



# **The Heritage Significance of Lake Burley Griffin and Lakeshore Landscapes**

**Report prepared by  
Lake Burley Griffin Guardians  
2016**



Cover image:

Clough, R. 1964 Fully Filled West Basin from Air above ANU 1964, Canberra. BibID: 2253890. From the National Library of Australia

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# The Heritage Significance of Lake Burley Griffin and Lakeshore Landscapes

## 1 Background

Lake Burley Griffin and its lakeshore landscape is a designed cultural landscape masterwork but it does not have heritage protection. Lake Burley Griffin Guardians, a not-for-profit group has prepared this report to document the significant heritage values of the Lake and its lakeshore landscape and make the information available as a public resource.

All of the property that comprises Lake Burley Griffin and Lakeshore Landscape, described in this report, lies within the land zoned as Designated Area in National Capital Plan (NCP), having 'special characteristics of the National Capital'.

A Commonwealth heritage assessment of the *Lake Burley Griffin and Adjacent Lands* (including only Commonwealth owned lands) is awaiting its finalisation and has been given an extension of time until 2017 by the Federal Minister for the Environment the Hon Greg Hunt MP. However there has recently been a considerable change to heritage management in Canberra's central national area.

The National Capital Plan - Amendment 86 that was approved by the Minister for the National Capital and External Territories, the Hon Paul Fletcher MP and registered in Parliament, on 5 May 2016 has a new segment on heritage, S2.4 Liveability Objective Two - Urban Design and Heritage. The objective has five principles the first of which states:

The National Capital Authority will consider heritage places in Designated Areas as Commonwealth Areas for the purposes of protecting the environment in the manner currently afforded under the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)* and any subsequent legislation (NCP 2016:20).

This revision to the NCP addresses what has been a difficult heritage management situation for Lake Burley Griffin since the introduction of the ACT Territory Government in 1988, that established a bifurcated heritage management program for Lake Burley Griffin's lakeshores.

In 2009 the National Capital Authority commissioned a heritage study of *Lake Burley Griffin and Adjacent Lands* by Godden Mackay Logan, producing a Heritage Assessment report and a two volume Heritage Management Report.

- *Lake Burley Griffin Heritage Assessment Final Report 2009*
- *Lake Burley Griffin and Adjacent Lands Heritage Management Plan Volume 1—Lake Burley Griffin 2009*
- *Lake Burley Griffin and Adjacent Lands Heritage Management Plan Volume 2—Stirling Ridge and Attunga Point Final Report 2009*

The study was thorough and followed the Burra Charter principles. However the study area excluded the lake landscapes owned by the ACT Government although it included the lake waters of those areas.

This report provides information for an upgrading of the Commonwealth heritage nomination for Lake Burley Griffin and lakeshore landscape building on the 2009 reports. It provides a comprehensive assessment against Commonwealth Heritage Criteria of Lake Burley Griffin and Lakeshore Landscape.

## 2 Property Information

### 2.1 Location

The place extends across portions of the suburbs of Parkes, Barton, Acton, Yarralumla and Kingston, ACT.

