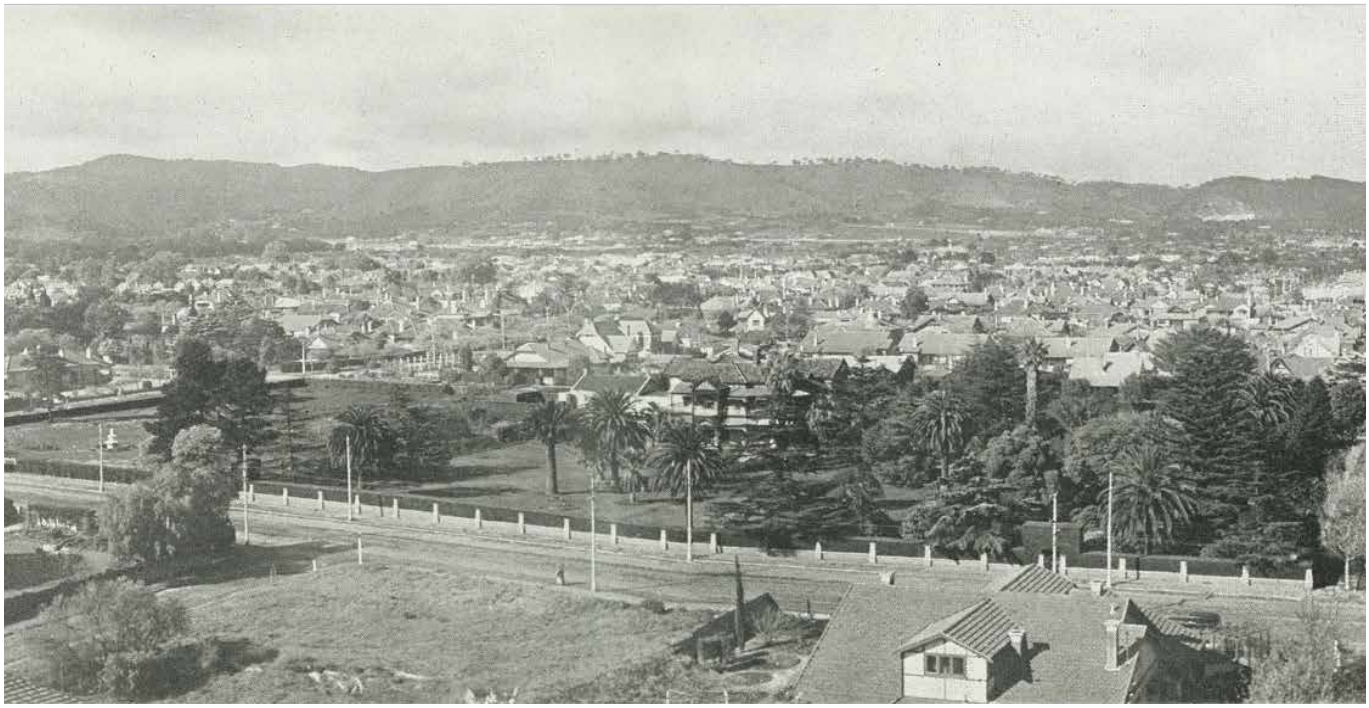
> *He was a generous and patriotic man who never sought public recognition. It was said that the design and care of this garden was his main interest and pleasure in the closing years of his life (Taylor 1998).*

The hospital began life as a Convalescent Hospital and the opening ceremony was held on 7 March 1950. Since then there have been many changes and building additions.

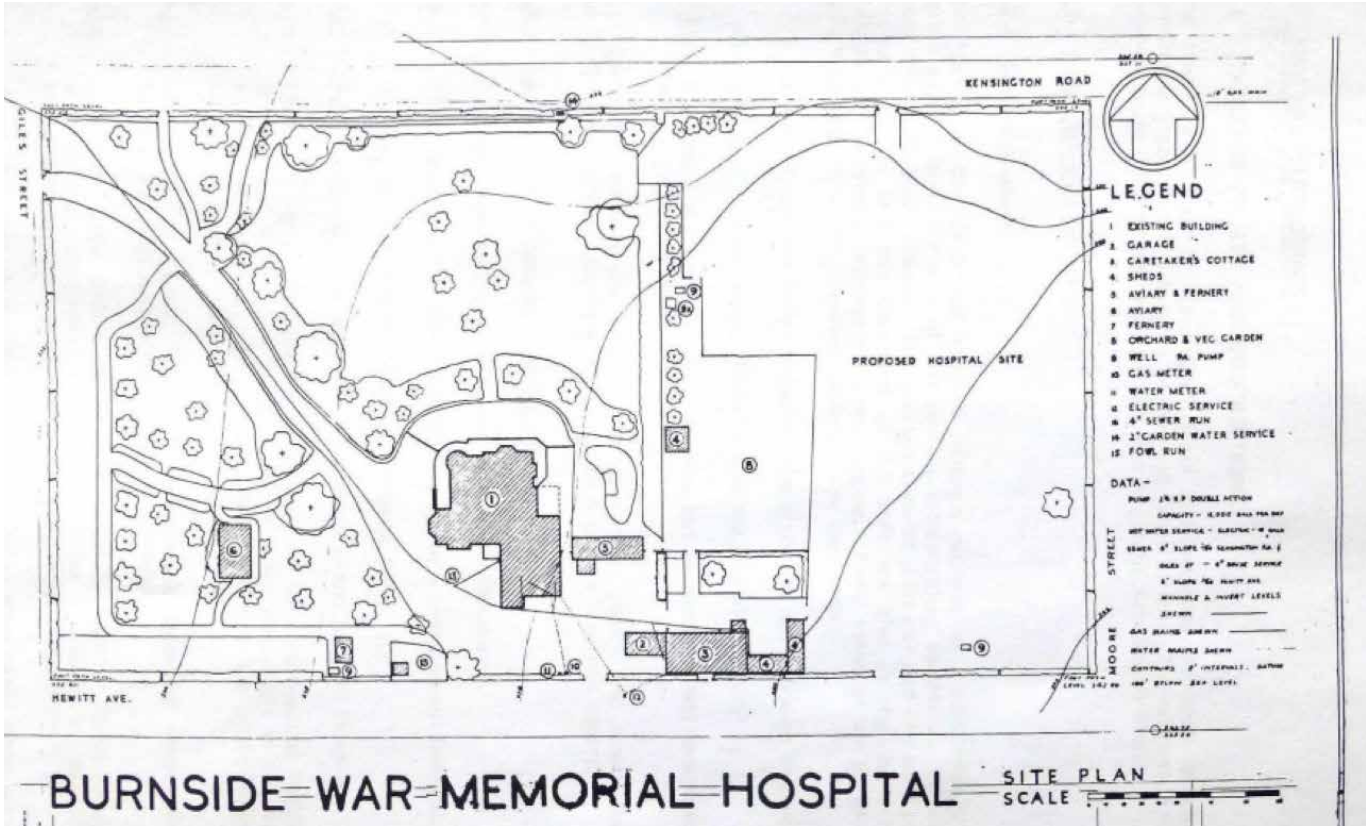
A site plan dated 1945 showed the Attunga site at the time of the handover for use as a hospital, as do aerial photographic views which were part of the 1945 Burnside War Memorial Hospital Conditions of Architectural Competition brief.

**1944-1997 COUNCIL MANAGEMENT**

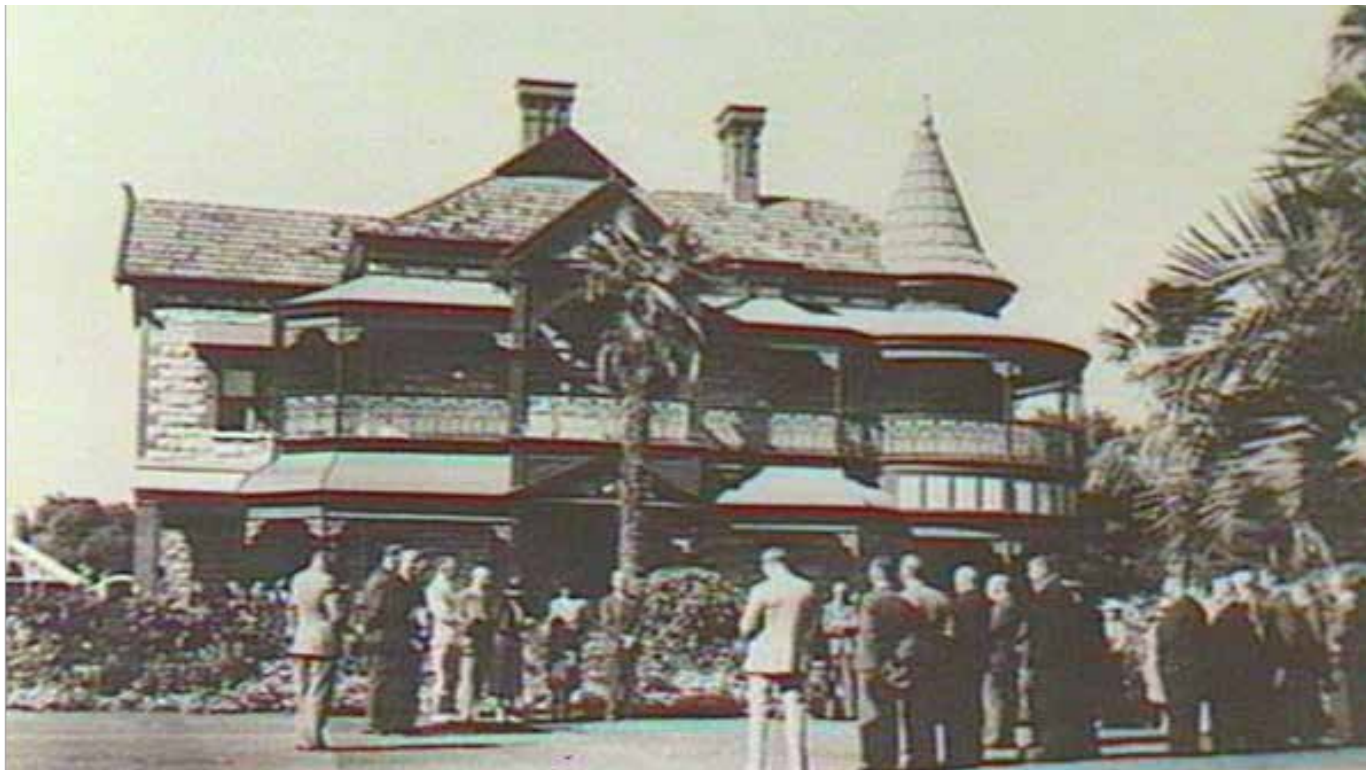
The 1944 deed of gift to council controlled the way the hospital was developed and managed and created a Board of Management for the Hospital. The garden was in the care and control of Burnside Council from the von Rieben bequest in 1944 to 1997 when the Burnside Hospital Board was given responsibility for the property.



Aerial view of Attunga 1945 from Kensington Road showing the wall, hedge and garden (Source: Burnside War Memorial Hospital).



Architects drawing of Attunga and grounds c.1944


Attunga 1944 (SLSA)

**1985 STATE HERITAGE LISTING**

Attunga was first assessed by the State Heritage branch in 1985 as a result of a public nomination, after a group of concerned residents (led by Mr Gerry Crane) petitioned for the property to be placed on the State Heritage Register.

The house, its fences and gates and the garden were subsequently confirmed as a State Heritage Place in the SA Heritage Register on 28 May 1987. The significance of the site was stated as follows:

> *Now part of the Burnside War Memorial Hospital, the elegant Edwardian residence formerly known as 'Attunga', with its park like garden and boundary fence to Giles Street and Kensington Road, is historically significant as one of the few remaining examples in Adelaide of a large house in its original garden setting dating from the early Edwardian period.*
>
> .....
>
> *The layout of the formal garden and remnants of the early planting represent a physical record of the tastes and interests of Adelaide during the early twentieth century. The fence and gates are a fine example of the Art Nouveau form of design, not often found in South Australia.*

Upon inclusion in the State Heritage Register in 1985, the Heritage Department made the following comments regarding the noteworthy features of the garden drawn from early pictures.

The garden to the north and west is substantially intact.

Driveway and paths are in original form, as are beds, according to strip iron edgings still visible.

- Notable trees still surviving are palms and Araucarias.
- The following items have been removed.
  - Low clipped box hedge bordering drive and entrance.
  - Clipped Cypress hedge planted inside the boundary fence.
  - Wisteria arbour, still survives but in shortened and modified form with a gardeners shed beneath.
- Specific directions were as follows:
  - Fence and gates should not be altered.
  - Garden should be presented as a turn of the century garden and shrub planting reinstated in accordance with the evidence of existing film and photographs.
  - A master plan should be prepared to ensure the original garden layout survives and to ensure that all maintenance and new planting is appropriate to the period of the garden.
  - Screen planting between parked cars and garden.
  - Replacing depleted palms and removing native shrubs of recent (1984) planting.

Attunga 1981 (Warburton 1981)

Attunga 1998 (Taylor 1998)

- Installing box hedges along drive.
- Omitting planting of annuals.
- Deleting car parking spaces in front of Board Room and extending garden with low planting, in keeping soil level below existing ground level.

A Conservation Plan for Attunga was prepared by heritage consultants McDougall & Vines in 1987. The Conservation Plan was used to guide most of the works undertaken at Attunga once its policies and recommendations were accepted by Council and the Board.

The establishment of the hospital building to the east of Attunga house (the old 'Attunga Paddock') has removed many features of the property typical of the period 1905-1945.

In this period a number of changes were also made to the main 'front' garden west of Attunga house. This included:

- Burnside Lions Club removed the gardeners shed beneath the wisteria arbour, two extra bays were added, post and rails renewed, a path was established beneath the arbour and a memorial seat installed under it.
- Memorial seats were offered for public purchase to replace concrete council seats with a more sympathetic design.
- Some unsympathetic shrubs were removed.

**1997-2016**

In a 1997 lease between Burnside War Memorial Hospital Inc. and the Burnside Council, the Burnside Hospital Board was given responsibility for Attunga Garden for the next 20 years. The Board stated that it 'desires to reconstruct some of its earlier features, keeping to the spirit of an Edwardian garden'.

In early 1997 after the lease was signed a report was presented to the Burnside Council by Cr. Crompton which outlined the history of the garden and steps for reconstruction. The Heritage Branch was also involved.

An informal Friends of the Attunga Garden group was also formed whose aims were to:

- Restore the garden according to the requirements of its heritage status and to make it a welcoming place for the peaceful recreation of patients and the public.
- Present the excellent collection of trees in the best possible setting and to restore the borders to their original condition as far as possible.

The Attunga Garden Management Plan 1998 documented the current state of the garden in 1997, and included an existing site plan and list of 'Plants of Significance' (see following page). It also presented policies for future management and 'The Future Plan'. These included:

- Extension of the current pathways to ensure a network suitable for wheelchairs, allowing patients to access the garden. This proposal however has not been implemented.
- Removal of unsuitable trees including Corymbia trees near the Kensington Road frontage. These had damaged the heritage wall and were not part of the original planting scheme. Other plants to be removed were also identified, mainly recent plantings of native Callistemon species.
- Several new trees were planted by the Friends including a Bunya Pine (Araucaria bidwilli) in a prominent site at the corner of Hewitt Avenue and Giles Street.
- During this period a large number of perennials, shrubs and bulbs from the period were donated and planted in garden beds by the Friends.
- Planting of a Viburnum tinus hedge along the exposed Hewitt Avenue frontage to reduce vandalism and enhance a sense of privacy within the garden.
- The two remaining large Cypress trees on Hewitt Avenue were to be retained until they further declined noticeably.
- The plans on the following pages comprise the existing site plan (showing 'plants of significance' in 1997) and the 'future plan' (showing proposed paths and plantings).

**2016 COUNCIL MANAGEMENT**

The formal lease agreement, which was first drawn up in 1997, between the Burnside Council and the Board of Management of the Hospital, was renewed in 2016 with some changed conditions. Most notably, the gardens and grounds revert to Council care and maintenance.

A revised Conservation Management Plan (Draft) was prepared by McDougall and Vines in 2016 addressing conservation of the house and wall. The a Conservation Management Plan also outlined the following garden and site policies.

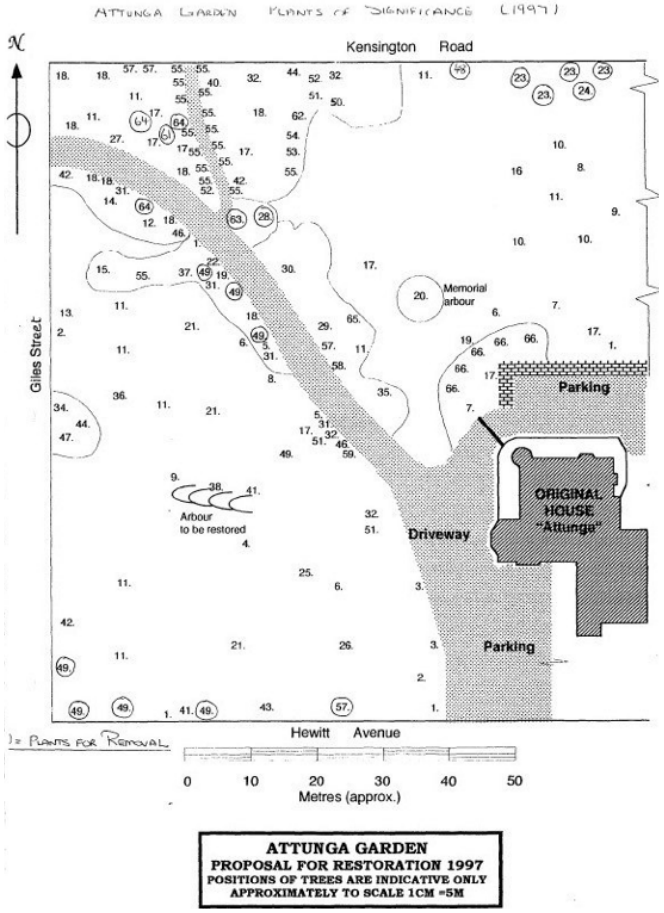
Background: The Attunga garden established by Otto von Reiben was renowned as an arboretum and park like setting, and the fence, gates and garden are included in the heritage listing. It has been maintained as a community asset by Council and the hospital.

Policy: The overall site, particularly the garden to the west of Attunga should be maintained to retain a suitable setting for the house. The view of the house from the west up the driveway should be maintained. All original planting, from before the time of establishment of the hospital, (mature and significant trees) should also be identified and maintained, to retain the mid-century qualities of the site.

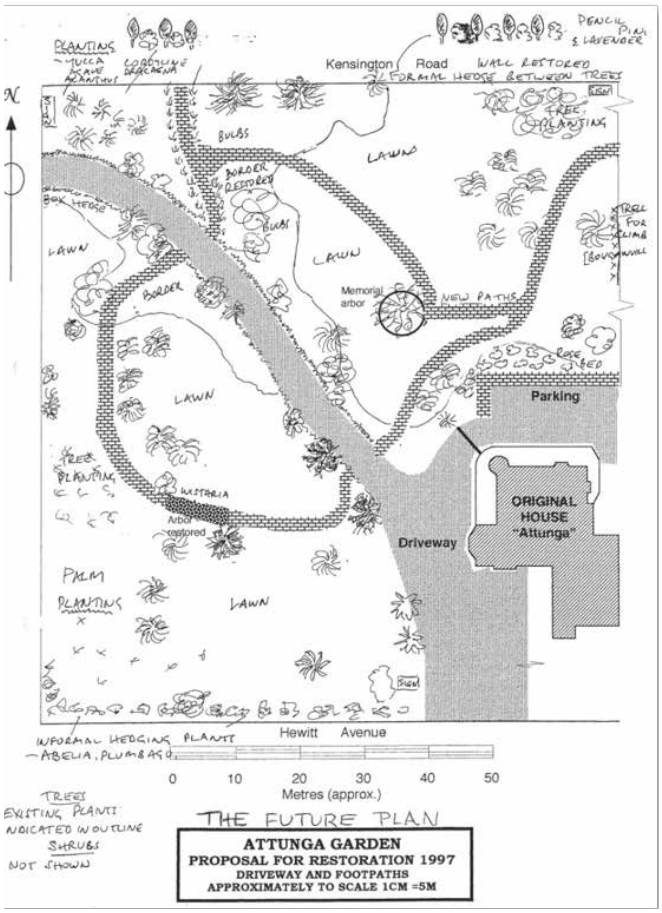
**IMPLEMENTATION:**

- Manage the significant trees in the garden to ensure their longevity, and replace with the same species when trees die. Collect seeds and seedlings for this purpose.

- Maintain the existing plan and layout of garden beds and do not extend planted areas any further into lawned areas.
- Retain and manage the wisteria arbour
- Keep any garden planting away from the base of the house after the current landscaping adjacent to the south of the house has been removed.
- Ensure that water supply is managed appropriately, possibly through the installation of underground tanks fed from the stormwater of the house.
- Survey, carefully identify, list and draw up a plan of significant trees and shrubs for conservation and special care.
- Commission a landscape architect to provide suitable plans which will ensure the implementation of these policies.




Existing site plan (showing 'plants of significance') from Attunga Garden Management Plan 1998.




'Future plan' (showing proposed paths and plantings) from Attunga Garden Management Plan 1998

## STATEMENT OF SIGNIFICANCE

**IMPORTANCE OF HISTORIC GARDENS**

Gardens are part of our cultural heritage. In most instances, gardens have been developed as settings for buildings. At the same time they represent a story of social and cultural change, and a botanical nursery of traditions and experimentation.

**EDWARDIAN PERIOD GARDENS**

Gardens are human creations and because of this, no two gardens are the same. As with houses, there are particular periods and collections of ideas that influenced the design and plant choice in a garden. However, gardens are more likely to be subject to modification and change than

houses, so it is harder to define a particular style or period for them.

Particular periods have distinct styles of architecture and landscape design including:

- Federation gardens (c.1890s-1920s) broke out from the symmetry of the Victorian period, introduced the curve, used a minimum of garden beds, applied some Arts & Crafts tradition features, explored an Australian theme, and often framed the house.
- Edwardian gardens (c.1910s-1940s) continued this exploration of nature but with more pronounced use of Australian plants, stone and features from the Arts & Crafts tradition, and was heavily influenced by the writings of Edna Walling and similar proponents. The style can be categorised into formal, informal and mixed forms.

Jones (1998) identifies the following characteristics of the Edwardian garden.

Gardens of the informal style stressed a sense of dense enclosure plantings, colour was important; foundational shrubs were often hydrangeas and pelargoniums.

- Sweeping lawns with the use of decorative or ornamental trees as features.
- Use of mixed planting themes included herbaceous borders, shrub gardens, ground covers, some Australian plants, a remnant or operational orchard, and rustic stone and timber embellishments and features.
- Gardens had a tidy appearance; plant shape was allowed to grow irregularly.
- Most planting adhered to a northern hemisphere evergreen and colour theme, including Cypresses, Jacarandas, the use of English Box and Pittosporum for hedges, and colour in the shape of hydrangeas, pelargoniums, roses, camellias, rhododendrons, agapanthus.

**SIGNIFICANCE OF ATTUNGA GARDEN**

Attunga is a rare example in Adelaide of an Edwardian period gentleman's residence still standing in what is essentially the original garden. The theme of such a garden is of a simple conjunction of broad lawns with trees standing alone in them, beds of shrubs and few annual plantings.

> *The owner often took pleasure in displaying favourite species and in Attunga the palm collection is the outstanding interest of the garden. When Tusmore House was demolished some of the palms were acquired for Attunga (Taylor 1998).*

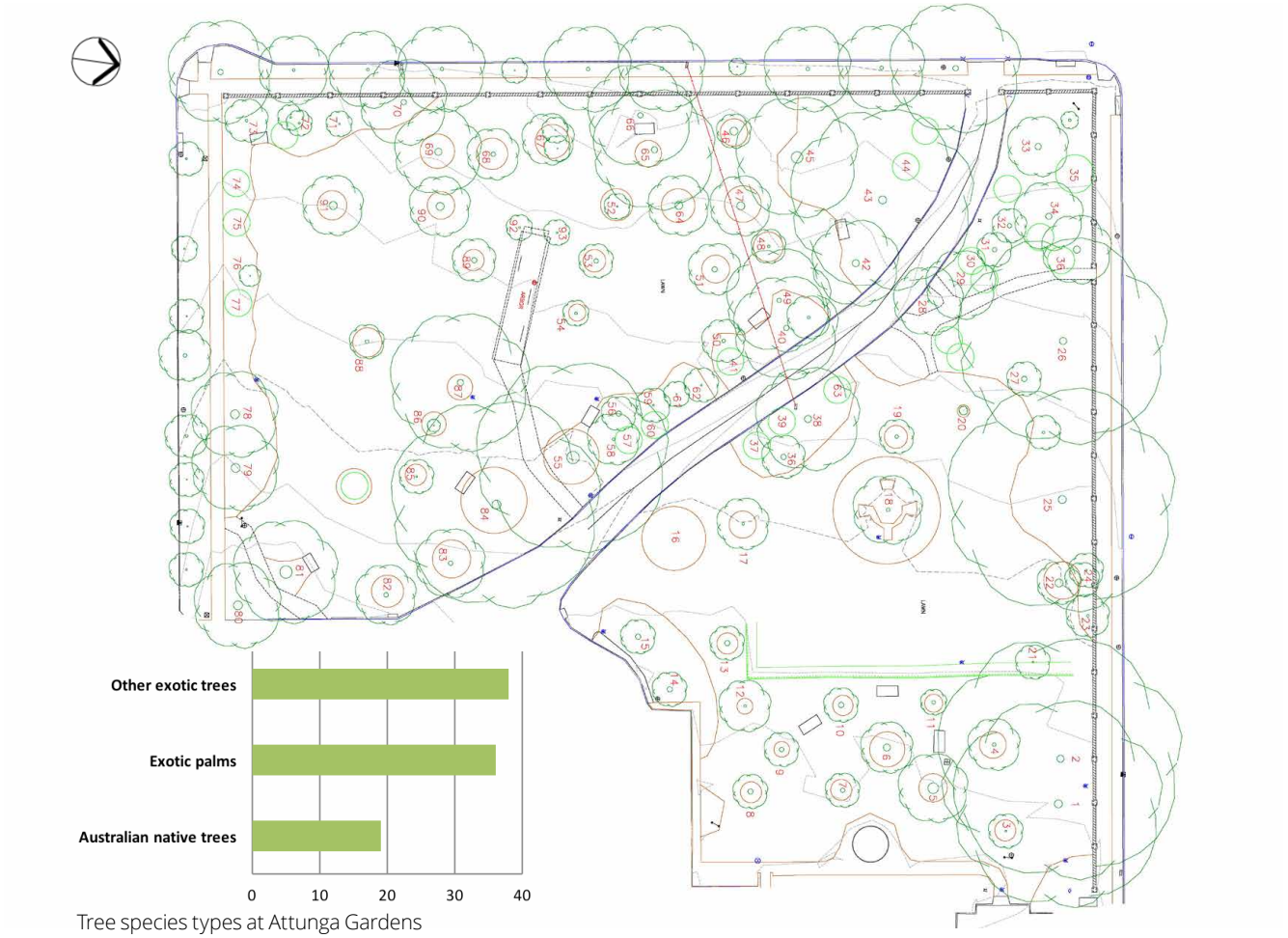
Attunga garden is of significance for a number of reasons:

- Attunga house and garden is historically significant as one of the few remaining examples in Adelaide of a large house in its original garden setting dating from the early Edwardian period.
- The layout of the garden and remnants of the early planting represent a physical record of the tastes and interests of Adelaide during the early twentieth century.
- The management of the garden setting of the house and the physical conservation of the masonry boundary fence and gates are essential to the retention of the cultural significance of the place.
- Attunga is also important as a botanic garden or arboretum with palm species as a specialty developed during the early part of the twentieth century. There are a large number of important trees (including palms, pines, dracaenas and other species). Most of these trees are named with hand painted labels.
- The garden is also unique in being in public ownership and accessible to the public.
- Attunga Garden is a significant open space within the local area.