### 2.2 Boundary

- All the waters of Lake Burley Griffin including the upstream waters of Monoglo River to Morsehead Drive and Jerrabomberra Creek from the boundary of Jerrabomberra Wetlands to Scrivener Dam and the islands within the lake.
- East Basin lakeshore parklands of Grevillea Park, the river edge landscape between the river and Morsehead Drive, Jerrabomberra Wetlands Nature Reserve including Jerrabomberra Creek and ponds within the Jerrabomberra Wetlands Reserve, the lake fronting Kingston Foreshore Estate, Bowen Park and the strip landscape from the lake edge to Bowen Drive.
- The Central Basin north side lakeshore landscape from Commonwealth Avenue Bridge to Kings Avenue Bridge that includes parklands of Commonwealth Park, Regatta Point, Rond Terraces and Kings Park. On the south side of Central Basin, the foreshore landscapes bounded by the lake edge and Flynn Drive and the National Library of Australia property, Parkes Place, the National Gallery of Australia property and Bowen Drive.
- Kings Avenue Bridge and the fingers of landscape beneath it.
- Commonwealth Avenue Bridge and the fingers of land beneath it.
- Scrivener Dam .
- West Basin lakeshore landscape between the lake edge, Commonwealth Avenue, Parkes Way, Lawson Crescent, and the National Museum of Australia property including Acton Park. On the south side the land from the lake edge to Flynn Drive inclusive of Flynn Place and Lennox Gardens.
- West Lake landscape from Scrivener Dam and the lake edge, the western lakeshore landscape from the lake waters to and including the road reserve of Lady Denman Drive to the eastern edge of Tuggeranong Parkway including the Lindsay Pryor National Arboretum, Yarramundi Reach, Yarramundi Grasslands and Acacia Inlet. From the western lakeshore landscape and the Lake waters to and including Lady Denman Drive to the junction of Lady Denman Drive and Parkes Way at Sullivans Creek, Sullivans Creek within the campus of the Australian National University, Black Mountain Peninsula park, from the lake edge to Parkes way and the property of Australian National University and the National Museum of Australia. On the south side, the landscape from the property of the National Zoo and Aquarium the Molonglo River to meet Lady Denman Drive following the boundary and inclusive of the Governor General's property. From the lake edge to the property boundary of the Royal Canberra Golf Course, inclusive of Weston Park. From the lake edge to Brown Street and Alexandrina Drive and inclusive of the all of the landscape of Stirling Park.
- Exclusions that are within the nominated area include the buildings of the Claire Holland House Hospice, the Boatshed Restaurant, the ACT Yacht Club, Jerrabomberra Education Centre.

Maps at Attachment 1 indicate the land areas described above. They are not precise.

## 2.3 Property Owners

- The Australian Government  
Management Authority - the National Capital Authority  
Treasury Building, King Edward Terrace  
Parkes ACT 2600
- The ACT Government  
Chief Minister, Treasury and Economic Development Directorate  
GPO Box 158  
Canberra ACT 2601

## 2.4 Groups with an interest in the Lake and Lakeshore Landscape

- Citizens of Australia
- Citizens of Canberra
- Ngunnawal Community, PO Box 6155, Mawson, ACT 2607
- ACT Government TAMS, Territory and Municipal Services, GPO box 158, Canberra, ACT 2601
- The Walter Burley Griffin Society, Secretary, 140 Edinburgh Road, Castlecrag
- Lake User Group, (19 groups) Michelle Jeffrey (co-ordinator) NCA
- North Canberra Community Council
- Inner South Canberra Community Council
- Yarralumla Residents Association; [info@yarralumlaresidents.org.au](mailto:info@yarralumlaresidents.org.au)
- Friends of the Grasslands; [jamie.pittock@fog.org.au](mailto:jamie.pittock@fog.org.au)
- Jerrabomberra Wetlands, ACT Government
- Australia ICOMOS: Secretariat, Deakin University Faculty of Arts – Cultural Heritage Centre for Asia and the Pacific 221 Burwood Hwy Burwood VIC 3125 Australia
- ICOMOS- IFLA International Scientific Committee on Cultural Landscapes: Secretariat, Dr Stéphanie de Courtois, Via Giovanni Paisiello 40, 00198, Rome, Italy
- Australian Garden History Society: Secretariat, Gate House, 100 Birdwood Avenue, Melbourne Victoria 3004
- National Trust of Australia ACT
- National Trust Australia (Australian Council)
- Canberra and District Historical Society;  
<http://www.canberahistory.org.au/contact.asp>

## 2.5 Why the Lake and its Lakeshore Landscape is important

Lake Burley Griffin and its Lakeshore Landscape is of outstanding national significance for its history of brilliantly conceived planning by Walter Burley Griffin and Marion Mahony Griffin that provided the vision for the extensive lake and landscape system. The subsequent planning and works led to the spatial water planes in the heart of Canberra that provide aesthetic ethereal beauty and a base for the valued vistas across water to the wooded hills and ranges. The lake unifies the city and is the crossing of the lands and water axial vistas. It provides reflective properties for the national icons, perimeter landscape of public parklands for people, wetlands for wildlife, and a water body for climate amelioration. It provides a restful heart for the City that is a haunt for visitors and

loved and is used by Canberra citizens. The lakeshore landscape is significant for providing an environment to mitigate the excesses of water pollutants.