# PHYSICAL DOCUMENTATION

## TREES

Tree Environs carried out a survey of 93 trees at Attunga on the 29 September 2016. The following sections summarize key findings of the survey. Tree data is compiled in a table attached at the end of the report. Tree numbers were marked on the survey plan provided.




Tree species types at Attunga Gardens

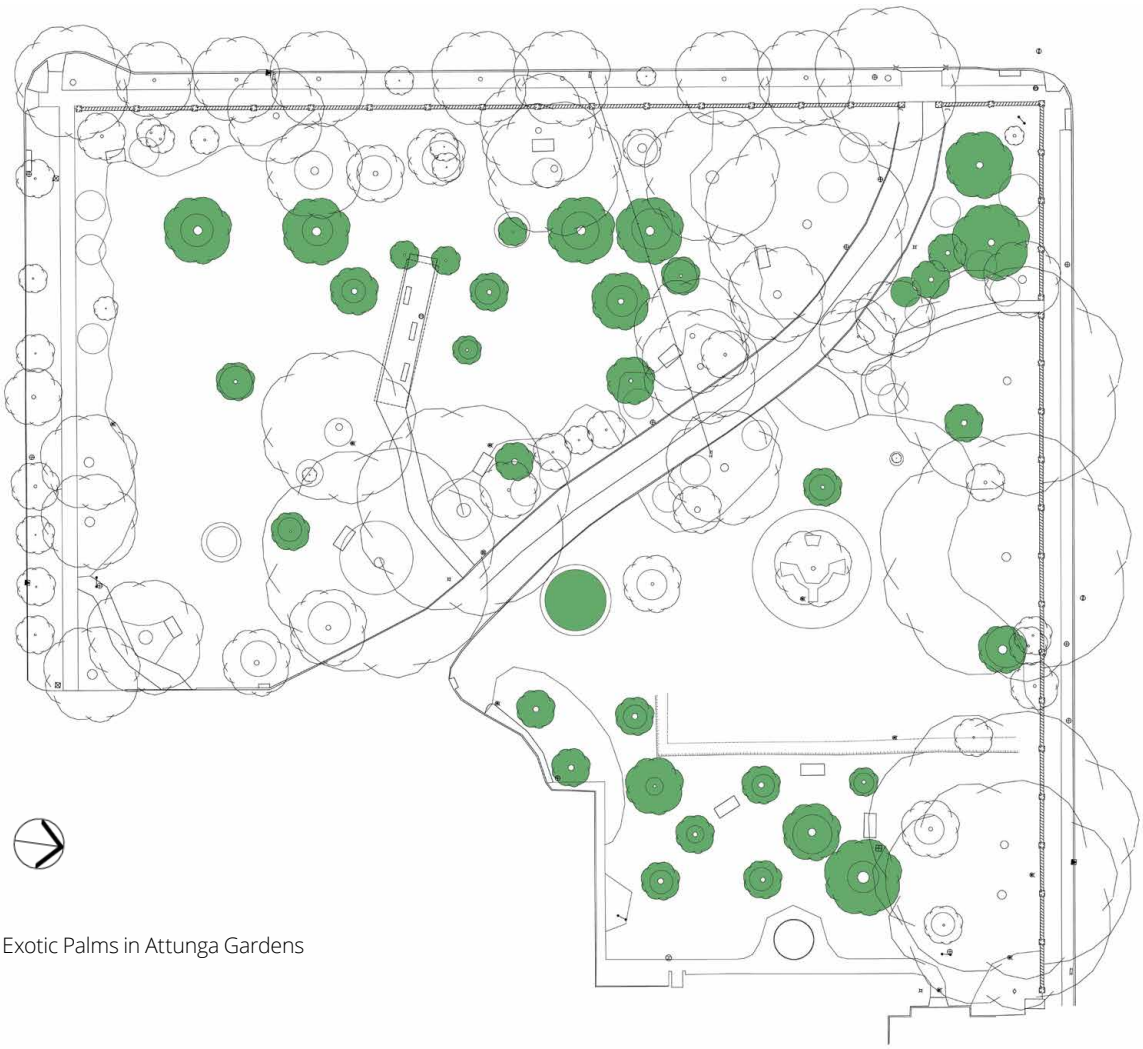
### TREE SPECIES

The tree population at Attunga comprises a mix of exotic trees and palms as well as Australian natives. The graph above summarizes the broad tree species types at Attunga garden. Refer to site diagrams on the following pages for more detailed information on the distribution of different tree species on the site. Many trees (especially the palms) are identified with old hand painted signs attached to their trunks.

### EXOTIC PALMS

A feature of Attunga is the palm collection of 36 exotic palms (with 9 species represented) which was planted as part of the original garden. A number of these palms were transplanted from Tusmore House. Palms are mainly scattered over the lawns in the garden. The following palm species were identified at the site.

- Brahea armata Mexican wine palm (x2)
- Brahea edulis Guadelupe fan palm (x1)
- Butia capitata Wine palm (x8)
- Chamaerops humilis European fan palm (x3)
- Jubaea chilensis Chilean wine palm (x1)
- Phoenix canariensis Canary Island date palm (x9)
- Phoenix reclinata Senegal date palm (x1)
- Sabal palmetto Sabal palm (x2)
- Syagrus romanzoffiana Cocos palm (x3)
- Trachycarpus fortunei Chinese windmill palm (x2)
- Washingtonia robusta Mexican fan palm (x4)



Exotic Palms in Attunga Gardens

Brahea armata

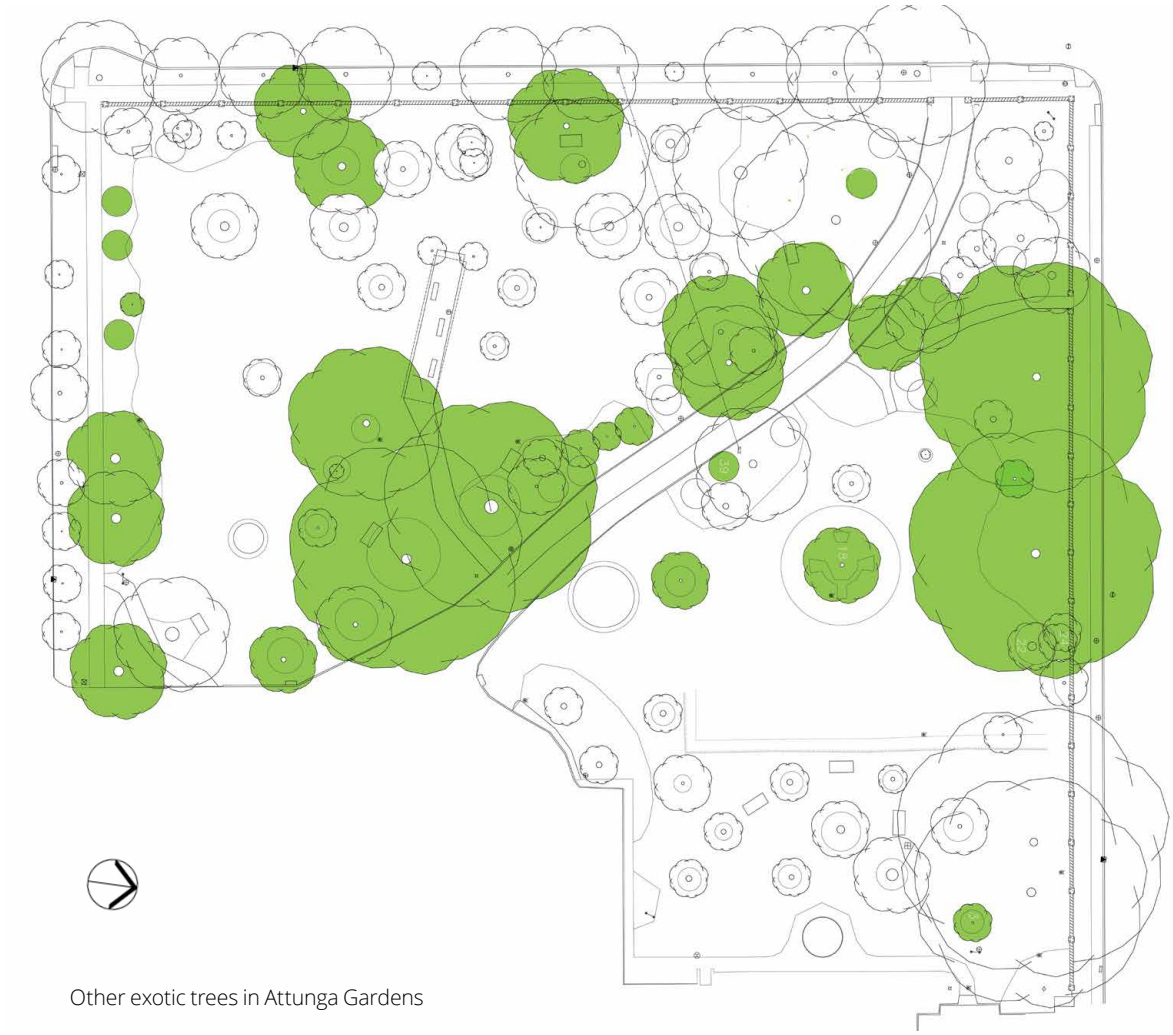
Butia capiata

Phoenix canariensis

**OTHER EXOTIC TREES**

Exotic trees were a feature of the Edwardian garden. Notable exotic trees include the Himalayan cedars and Dragons blood trees. There is also a range of other deciduous and evergreen trees typical of the period. The following exotic tree species were identified at the site.

- Arbutus unedo Strawberry tree (x1)
- Araucaria columnaris Cook pine (x1)
- Cedrus deodara Himalayan cedar (x5)
- Cotoneaster glaucophyllus Cotoneaster (x2)
- Cordyline australis Cabbage tree (x1)
- Crataegus laevigata 'rosa' Pink hawthorn (x1)
- Cupressus macrocarpa Monterey Cypress (x3)
- Cupressus sempivirens Italian cypress (x1)
- Dracaena draco Dragons blood tree (x5)
- Erythrina caffra African coral tree (x1)
- Fortunella japonica Kumquat (x1)
- Garrya elliptica Catkin tree (x1)
- Ginko biloba Ginko tree (x1)
- Ilex aquifolium Holly (x1)
- Jacaranda mimosifolia Jacaranda (x1)
- Lagerstroemia indica Crepe myrtle (x2)
- Liquidamber styraciflua Liquidamber (x1)
- Photinia serrulata Chinese photinia (x1)
- Pistacia chinensis Chinese pistacio (x1)
- Prunus sp. Prunus (x4)
- Pyrus calleryana Callery pear (x1)
- Quercus robur English oak (x1)
- Ulmus glabra 'pendula' Weeping elm (x1)



Other exotic trees in Attunga Gardens

Cedrus deodara

Dracaena draco

Jacaranda mimosifolia

**AUSTRALIAN NATIVE TREES**

Australian native trees were also found in Edwardian gardens. At Attunga this includes pre-1945 plantings of a range of east coast native trees including Lilli-pilly, Araucaria and Brachychiton species, mainly located along the Giles Street frontage. There are also some more recent plantings of native tree species such as Corymbia and Callistemon, Bottle brushes. Some of these later plantings were removed from c.1997. The following native tree species were identified at the site.

- Acmena smithii (Syn Syzigium smithii) Lilli-pillyi (x2)
- Araucaria bidwillii Bunya Pine (x1)
- Araucaria heterophylla Norfolk Island pine(x1)
- Brachychiton acerifiolius Illawarra flame tree (x1)
- Brachychiton discolor Lacebark tree (x1)
- Brachychiton populeneus Kurrajong (x1)
- Callistemon 'Harkness' Gawler hybrid (x1)
- Callitris glaucophylla White Cypress (x1)
- Corymbia citriodora Lemon scented gum (x1)
- Corymbia ficifolia Red flowering gum (x1)
- Corymbia maculata Spotted gum (x1)
- Ficus rubiginosa 'variegata' Port Jackson fig (x1)
- Lepidozamia peroffskyana Cycad palm (x1)
- Livistona australis Cabbage tree palm (x1)
- Pittosporm undulatum Sweet pittosporum (x2)
- Stenocarpus sinuatus Firewheel tree (x1)
- Toona ciliata Red cedar (x1)

Native trees in Attunga Gardens

Acmena smithii (Syn Syzigium smithii)

Brachychiton discolor

Aruacaria columnaris

### TREE AGE

An estimate of tree age has been assessed in the following categories.

- Original plantings from ~1905-1945.
- Trees that were planted between the~ 1945 -1997.
- More recent plantings since ~1997.

The majority of trees are 'original' trees planted before 1945. The graph below summarizes the age distribution of trees at Attunga garden.

### RETENTION VALUE

The retention value of trees has been assessed as follows:

- High retention value trees form the 'foundation' of the historic garden. These are trees which should be retained as a priority in the garden, managed through their decline, and replaced with an appropriate species if removal is required
- Medium retention value trees make a contribution to the character and amenity of the garden. These are trees which should be retained if possible
- Low retention value trees. These include smaller stature trees which are not appropriate to the period and more recently planted trees with poor health or structure. These trees may be removed if required and replaced with a more appropriate species.

The majority of trees have high retention value. The graph below summarizes the retention value of trees at Attunga garden.

### LEGAL STATUS

The legal status of trees has been classified as follows:

- Regulated trees under the Development Act 1993.
- Significant trees under the Development Act 1993.
- Exempt trees under the exempt species rule of the Development Regulations 2008.
- Non-regulated trees

The majority of trees are non-regulated. A large number of palm trees are very old, tall trees but have very slender trunks and do not qualify as regulated trees. Three trees (Cupressus macrocarpa) are exempt from the regulations under the exempt species rule

### TREE HEALTH

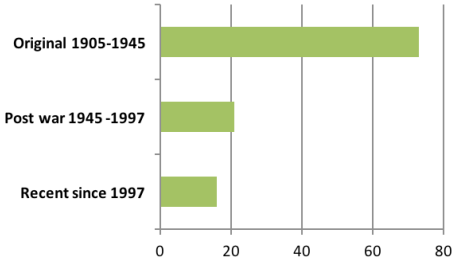
The majority of trees on site are in average to good health. 9 trees are in below average to poor health, with low vitality and higher than normal number of dead branches in the crown, possibly due to their poor growing environment.

### TREE STRUCTURE

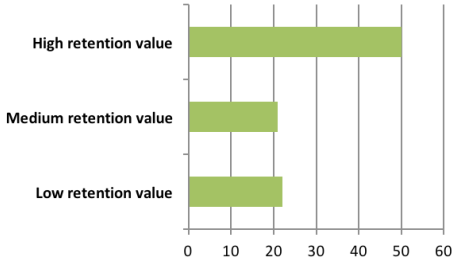
The majority of trees on site have average to good structure.  Some trees with average structure are recently planted trees affected by poor planting practices resulting in the development of girdling root systems.

### TREE MANAGEMENT

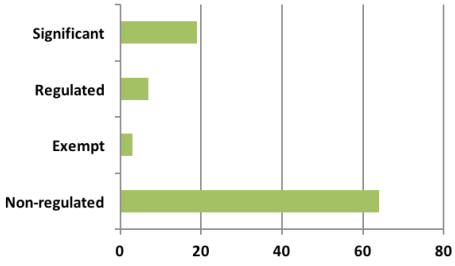
Management recommendations for individual trees, such as pruning, are contained in the attached Tree Survey Data table.




Age




Retention vale




Legal status

## GARDEN BEDS

Densely planted garden beds around the house, driveway and lawns were a feature of the original garden.

Many of the original garden beds are still in place, especially in the north-western part of the site.

Some garden beds have been removed, adjacent to the heritage wall, along the driveway and around the former entry to the house.

An attempt has been made to reinstate a hedge and garden bed along the Hewitt Avenue frontage, where several large Cypress trees have been removed in the past.

The following observations are made in relation to garden beds:

- The garden beds in the northwest corner have become overgrown with perennials adversely impacting tree health.
- Garden beds along the driveway have become overgrown with shrubs obstructing view to Attunga house.
- Garden beds under the Cypress trees on Hewitt Avenue are devoid of under plantings.
- Small circular garden beds around trees in the lawns (some planted with perennials) do not provide a good growing environment for the trees.
- Some smaller garden beds around individual trees could be consolidated for more effective tree and lawn management.

Garden beds in Attunga Gardens

Garden Beds

## LAWNS

Sweeping lawns, enclosed by garden beds, and with scattered palms, were a feature of the original garden.

The original layout of lawns remains, but has become somewhat fragmented with the number of garden beds around individual trees.

The following observations are made in relation to lawns:

- The irrigation regime for the lawns is not known at this stage.
- Some smaller garden beds around individual trees could be consolidated for more effective tree and lawn management.

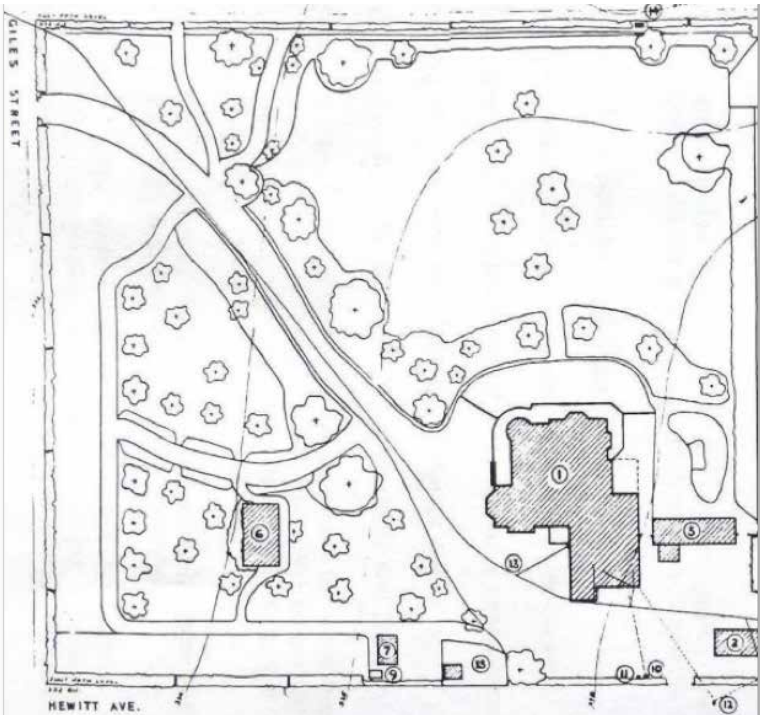
Lawn areas in Attunga Gardens

## PATHS

The original driveway and gravel path leading to the pedestrian gate on Kensington Road remain. The driveway was originally gravelled but has now been sealed, however the original brick gutter remains.

The view down the driveway to Attunga house is recognized as an important view to be retained. The gravel pathway to the Wisteria arbour is thought to be a post 1945 addition.

Paths in Attunga Gardens




Part plan of Attunga c. 1944

Gravel path 1930 (SLSA)

## GARDEN STRUCTURES

There are few structures present in the garden. Two features make an important contribution as visual focal points in the two main lawn areas.

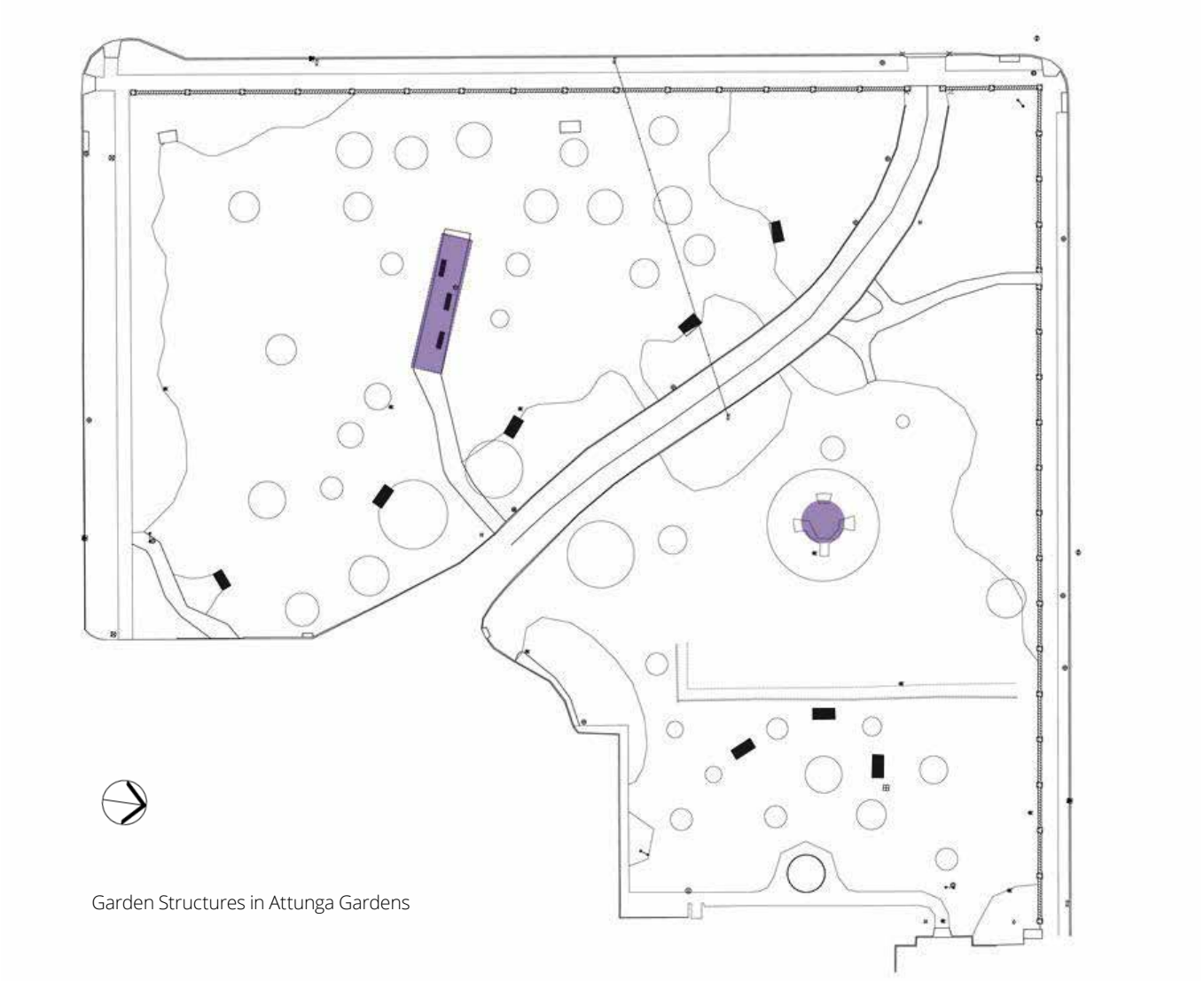
- The circular arbour around Weeping Elm c.1910. This was dedicated as an RSL WW2 memorial in 1996 and has inappropriate landscaping around its base, with scoria, poorly laid bricks and sparse plantings. The original 'gazebo' effect present in the 1930's has been lost over time. This was characterized by seating under a tree weeping towards the ground, with climbing roses on the frame, and a circular bed of annuals.
- The Wisteria arbour which was 'restored' in the 1990's with seats added.

The stobie pole by the driveway in the centre of the site is intrusive and inappropriate for the period.

The masonry wall extending along Kensington Road and Giles Street, and the metal gates at the corner, are an integral part of the garden and are part of the heritage listing of the site. The former Cypress hedge behind the wall has been removed. Conservation of the wall and gates is addressed in the McDougall and Vines 2016 Conservation Management Plan for Attunga.

There two types of park seats present in the garden, all installed on concrete bases. The earlier post 1945 Burnside council concrete seats with an outdated 'civic' design.

Memorial 'Ballarat' seats of a more sympathetic design offered to Burnside residents as memorial seats in the 1990's with metal plaques attached. This more closely resembles the garden seats seen in early photographs from 1919 and 1938.



Garden Structures in Attunga Gardens


Heritage wall

Heritage wall

Weeping elm in circular arbour

Wisteria arbour


The earlier post 1945 Burnside council concrete seats with an outdated 'civic' design.

Memorial 'Ballarat' seats of a more sympathetic design offered to Burnside residents as memorial seats in the 1990's with metal plaques attached. This more closely resembles the garden seats seen in early photographs from 1919 and 1938.

Signage in the garden includes:


Two green metal signs commemorating Otto von Riebe.


Metal signs at the bases of trees planted in the 1990's.


Hand painted metal signs on tree trunks of pre-1945 trees.


1995 RSL WW2 plaque at the base of the Weeping Elm


Metal signs affixed to trees in the 1990s

# ANALYSIS

## CHANGES TO PHYSICAL FABRIC OVER TIME

The establishment of Burnside War Memorial Hospital has removed or modified many features of the property and its garden established in the period 1905-1945.

**FEATURES REMOVED**

A number of features of the garden from the period 1905-1945 have been removed:

- The new hospital building was established on the large paddock at the rear of the house, removing the orchard and vegetable garden, pump and well, caretakers cottage, garage and sheds.
- A number of features in the original front garden east of the house have also been removed:
- The clipped Cypress hedge planted inside the boundary fence.
- A glasshouse or fernery and aviaries which were part of the garden along the Hewitt Avenue boundary
- A fernery and arbour which were part of the front garden.
- A wide path leading from the Drive and around the south and west boundaries of the garden.
- Some garden beds including the herbaceous border framing the entry to Attunga House from the north replaced with a rose garden).
- Low clipped box hedge bordering drive and entrance.
- Some larger trees including a number of Cypress trees along the Hewitt Avenue frontage.

**FEATURES RETAINED**

A number of features of the garden from the period 1905-1945 have been retained:

- The layout of the front garden to the north and west is substantially intact, including the main garden beds, according to strip iron edgings still visible.
- Many notable trees still surviving including the palms and Araucarias (trees planted pre 1945 are identified with a sign).
- Weeping elm in circular arbour from c.1910 (with a modified garden bed layout).
- The driveway is in original form, but changed from gravel to asphalt, but with the original brick gutter retained.
- The original gravel path from the driveway to the gate on Kensington Road.
- The stone fence and gates.
- Wisteria arbour but in modified form.

**FEATURES ADDED**

A number of features have been added to the 1905-1945 garden:

- Planting by the Friends of the Attunga Garden of numerous perennials etc.
- Planting of several new trees by the Friends 1997-2001 including
- Several native trees in the northern lawn area (some identified with signs installed at the tree base)
- A Viburnum hedge and several small ornamental trees in the garden bed along the Hewitt Avenue frontage.
- A Bunya Pine (Araucaria bidwilli) in a prominent site at the corner of Hewitt Avenue and Giles Street.
- The ‘coronation oak’ planted 1997 in the northern lawn near the hospital car park.
- A number of Burnside council concrete garden seats and more recent memorial seats.
- RSL WW2 plaque by Weeping Elm 1995.
- Two remaining Corymbia trees planted along the Kensington Road frontage.
- Viburnum hedge and small trees planted along the Hewitt Avenue frontage.