There is no other designed landscape of this scale and success in Australia.

### **3 Heritage Significance**

The assessment has been undertaken against the Commonwealth Heritage Criteria.

#### **3.1 Criterion (a) – the place has significant heritage value because of the place's importance in the course, or pattern, of Australia's natural or cultural history**

In the course and pattern of Australia's history, Lake Burley Griffin and Lakeshore Parklands exists as a major component of the Griffin plan that Australians had the foresight to accept and implement as the national capital. The lake waters are formed the impoundment waters mostly from the Molonglo and Queanbeyan River catchments, Jerrabomberra Creek and Sullivan's Creek to create a lake system with three basins, bays and a lake including several Islands. Lake Burley Griffin and Lakeshore Landscape are of outstanding significance in Australia's history as major components of the prize winning plan for Canberra, a city written into the nation's founding Constitution.

The idea of a lake as a central feature of Canberra emerged as a part of the 1909 proposals by a congress of design experts for a major water feature for the site for the national capital. The surveyor, Charles Robert Scrivener, who was instrumental in the selection of the site for Canberra gave one of the reasons for recommending the Canberra site as the opportunity afforded for 'storing water for ornamental purposes at reasonable cost'.

Griffin's lake was designed to create an ornamental water feature using the Molonglo River, which passes through the centre of Canberra covering a flood plain with some karst features. His practical motive was the control of the flood plain, climate amelioration and to ensure water quality. 'To protect the ornamental waters of his central lake, Griffin planned a two level lake system with a higher level East Lake and associated wetlands upstream from the formal central basins and West Lake to manage sedimentation and pollution from the rivers draining the cleared grazing lands, settlements and mines to the south-east of the ACT' (Fischer and Weirick 2014: 352)

The lake, developed from its initial design, lies astride the intersection of the main 'land axis' of the city extending from Mount Bimberi to Mount Ainslie and the 'water axis' that extends from Black Mountain across the three central water basins approximately aligned with the water course. Walter Burley Griffin and Marion Mahony Griffin conceived the vision for the lake system in the award winning Canberra plan. The Griffin's lake system reflects landscape water systems established in America towards the end of the 19<sup>th</sup> Century in the works of Frederick Law Olmsted, with the inclusion of arboreta, parks, gardens, naturalistic landscapes, wetlands and landscape features with strong evergreen planting at the Eastern and Western lake horizons. The Griffins used the combination of the spatial lake waters and the vista termini of naturally vegetated hills to provide the fundamental elements of the central Canberra design.

Modifications were made to the precise Griffin's geometry of the Central and East and West Basins in the 1960s along with the removal of East Lake to enable dairy grazing, but considerably reducing the size of the original Griffin lake plan. and the construction of the two bridges Commonwealth Avenue Bridge and Kings Avenue Bridge in the 1960s crossing the 11 km long lake area and the impoundment of the lake waters by Scrivener Dam completed in 1964 were engineering design accomplishments of the era. The extensive lake landscape was established by surveyors, bureaucrats, urban planners, engineers, architects, horticulturalists, landscape architects, hydrologists and scientists encouraged by the Prime Minister, the Hon Robert Menzies



all of whom respected Griffin's visionary design but modified some of the formal elements for a more naturalistic picturesque setting. The lake system with its landscape perimeter and emphasis on public space is the most successful urban lake landscape in Australia that provided Canberra with a unique and beautiful heart.