Weeping elm c. 1919 (SLSA)

Weeping elm c. 1919 (SLSA)

Weeping elm, current

View of Attunga  c.1910 (SLSA)

View to house c.1919 (SLSA)

View of Attunga , current

View to house, current

View of garden  c. 1930 (SLSA)

View of driveway c.1930 (SLSA)

View of garden , current

View of driveway, current

View of gravel path and hedge c.1930 (SLSA)

View of gravel path, current

## CONSERVATION ELEMENTS

In the development of a conservation management plan, consideration has been given to the levels of significance of the different elements within the garden. Establishing such a hierarchy indicates where there is greater or lesser scope for adaptation and alteration of any given element without diminishing the overall significance of the place.

The Burra Charter 1999 and guidelines for the preparations of conservation plans (Kerr J.S. 2013) require a system of grading. Generally, a five tier grading system is used to identify those parts of the place that are of:

- Exceptional significance
- Considerable significance
- Some significance
- little and/or no significance (neither contributes nor detracts from the significance of the place)
- Intrusive (detracts from or has an adverse effect on the significance of the place
- These grades are to be considered in a State context and all five tiers may not apply to each place.

It should also be noted that conservation plans and policies have mainly been developed mainly for application to the built environment, and may require modification in dealing with the dynamic and changing environment of a heritage garden.

For the purposes of this study four levels of significance have been assigned to the various components of the site:

- Primary significance.
- Contributory significance.
- Little and/or no significance (neither contributes nor detracts from the significance of the place).
- Intrusive (detracts from or has an adverse effect on the significance of the place).

Primary Significance (High retention value)

Elements of primary significance are those which contribute in a fundamental way to an understanding of the cultural significance of the place. As such, they should be retained if possible and, if altered, then it should be done with minimal impact on significant fabric. Elements of contributory significance at Attunga include:

- High retention value trees including the original tree plantings 1900-1930's.
- Weeping elm in circular arbour.
- Heritage wall and gates.
- Layout of remaining garden beds.
- Sweeping expanses of lawn.
- Driveway brick edging

**CONTRIBUTORY SIGNIFICANCE (MEDIUM RETENTION VALUE)**

Elements of contributory significance are those which are of a secondary or supportive nature in the understanding of the cultural significance of the place. While they contribute to the overall significance of the site, they are not of individual distinction with regard to original plan form, fabric or function. Elements of contributory significance should be retained if possible, although there may be scope for alteration and adaptation. Elements of contributory significance include:

- Medium retention value trees including some pre 1945 tree plantings.
- Wisteria arbour.
- 'Heritage' seating.

**LITTLE OR NO SIGNIFICANCE (LOW RETENTION VALUE)**

Elements of little or no significance include those which were originally minor in nature, contributing little to the cultural significance of the place, areas which have been so altered that they have lost any significance they might have otherwise had, or are of recent origins. Generally, they can be altered, adapted or removed as required. Elements of little no significance include:

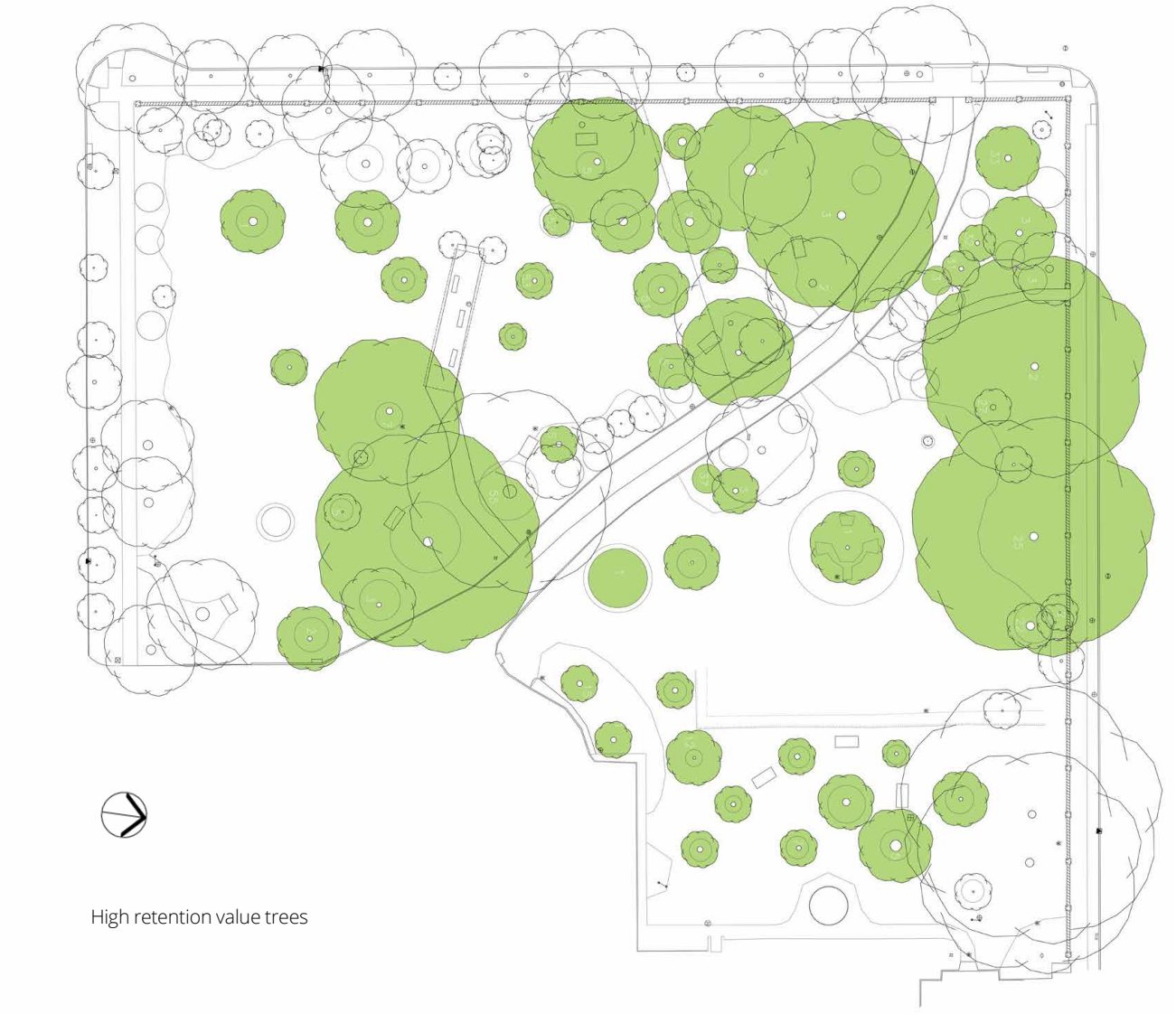
- Low retention value trees including some recent tree plantings in since the 1970s.
- Some garden bed plantings from the 1990's.
- Shrubs along driveway obstructing view Attunga house.

**INTRUSIVE**

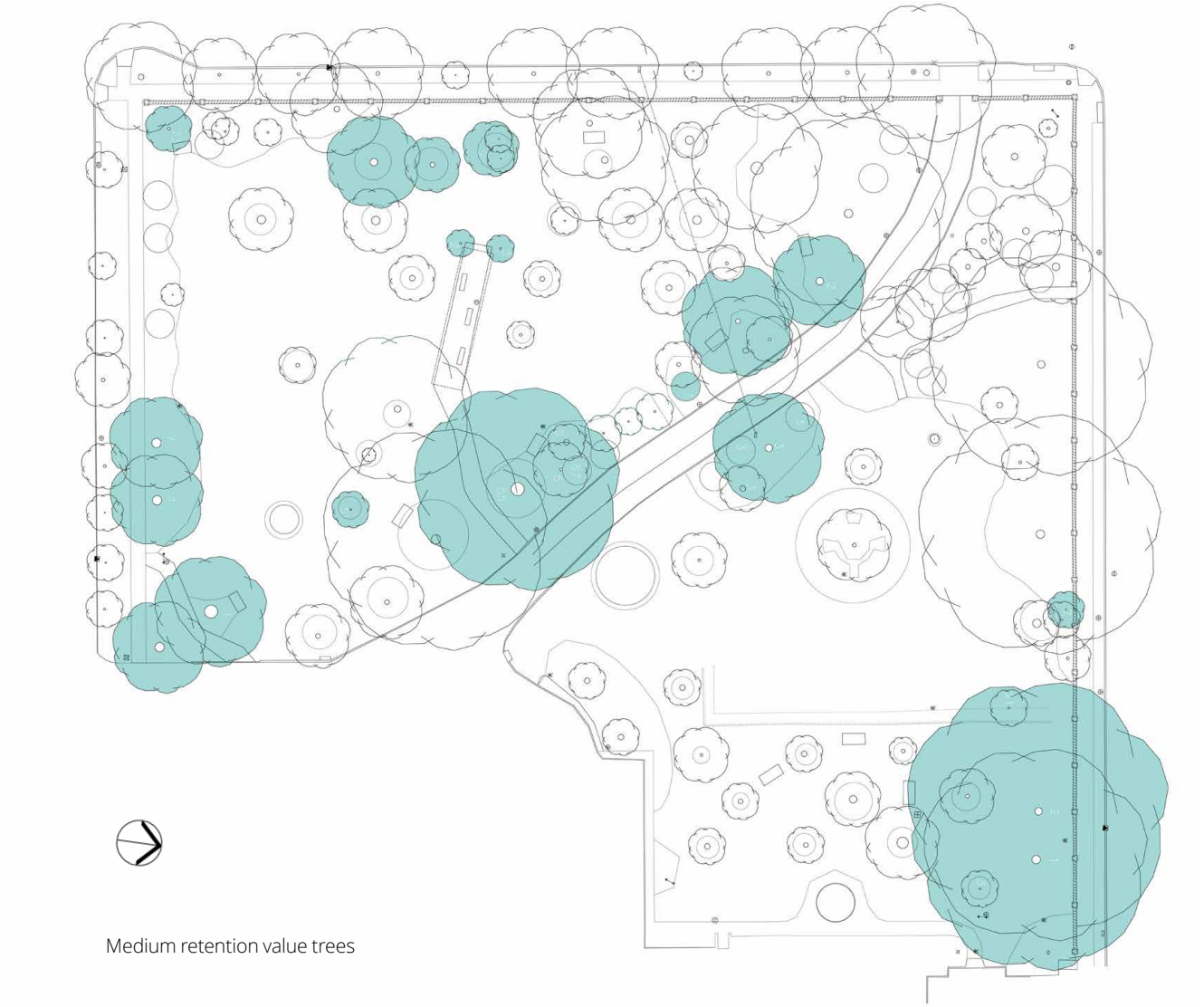
Intrusive elements are those which are considered to be intrusive and which have a negative impact upon the site. Intrusive elements include:

- Scoria landscaping around Weeping Elm.
- Stobie pole by driveway.

The following diagrams show the location of high, medium and low retention value trees in the garden.



High retention value trees



Medium retention value trees

Low retention value trees

## KEY GARDEN ISSUES

The following section summarizes key landscape issues identified in the tree survey and site analysis.

- Current and long term tree health will be influenced by the surrounding growing environment. The following general comments are made.
- Trees located in lawn areas, especially the palms, are surrounded by circular garden beds of varying sizes. Many of these beds are too small to provide any benefit to the tree. The trees are subject to competition for resources by deep rooted turf, soil compaction arising from foot traffic and general garden management and in some cases, scalping of exposed surface roots. Refer to 2016 Tree Management Plan by Tree Environs for individual trees.
- Perennials have been planted in some of these garden beds increasing the degree of root competition.
- In some garden beds there are too many competing plants. Clumping species (e.g. Agapanthus, Clivia) are unsuitable as they disadvantage tree root systems.
- There are signs that poor drainage or excessive irrigation may be a problem in some areas.
- A number of trees along the Hewitt Avenue frontage have failed to establish. This may be due to the use of poor quality stock and/or poor planting practices, giving the trees no chance of growing to maturity and contributing to the garden.
- Some trees are very old and have a limited life expectancy-e.g. some of the Deodar Cedars are likely to require replacement in the near future. (>10 years)
- A large number of high retention value trees (palms) do not qualify as regulated or significant trees due to their slender trunks. However these trees are currently protected by their State Heritage listing.
- Self-seeding plants are becoming invasive in some areas.
- Before its handover to council in 1945, Attunga as a private garden would have had a very intensive maintenance regime. This is no longer possible in the public ownership.
- Views to historic Attunga house from the garden have been modified over time by the growth of trees and shrubs.

# MANAGEMENT PLAN

## OBJECTIVES

The Attunga garden established by Otto von Reiben was renowned as an arboretum and park like setting, and the fence, gates and garden are included in the heritage listing. It has been maintained as a community asset by Council and the hospital. The management of Attunga garden should retain the cultural significance of the place including:

- The historical significance of the house and garden as one of the few remaining examples in Adelaide of a large house in its original garden setting dating from the early Edwardian period.
- The layout of the garden and remnants of the early planting which represent a physical record of the tastes and interests of Adelaide during the early twentieth century.
- The management of the garden setting of the house and the physical conservation of the masonry boundary fence and gates are essential to the retention of the cultural significance of the place.
- The importance of Attunga as a botanic garden or arboretum with palm species as a specialty developed during the early part of the twentieth century.
- The garden is also unique in being in public ownership and accessible to the public, and is a significant open space within the local area.

### CONSERVATION APPROACH

Under the Burra Charter conservation means all the processes of looking after a place so as to retain its cultural significance. It also recognizes that change may be necessary to retain cultural significance, but is undesirable where it reduces cultural significance.

To retain its cultural values, the garden needs to be managed using sound horticultural practices, to ensure the garden will be viable in the future.

In managing the garden, the intent of the original garden and significant subsequent changes are to be respected.

Conservation can also involve garden restoration or reconstruction. At this point in time it is not intended to reinstate the garden to some earlier period in its history. It is considered that this would not be feasible due to changes in the growing environment, site use and maintenance resources.

## MANAGEMENT POLICIES

The following policies identify what needs to be done to manage the garden to retain its significance into the future.

### GARDEN MANAGEMENT

- Attunga is an aged garden, and not just another Council reserve or open space, and needs to be managed as such.
- There is a community expectation and a heritage listing requirement that the garden be maintained in optimal condition.
- The heritage trees are not in the same condition that they were seventy years ago when the garden was handed to Council.
- The functioning and use of the garden has also changed over time and it is now part of a hospital setting.
- The maintenance regime needs to reflect the age of the garden, with site conditions different from what they were 50 years ago.

### MANAGEMENT RESOURCES

Sound management of the garden will require staff with a good skill base, and where appropriate qualifications. Continuity of staff is also important.

- It is recommended that two dedicated full-time staff be allocated to the garden.

### GARDEN CONSERVATION

- All elements identified as being of primary significance should be retained and conserved.
  Landscape and built elements of primary significance have been identified as those which contribute in a fundamental way to an understanding of the cultural heritage significance of Attunga garden, and these should be retained as part of the ongoing management of the place.
- All elements identified as being of contributory significance should be retained and conserved if possible.
  Landscape and built elements of contributory significance make a lesser contribution to an understanding of the history and assessed significance of the Attunga garden. Their retention and conservation is strongly preferred.
- All elements identified as being of little or no significance could be retained or removed as required.
  These elements do not contribute to, or detract from, an understanding of the cultural heritage significance of the Attunga garden as a whole and their retention is not required for heritage reasons.

### TREE RETENTION/REPLACEMENT

- A number of mature trees make a significant contribution to the character and heritage of the garden and should be retained.

- The mature trees in the garden should be managed in a way that will promote their longevity, and be replaced with the same species or an appropriate species when trees reach the end of their useful life.
- Attunga garden has a very good stock of trees. The loss of a single tree would not have a dramatic impact on the garden. If a tree must be removed due to declining health or risk concerns, then another can be established in its place.
- High retention value trees should be retained using the highest maintenance standards unless irreparably damaged, pose an unacceptable risk to the public that cannot be mitigated, are dying with no chance of recovery, or diseased and beyond treatment.
- Where possible, replacement specimens of these trees should be planted in advance of senescence to enable establishment prior to removal of existing trees.
- Removed trees should be replaced with the same species and generally in the same locality unless there is a sound reason not to do so e.g. risk or inappropriate growing conditions.
- Trees should be replanted to retain existing planting patterns consistent with the established historic character of the garden.

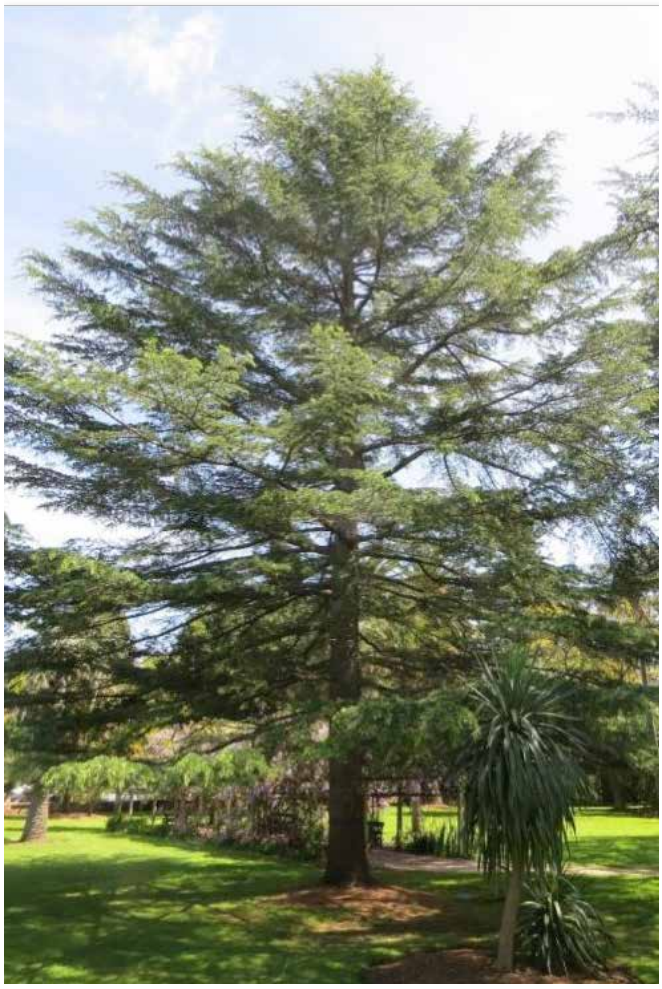
**TREE HEALTH**

- For trees located in lawn areas, the surrounding beds should be enlarged to 2 to 3 m radius and organic mulch applied. A specific garden bed radius should be selected for all trees, to maintain visual consistency across the site.
- Perennials planted in some of these garden beds should be removed.
- Self-seeded plants in garden beds should be removed if they have become invasive.
- In some instances groups of adjacent trees could be incorporated into a single garden bed, improving growing conditions while reducing maintenance requirements and preventing injury. Free standing trees along the site boundaries should be incorporated in garden beds where possible. This applies to:
  - Trees 80-84 adjacent to the hospital car park.
  - Trees 46, 65 & 66 adjacent to the western boundary.
  - There are signs that poor drainage or excessive irrigation may be causing tree health problems in some areas. Further investigations of the soil profile, site history and irrigation regime may be required.

**TREE MAINTENANCE**

- Tree maintenance should be carried out in accordance with the schedule in the tree survey data sheets attached to this report.
- Tree management should recognize that the garden is a public space.
- Tree pruning should be kept to a minimum to manage crown form, function and aesthetic qualities.
- All pruning must conform to the Australian Standard AS 4373 – 2007 Pruning of Amenity Trees.
- Pruning of trees should be carried out by AQF level 3 or higher qualified and experienced arborists.
- The tree inspection regime will vary according to tree type. The large mature 'foundation' trees in high use public zones should be inspected every two to three years for condition and management requirements.
- Individual trees previously identified with health, structure or risk issues may require more frequent monitoring. The Tree Environs report 2016 identifies 2 trees, tree numbers 81 & 84 as requiring further investigation.
- The larger trees with known defects or in the higher use zones should be inspected after major storms or other exceptional events to identify damage or any changes in condition that may have occurred. Such assessments could be undertaken by appropriately trained and skilled staff familiar with site trees, or conducted externally.


Tree 81

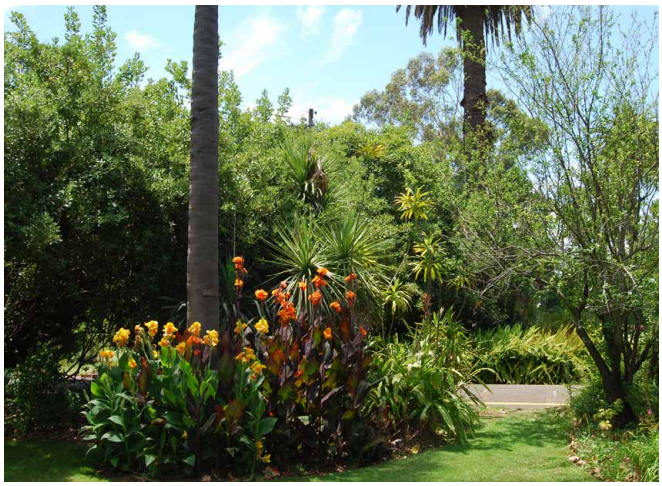


Tree 87

**GARDEN BEDS**

- In some garden beds competition from the uncontrolled spread of mainly perennial species is impacting the condition of trees and detracting from the original character of the garden. These previously neat but informal garden beds and borders have become overgrown through a lack of appropriate management.
- The following spreading plant species are considered to be unsuitable for planting beneath trees unless they are regularly controlled. These species largely originate from non-treed environments. They compete strongly with tree root systems for resources usually to the detriment of the trees over time. The list is dominated by plants with spreading underground rhizomes, but also includes clumping plants. Species planted in Attunga garden beds in the past include Agapanthus sp. – Lily of the Nile, Clivia miniata – Natal lily, Canna sp. – Canna lily, ,Nephrolepis sp. & Polystichum sp. - Sword Ferns, Hedera helix - English Ivy, Dieties bicolor – Wild iris, Wandering jew - Tradescantia fluminensis to name but a few.
- Where these species or species like them exist in the garden they should be controlled to small areas to minimize adverse impacts on trees, or replaced with more appropriate species
- Some of these plants were part of the original planting palette, and were characteristic of the period, but are now known to be unsuitable for garden beds under trees.
- These plants may still have a place in the garden, but should be contained in defined areas and managed, preferably away from trees.
- The nature of the garden beds has changed from the garden of 50 years ago, with increased shade and more tree roots present.
- New plants for garden beds around trees should not be excessively competitive. This applies especially to garden beds around newly established trees.
- All garden beds to be mulched with organic mulch (see below).
- Along the driveway, proposals to reinstate the original clipped box hedge may not be desirable. This would be difficult to re-establish under trees which have since increased in size.
- New plantings should be of species appropriate to the period. Refer to guidelines for plant species typical of the period in the following section.

- Steel edging to garden beds was originally used in some beds at Attunga Garden. A softer and equally effective garden edging method with superior aesthetic qualities is classic spade cut edging.
- Council should develop a program to progressively renew or reconstruct identified garden beds based on budget constraints. This may require additional resources from outside of Council.
- The aim should be to rebuild garden beds to reflect an Edwardian layout and planting palette.
- Reconstruction of garden beds would include raising garden beds to their original levels with new soil and organic matter. Some compromises in reconstruction may be required due to issues of root invasion and lower lighting.



**MULCHING**

- Mulch was not a feature of early twentieth century gardens, however it provides numerous well documented horticultural and water conservation benefits.
- Mulch should be installed in a consistent manner which retains the heritage character of the garden.
- An organic mulch layer should be selected and applied as per the mulching schedule at the end of this report.

**SITE IRRIGATION AND DRAINAGE**

- The existing irrigation system appears to have been installed in stages with noticeable gaps in delivery to parts of the garden
- The system has a focus on irrigation of turf areas.
- A variety of sprinkler heads are located in garden beds. The coverage and output of theses sprinklers varies depending on type, plant density and maintenance frequency.
- There is often a mix of plant species in a single garden with different irrigation requirements.
- Trees have different irrigation requirements to turf. Different tree species also have different irrigation requirements
- Excess water is being delivered to some trees leading to health issues. For example the Cedars in lawn areas are in part suffering from over-watering. Some Palms are being overwatered
- A modified irrigation system is required that addresses the needs of the three garden elements:
  - Trees
  - Lawn
  - Garden beds
- Council should investigate the status of the current system to determine the layout, type, output and suitability of what currently exists.
- Where possible, council should seek to modify the existing system to avoid the unnecessary damage to the root systems of established trees.
- Modification of the irrigation system will require:
  - Review of the current irrigation regime. This includes an irrigation layout plan if available and information on flow volume/frequency.
  - An existing irrigation layout plan should be prepared if not currently available.
  - Soil/drainage testing is to be undertaken to inform future management practices and irrigation schedule.
- Sustainable water management practices should be encouraged in the garden, subject to heritage listing requirements. Consideration could be given to the re-use of the stormwater runoff from the house and car park if feasible.
- There is a community expectation and a heritage listing requirement that the garden be maintained in optimal condition. Water restrictions

should not apply, and key areas will require irrigation above normal in times of water restrictions.
- Irrigation should be applied in accordance with the specifications in the Irrigation Schedule at the end of this report.

**LAWNS**
- The character of the existing lawns has been fragmented over time. Some small areas of lawn are not appropriate to the current function and management of the garden.
- There is a large collection of palms planted in the lawn areas. These lawns need to be managed from the perspective of the palms rather than the lawn in isolation.
- Lawns should be mown only as required. Less frequent mowing to maintain a longer sward of turf is preferable from a health perspective.
- Lawns should be fertilized with organic fertilizers only. In some areas turf occurs in close proximity to palms and other trees to their detriment.
- Avoid any further fragmentation of the existing lawns.
- No additional free standing trees should be planted in the lawns. They would make management of the lawns even more difficult, and may add to 'visual clutter' in the garden.

**WORK AREAS**
- The area to the west of the Norfolk Island Pine may be retained as a mulch stockpiling or general storage area, in the absence of any other suitable location within the gardens.
- Paths
- The existing path layout should be retained.
- Proposals have been made to extend or re-establish the former path network and provide additional paths for user access. This would further fragment the lawn areas. Generally the fewer paths there are the better.

**DRIVEWAY**
- The driveway was part of the original layout of the site, and is currently used as an egress road, but with parking restrictions.
- The road also acts as a pedestrian path within the garden and provides strategic views approaching the old Attunga house.
- The historic character of the driveway could be improved with the removal of the inappropriate yellow line marking and modern no-parking signs.
- The existing brick edging to driveway should be retained and areas of damaged brick repaired as required.
- Consideration should be given to the long term closure of entry gates/vehicle access to Kensington Road, retaining the road for pedestrian use only.
- Consideration should be given to removing the existing asphalt driveway surface and reinstating the original gravel surface.
- Views and vistas
- Views of historic Attunga house from the garden have been modified over time by the inevitable growth of trees and shrubs.
- Key views and vistas within the garden should be maintained. Key views include:
  - The important view of the house from the west up the driveway.
  - Views to the western façade of the house from the garden to the west.
  - Views to the northern façade of the house from the garden to the north.
- New plantings may be used to
  - Screen undesirable views of the hospital additions from the garden.
  - Provide visual enclosure of spaces within the garden.
  - Provide screening from traffic in the adjacent streets.
- Any new landscaping should reinforce the existing visual character of the site comprising sweeping lawns and neat garden beds punctuated with tall palm and conifer trees.

**SEATING**
- Additional seating may be required, at strategic shaded locations, given the use of the site by hospital patients and the community.
- New seats should not be installed on intrusive concrete pads, and existing concrete pads should be removed.
- New seating should be consistent across the site and reflect the heritage significance of the garden.

**HERITAGE WALL**
- The heritage wall and gates should be protected and restored in accordance with the 2016 Conservation Management Plan by McDougall & Vines.
- Plantings in garden beds adjacent to the heritage wall should not impact on the integrity of the wall.

**INTRUSIVE STRUCTURES**

- Remove the stobie pole in the centre of the site (verify the service is decommissioned).

**TREE SIGNAGE**

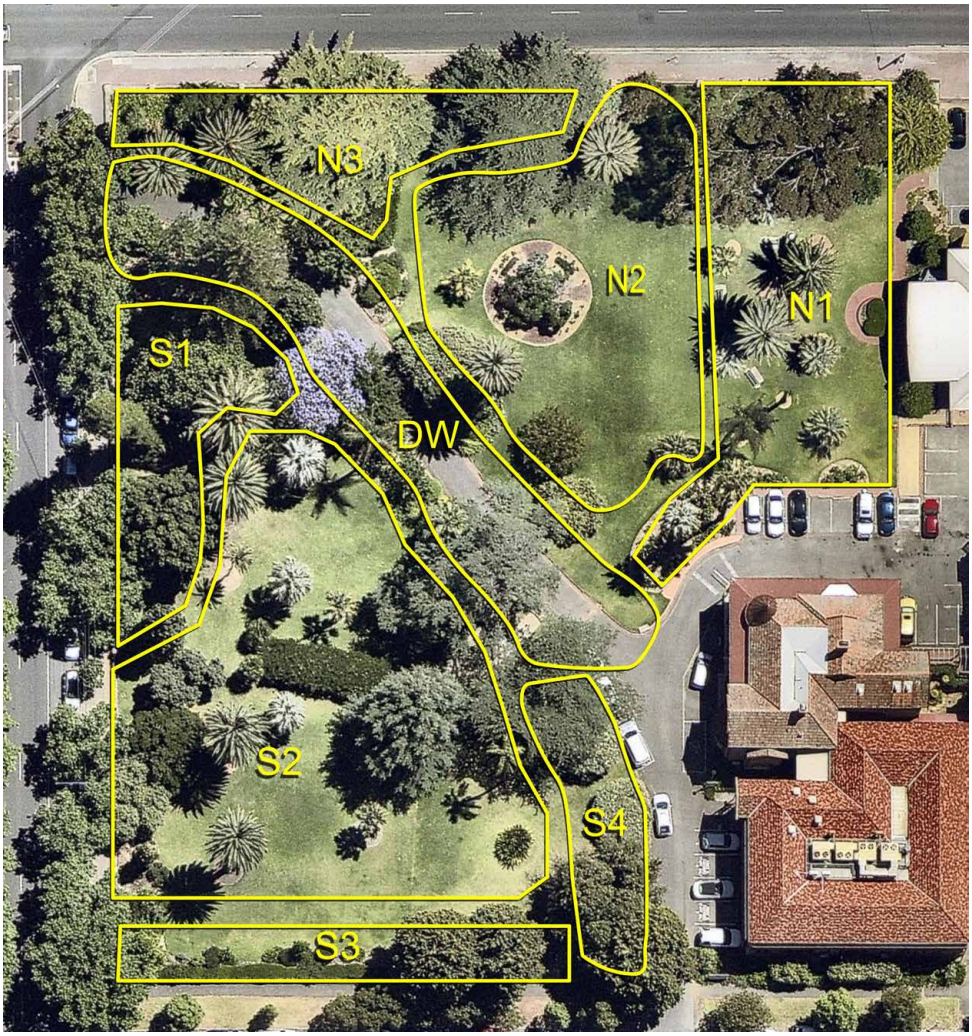
- The hand painted signs on trees and palms provide valuable information on the age and species of the older trees. These are mounted on tree trunks which is not ideal.
- Existing signs could be maintained if safe and secure.
- New tree identification signs should be in the style of the original signs. The placement and method of attachment should not be invasive or damaging to the tree.

**INTERPRETATION**

- Council should investigate the installation of interpretive signage covering the history of the garden and of Otto von Rieben, including the use of early images of the garden.
- The George Bolton video showing the garden in 1944-45 should be made available to the public on Councils website.
- Council should consider commissioning additional historical research into the garden, including a review of Council and Hospital archives, and interviews with key people involved in the management of the garden since 1945.

## MANAGEMENT ZONES

A number of management zones have been identified across the site. These are areas identified as having a distinctive character within the overall garden. They have been intended to provide a framework for future management policies and actions.




**NORTHERN SECTION**

**N1. Eastern lawn**

One of the main pedestrian entry zones to the garden is from the hospital. Adjacent to the new hospital building and new raised sensory garden and red brick path. The area is defined by a change in level and an embankment to the west.

The palms in this area are part of the important collection on the site, and are scattered through the lawn. There are two large Corymbia trees adjacent to Kensington Road and the heritage wall. A glory vine and several Corymbia trees have been removed since 1997 to protect the wall.

A 'coronation oak' was planted in 1997 near the car park entry.

A garden bed around the palms adjacent to the carpark frames important views to Attunga House frontage.

The mulched garden bed with roses appears to be well maintained and in good health.

**N2. Northern Lawn**

This lawn area is adjacent is to the driveway and two large Deodar Cedars. The weeping elm in the original tubular steel structure provides a visual focal point in the area. There is garden bed with scoria and poorly laid bricks around the tree, with sparse plantings of roses, rosemary etc. The original 'gazebo' effect has been lost over time. This was characterized by seating under a tree weeping towards the ground, with climbing roses on the frame, and a circular bed of annuals.

The garden bed around this tree requires redesign and revitalization. This would include removing the scoria ( a modern garden material) and bricks and replacing with organic mulch. The new design should better reflect original layout. Planting should be rejuvenated with suitable non-competitive species. Possum damage to the tree is a major issue with no easy solution.

**N3. Northern garden bed**

The garden bed around the large Deodar Cedars on Kensington Road frontage provides important enclosure to and shading to northern lawn area and screening to Kensington Road traffic. The garden is located adjacent to the heritage wall.

The area has been considerably replanted since 1997. There are dense planting of perennials in the shade under the trees including Plumbago, Agapanthus, Canna, Clivea and Cordyline plants have become invasive. The area also appears to have poor drainage.

The over-grown nature of the under plantings are incompatible with tree needs due to root competition and differences in irrigation requirements. The perennials should be preferably removed or greatly thinned. The area needs a more compatible under planting of species with the same watering requirements of the tree species present.

The garden bed in the north-west corner is bounded by Kensington Road, Giles Road, the Driveway and a gravel pathway. It is adjacent to heritage wall and metal entry gate.

There is a mixed planting of perennials and palm like plants under the tall palms, and many self-sown plants/palms.

The self-sown plants should be removed to better exhibit the trees.

Weeping elm, current

Weeping elm c1930

Weeping elm, current

**CENTRAL SECTION**

**DW. The Drive**

The garden beds along the drive providing screening the adjacent lawn areas. They contain a mixture of exotic shrubs and small trees, with under plantings. A number of native shrubs have been removed from this area since 1997.

Some shrubs have grown relatively large detracting from a continuous 'low border' effect and obstructing the important views to Attunga House. These should be pruned or removed and replaced to maintain view to the former house.

The Heritage SA report of 1985 recommended reinstating the clipped box hedge which originally lined the driveway. Since 1997 however efforts have been aimed at planting with edging plants which reflect the appearance of a Federation period garden, without the maintenance requirements of a box hedge. Reinstating the hedge would now be difficult due to increased shading of the area and greater root competitions from adjacent established trees and shrubs. Garden beds along the driveway should be restored and rebuilt in stages to better reflect the original intent of the garden design.

The Drive c.1930

**SOUTHERN SECTION**

**1. North west corner**

The garden bed in the north-west corner surrounds a large Norfolk Island Pine. It is adjacent to the heritage wall and metal entry gated. The garden bed provides enclosure , shade and backdrop to adjacent lawn.

The between the Norfolk Island Pine and the wall is a relatively undeveloped area used for mulch stockpiling. This use is considered appropriate given the lack of alternative locations within the garden.

This garden bed should be extended to include trees 46,65,66 adjacent to the western boundary to minimise existing mowing damage to tree root systems and facilitate improved management of these trees.

**S2. Western lawn**

The western lawn area contains part of the main palm collection scattered about the lawn.

A number of Australian native trees (planted before 1945) are located along the western boundary.

In this area there is little screening of the hospital buildings and car park to the east.

The area also includes the Wisteria arbour which has been restored since 1997. The two palms planted at the arbour entry detract from the character of the structure and should be relocated elsewhere on the site.

**S3. Hewitt Avenue garden bed**

The narrow garden bed along the Hewitt Avenue frontage contains three large Cypress trees which provide screening to the street. Previously there was better screening along this boundary with a row of Cypress trees.

Consideration should be given to the replacement of the remaining Cypress trees in the longer term as they continue to decline.

The garden bed under the Cypress trees is also bare and needs reconstruction following removal of the Cypress trees, to provide screening form the street and enclosure of the garden

A number of smaller native shrubs have been removed from here since 1997. Replanting efforts have aimed to create an informal Viburnum hedge to provide screening and limit public access to the main entries. This has included plantings of an eclectic collection of small stature flowering or coloured foliage trees. Many of these trees are poor specimens and should be removed and replaced with more suitable species.

**S4. Western garden bed**

A number of notable trees are located in the lawn area adjacent to the hospital car park, including two large Deodar cedars, two Dracaenas and a Lilly-pilly tree.

The growing environment for these trees would be improved if they were to be incorporated into a single garden bed. Any under plantings in this garden bed should be low growing species which retain the vista over the lawns viewed from the east. Understorey species chosen should have the same irrigation requirements as the trees.

# RECOMMENDATIONS

The following recommendations are made regarding actions by the City of Burnside for the conservation and management of Attunga garden.

**1. MANAGEMENT RESOURCES**

1.1. Allocate two dedicated full-time staff to manage and maintain the garden.

1.2. Allocate external resources for the implementation of major projects (such as garden bed reconstruction) as required.

**2. TREE RETENTION/REMOVALS/REPLACEMENT**

2.1. The Hewitt Avenue garden bed contains three Cypress trees with poor form and no understorey. There has been a previous failed attempt to re-establish the foundation planting in this bed to the west. A fresh start is the best option, re-establishing the entire bed.

2.2. Remove the Cypress and smaller poorly performing trees identified in the tree survey data sheets attached to this report. This would enable the re-establishment of a full strata of plants over the entire bed on a project basis with species suitable to the period.

**3. TREE HEALTH**

3.1. Enlarge circular garden beds around trees in lawn areas to a consistent 3 metre radius, remove unsuitable perennials within the best and install a layer of organic mulch.

3.2. Remove invasive perennials and self-seeded plants around trees located in garden beds.

3.3. Incorporate the following trees into single garden beds to improve growing conditions for the trees and streamline management.

3.3.1. Trees 80-84 adjacent to the hospital car park.

3.3.2. Trees 46, 65 & 66 adjacent to the western boundary.

**4. DRAINAGE**

4.1. Assess the soil type and drainage in low areas of the garden where deteriorating plant health indicates either overwatering or poor drainage are causing problems.

4.2. Specific areas of concern are near tree numbers 13 & 25.

**5. WEEPING ELM.**

5.1. The garden bed around the Weeping Elm must be redesigned and the tree revitalized. The new design should better reflect original layout.

5.2. The redesign of the bed and revitalization of this tree should be a priority.

5.3. Remove the scoria and paving. Replace with organic mulch and new plantings. The species used in the new garden should be non-invasive and complement the style of the garden and the Elm's prominent setting.

5.4. Possum damage to the tree is a major issue with no easy solution. Regular monitoring of the tree for possum activity would be a starting point.

5.5. A range of treatments to improve tree health and vitality are needed. Regular sub-mulch irrigation. Soil injections using bio-activators and growth stimulants on a twice yearly basis are proven to improve tree health and vitality. Control elm leaf beetle with trunk injected Silvashield every 2 years. Careful well targeted pruning to remove some of the dead branches (not all of the dead branches can be removed at this stage as some retain live areas and the form of the tree would likely be adversely affected).

5.6. The practice of removing the weeping sections of the tree must cease.

**6. TREE MAINTENANCE**

6.1. Tree maintenance should be carried out in accordance with the schedule in the tree survey data sheets attached to this report.

6.2. Develop a tree inspection regime based on tree type. The large mature 'foundation' trees in high use public zones to be inspected every two to three years by a level 5 consulting arborist for condition and management requirements.

6.3. Carry out further investigations into tree health, structure, risk and management requirements for tree numbers 81 & 84.

6.4. Monitor the health and management requirements of tree number 18.

6.5. All tree pruning conducted in the garden should be based on level 5 consulting arborist recommendations.

6.6. The work must be completed by or supervised by level 3 or higher trained and experienced arborists.

6.7. All pruning must comply with the Australian Standard AS 4373 – 2007 Pruning of amenity trees.

**7. GARDEN BEDS**

7.1. The spreading perennial species in garden beds across the site need to be controlled. These species should be removed altogether and replaced with other suitable non-spreading species, or confined by regular maintenance to small areas so as to minimize adverse impacts on trees.

7.2. Priority is to be given to the garden beds around the Deodar cedars in the north western part of the garden.

7.3. Remove self-seeded plants (including palms) from garden beds.

7.4. Develop a program to progressively renew or reconstruct identified garden beds based on budget constraints. These include:

7.4.1. Garden beds along driveway.

7.4.2. Garden beds along Hewitt Avenue including the garden bed around the three remaining Cypress trees.

7.5. Prune or remove large shrubs from garden beds along the driveway to maintain views to Attunga house.

7.6. New plantings to be selected from the schedule of typical plants of the period at the end of this report.

**8. MULCHING**

8.1. Apply an organic mulch layer to all garden beds as per the mulching schedule at the end of this report.

9. Site irrigation and drainage

9.1. Modify the existing irrigation system to better manage the different needs of trees, garden beds and lawns. This will require the following actions:

9.2. Review the current irrigation regime. This includes an irrigation layout plan if available and information on current volume/frequency of irrigation to all parts of the garden.

9.3. Prepare an existing irrigation layout plan if not currently available.

9.4. Undertake soil/drainage testing to inform future management practices and irrigation schedule.

9.5. In preference to the installation of an 'all new' irrigation system, modify the existing system/s where possible to avoid any unnecessary damage to the root systems of established trees.

9.6. The volumes and frequency of irrigation applied should be in accordance with the specifications in the Irrigation Schedule at the end of this report.

9.7. Water restrictions to gardens of this nature cause irreparable damage when they come into force. Planning for the security of the Attunga Garden water supply in the event of a water crisis must be a priority for current garden management.

**10. WEEDS**

10.1. A number of plants have become weeds on the site, and need to be removed. This includes:

10.2. Woody weeds. All self-sown trees (including Olives, Ash trees and palms) should be removed.

10.3. Planted species that need to be controlled (including Agapanthus, Cliveas, Canna lily, Nephrolepis sp. & Polystichum sp, Dietes).

10.4. Invasive plants and other weeds (including Wandering jew, English Ivy).

**11. LAWNS**

11.1. Lawns to be mown only as required.

11.2. Lawns to be fertilized with organic fertilizers only.

11.3. Existing lawn areas are not to be further fragmented with new paths.

**12. DRIVEWAY**

12.1. Maintain the brick edging to the driveway and repair areas of damaged brick as required.

12.2. Investigate the following longer term strategies for the driveway.

12.3. Long term closure of the entry gates/vehicle access to Kensington Road.

12.4. Removal of the existing asphalt driveway surface and reinstatement of the original gravel surface.

**13. SEATING**

13.1. Investigate opportunities for additional seating at strategic shaded locations.

13.2. New seating to be:

13.2.1. Of a style and consistent with the existing 'Ballarat' seats.

13.2.2. Installed without intrusive concrete pads.

13.3. Concrete pads to be removed from existing seats and where they occur without seats.

**14. HERITAGE WALL**

14.1. Protect and restore the heritage wall in accordance with the 2016 Conservation Management Plan by McDougall & Vines.

15. Intrusive structures

15.1. Remove the stobie pole in the centre of the site (subject to verifying the service is decommissioned).

**16. TREE SIGNAGE**

16.1. Maintain existing hand painted signs if safe and secure.

16.2. New tree identification signs should be in keeping with the existing style. The existing method of attachment is unsuitable for new signage.

16.3. New signs should be securely mounted on low post adjacent to trees.

**17. INTERPRETIVE SIGNAGE**

17.1. Investigate the installation of interpretive signage covering the history of the garden and of Otto von Rieben, including the use of early images of the garden.

17.2. The George Bolton video showing the garden in 1944-45 to be made available to the public on Councils website.

17.3. Consider commissioning additional historical research into the garden.

**18. GARDEN STRUCTURES**

18.1. Develop a new design for the garden around the Weeping Elm which better reflects the original layout, and provides a favourable environment for the tree.

# ACTION PLAN

| Task | Action | Details | Priority | | |
|---|---|---|---|---|---|
| | | | High (within 6 months) | Medium (within 2 years) | Low (as funds allow) |
| 1. Pruning | | | | | |
| 1.1 | Maintenance pruning | Refer to Tree Survey data sheet | 1,25,26,40,44,45, 49,55,65,66,69,73, 78,79,80,81,84,86, 87 | | |
| 1.2 | Formative pruning | | 3,28,58,59,64 | | |
| 1.3 | Palms - Remove dead fronds | | 4,5,6,7,33,50,51, 54,88,89,90,91 | 22 | 14 |
| 1.4 | Remove ivy | | 42 | | |
| 2. Tree removals | | | | | |
| 2.1 | Remove trees and replace with suitable species | Remove poor specimens recently planted and inappropriate species. | | | 23,24,29,35,60, 62,63,75,77 |
| 2.2 | Remove and replace with same species | | | | 61 |
| 2.3 | Monitor & remove if tree declines | | | 74,78,79,80, | |
| 2.4 | Transplant within site | Palms by Wisteria arbor. | | 92,93 | |
| 3. Mulching | | | | | |
| 3.1 | Trees in lawns | Form 3m radius bed around tree. Remove/thin perennials and install layer of organic mulch. | All palms in lawns. | | |
| 3.2 | Garden beds | Mulch as per mulching schedule | | All garden beds | |
| 4. Garden bed management | | | | | |
| 4.1 | Thin/remove perennials & self-sown species | Remove and replace with suitable species, or manage to prevent spread. | Garden beds around trees 25 and 26. | Other garden beds | |
| 4.2 | Integrate trees into single garden bed | To improve growing conditions and management. | Trees 80-84. Trees 46, 65, 66. | | |
| 4.3 | Reconstruct garden beds | Develop a program to renew and reconstruct garden beds based on budget constraints. | | Garden beds along driveway. Garden beds along Hewitt Avenue. | Other garden beds |
| 5. Tree management | | | | | |
| 5.1 | Tree health management | Soil injection, mulching etc. | | 18,55 | 66 |

| | | | | | |
|---|---|---|---|---|---|
| 5.2 | Undertake risk assessment | | | 81,84 | |
| 5.3 | Undertake further site investigations | Soil profile, drainage, irrigation regime, past site works. | 13, 25, 55,84 | | |
| 5.4 | Monitor trees to determine future management requirements | | 84 | | |
| 5.5 | Weeping elm (tree 18) | Monitor health, remove scoria, redesign garden bed, mulch, monitor possum activity and control as possible when required, treat Elem leaf beetle, targeted pruning. | High priority | | |
| 6. Irrigation | | | | | |
| 6.1 | Review current irrigation regime | Review flow volumes, undertake soil/drainage testing. | High priority | | |
| 6.2 | Modify existing system | Volumes to be in accordance with irrigation schedule. | | Medium priority | |

# SCHEDULES

## SCHEDULE 1: TYPICAL PLANTS OF THE PERIOD

The following guidance is provided for the planting of 'Federation' gardens of the 1900-1920's period (Source: Jones, D. & Payne, P. Gardens in South Australia 1840 - 1940 Guidelines for Design and Conservation). Please note that this is a general guide to plants of the period, and is not intended as a list of plants planted at Attunga garden.

**TYPICAL PLANTS OF THE PERIOD**

**Sombre foliaged trees**

Jacaranda mimosifolia (Jacaranda)

Photinia sp. (Photinias)

Coprosma repens (Mirror Bush)

Acmena sp. syn Syzigium (Lilly-pillys)

Ilex sp. (Hollys)

Prunus laurocerasus (Cherry Laurel)

Prunus lusitanica (Portuguese Laurel)

Laurus nobilis (Sweet Bay)

Agonis flexuosa (Willow-myrtle)

Acacia saligna (Golden Wattle)

Melia azederach var. australasica (White Cedar)

Koelreuteria paniculata (Golden Rain Trees)

Magnolia grandiflora (Southern Magnolia)

Arbutus menziesii (Madrone)

Arbutus unedo (Irish Strawberry Tree)

Ceratonia siliqua (Carob)

Corymbia ficifolia syn. Eucalyptus ficifolia (Red Flowering Gum)

Corymbia calophylla syn. Eucalyptus calophylla (Marri)

Callitris columnellaris (White Cypress-pine)

Pinus sp. (PInes)

Araucaria sp.('Pines')

Cupressus sp. (Cypress)

Cupressus sempervirens var. stricta (Pencil Pines)

**Deciduous trees**

Jacaranda (Jacaranda mimosifolia)

Prunus sp. (Prunus)

Malus sp. (Crabapples)

Prunus persica (Peaches)

Prunus dulcis (Almonds)

Betula sp. (Birches)

**Colourful foliaged trees**

Cedrus sp.(Cedars)

Cinnamomum camphora (Camphor Laurel)

Cryptomeria elegans (Bronze Japanese Cedar)

Ligustrum japonicum (Golden Japanese Privet)

**Palms, succulents, etc.**

Cordyline sp.) (Cabbage Tree)

Phoenix sp.) (Palms)

Phoeni  canariensis) (Canary Island Palm)

Aloe sp. (Aloes)

Agave sp. (Agaves)

Yucca sp. (Yuccas)

Phormium tena) (New Zealand Flax)

Cortaderia sp. (Pampas Grass)

Melianthus major (Large Honey-flower)

**Shrubs**

Camellia sp. (Camellias)

Rhododendron sp.(Rhododendron)

Hydrangea sp. (Hydrangeas)

Agapanthus sp. (Agapanthus)

Rosa sp. (Roses)

**Hedges**

Olea europaea (Olive)

Cupressus sp. (Cypress)

Buxus sempervirens (English Box)

Pittosporum eugenoides, P. undulatum  (Pittosporum)

**Flowering perennials & annuals**

Rosmarinus officinalis (Rosemary)

Lavandula angustifolia (Lavendar)

Pelangonium sp.(Perlagoniums)

Plumbago auriculata Syn. P. Capensis  (Plumbago)

Abutilon sp. (Chinese lantern)

Ruseda sp. (Mignonettes)

Viola sp. (Violets)

Aloysia citrodora  (Lemon Verbena)

Bouvardia longiflora  (Bouvardia)

Erysimum sp. (Wall flowers)

Matthiola sp.  (Stocks)

Boronia Megastigma (Brown Boronia)

Dianthus caryophyllus (Carnation)

Dahlia sp.(Dahlias)

Chrysanthemum sp.(Chrysanthemums)

Narcissus sp. (Daffodils)

Iris sp. (Irises)

Canna sp. (Canna lilly)

Erica sp. (Heaths)

Rhododendron sp. (Azaleas)

Rosa sp. (Hybrid Teas)

Thymus citriodorus (Lemon Thyme)

Armeria juniperifolia (Dwarf Thrift)

Pyrethrum aureum (Golden Moss)

**Climbers**

Wisteria sinensis (Wisteria)

Rosa sp. (Roses)

Jasminum sp. (Jasmine)

## SCHEDULE 2: MULCHING GUIDELINES

- A layer of organic mulch of between 50-100mm (ideally 75mm) provides a wide range of benefits to plants.
- Mulches for use around trees should have the following properties;
  - The mulch should be partially composted (moist storage for a minimum 8-12 weeks in a pile prior to use). Storage and partial decomposition decontaminates the mulch, degrading natural toxins and stabilizing the materials.
  - The material should comprise a majority of particles >15mm. The upper size limit will often be determined by appearance but is usually within 25-75mm depending on application.
  - The fines component of the mulch (leaves, flowers, fruits, bark, wood) should not contain materials that matt or stick together such as lawn clippings, tub-ground bark or wood.
  - Mulches generally will not contain manures, bio-solids, fertilizers or other contaminants.
  - Mulches must be free of weed seeds, disease (particularly Armillaria and Phytophthora spp.) and refuse.
  - The materials should not decompose too fast or be so light that they will blow away.
  - In public environments the appearance of the mulch may be an important consideration.
  - Where this is the case a mulch with the properties previously listed may be covered by a thin layer of finer more processed mulch to give a desired effect.
- Mulch must be spread by hand over the root zone, not by machinery driving over the root zone.
- Organic mulches degrade over time and so they need to be periodically replenished.
- The frequency of replenishment depends on the composition of the materials involved but will usually be every 2 years for mulches containing hardwoods and every 12 months for softwood based mulches.

## SCHEDULE 3: IRRIGATION GUIDELINES

- The irrigation table is has been prepared as a guide to suitable irrigation practices in Attunga Garden.
- The high and low volume figures to allow scope to consider the normal range of variable in water use requirements.
  - The weekly volume of water applied would ideally be adjusted based on temperature, wind, previous precipitation, plant water requirements and desired plant condition.
- The recommended volumes do not take into account areas where drainage problems may yet be identified in the garden.
- Avoid frequent, low volume irrigation in any areas of the garden.
- The recommended irrigation type is suggested as the most suitable means of irrigating a given area. These are not the only methods that could be used, although other methods may have unforeseen adverse consequences.
- Newly planted trees and shrubs may require initial additional hand watering of the root ball during the first few weeks of establishment until the root system grows into adjacent soils. Take care not over-irrigate by monitoring soil moisture levels, drainage and plant condition.

**IRRIGATION TABLE**

| ZONE | PREFERRED METHOD | FREQUENCY | VOLUME |
|---|---|---|---|
| Turf | Pop-up | 1 per week or half volume twice weekly. | 25-50 L/$m^2$ |
| Hardy Shrub/perennial bed (no trees) | Sub-mulch in-line drip | 1 per week | 30L/$m^2$ |
| Non-hardy shrub/ perennial bed (no trees) | Sub-mulch in-line drip or<br>high volume sprayer on riser | 1 per week or half volume twice weekly. | 30-50 L/$m^2$ |
| Hardy tree sp. with compatible understorey | Sub-mulch in line drip | 1 per week | 30-40 L/$m^2$ |
| Non-hardy tree sp. with compatible understorey | Sub-mulch in line drip | 1 per week | 40-60 L/$m^2$ |
| Dracaena draco | None | None | None |
| Cedrus deodara | Sub-mulch in-line drip | 1 per week | 30L/$m^2$ |
| Palms | Any system | 1 per week best | 30-50 L/$m^2$ |

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# ATTACHMENTS