From its design inception the lake has been the centrepiece of the central national area of Canberra, forming an important part of the immediate foreground of the Parliamentary Zone and the city's main recreation zone. Its parklands have been sequentially developed and become a venue for national memorialization and for national and local events and citizen recreation.

In terms of the course and pattern of the natural environment although the lake system is originally artificial it has evolved to provide a richness of birdlife and associated breeding, feeding and nursery habitat. Seventy seven species of waterbird have been recorded within the Nature Reserve representing most of the waterbird species that are found in south-eastern Australia. Sixteen of these species use the area to breed. Notable amongst the waterbirds to use the area are the Latham's snipe *Gallinago hardwickii*, the common greenshank *Tringa nebularia*, the red-necked stint *Calidris ruficollis* and the sharp-tailed sandpiper *Calidris acuminata*, all of which are protected under the Japan Australia Migratory Bird Agreement and the China Australia Migratory Bird Agreement.

### **3.2 Criterion b – the place has significant heritage value because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history**

The extensive lake landscape was accomplished by surveyors, bureaucrats, urban planners, engineers, architects, horticulturalists, landscape architects, hydrologists and scientists who respected Griffin's design and developed the most successful urban lake landscape in Australia.

Lake Burley Griffin and Lakeshore Landscape, is outstanding to the nation for its rarity as a designed urban lake system that brings together the outstanding works of planning, engineering design and works and landscape development to create the magnificent urban lake that is the centrepiece of Australia's national capital.

There are features in the lake and lake landscape that are rare in Australia as noted in the report *Lake Burley Griffin Heritage Assessment Final Report*, Godden Mackay Logan (GML) (2009):

- The German designed and built hydraulically operated fish belly flap gates of Scrivener Dam, which allow for a precise control of water levels. The fish belly flap gates are rare in a national context.
- The large surviving grassy woodland area now modified to grassland, at Yarramundi Reach displays significant characteristics of the natural temperate grasslands community. The area is listed in the ACT Lowland Native Grassland Conservation Strategy as a 'Category 2' Temperate Grassland Site. Through this listing, it is also included as a Threatened Ecological Community under the EPBC Act. The grassland at Yarramundi Reach also provides habitat for the striped legless lizard (a declared threatened species under the Nature Conservation Act 1980 (ACT), and listed as a threatened species under the EPBC Act) and Perunga grasshopper (a declared threatened species under the Nature Conservation Act). The natural value is a combination of a remnant of pre-European vegetation community, an occurrence of a listed threatened ecological community and the provision of habitat services for listed threatened species.
- The yellow box-Blakely's red gum woodland community of Stirling Park is listed as a threatened ecological community under the EPBC Act and is noted in the ACT Lowland Woodland Conservation Strategy as a 'lowland woodland on National Land'. The community also provides habitat for the Button Wrinklewort (a declared threatened species

under the Nature Conservation Act, and listed as a threatened species under the EPBC Act). The habitat of this species within Stirling Park and the Majura Field Range has recently been nominated to the ACT Heritage Register. The natural value is a combination of a remnant of pre-European vegetation community, an occurrence of a listed threatened ecological community and the provision of habitat services for listed threatened species.

Wetland habitats at Yarramundi Inlet, Acacia Inlet and Warrina Inlet, comprising reed beds, fringing terrestrial vegetation and open water, provide habitat for a diverse population of waterfowl and land birds. The Japan-Australia Migratory Bird Agreement (JAMBA) listed Latham's snipe as recorded from these wetlands. This species is listed as a Migratory Wetland Species under the EPBC Act. Other locally rare species recorded here include the greater crested grebe, the little bittern, the little grassbird, and the musk duck.

The aquatic ecosystem of the lake provides a habitat for the Murray cod, which is listed as a threatened species under the EPBC Act. The natural value here is the provision of habitat services for listed threatened species.

There is no other city lake in Australia that has such a central designed lake landscape system.

### **3.3 Criterion c – the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history**

Excerpt from *Lake Burley Griffin Heritage Assessment Final Report*, Godden Mackay Logan (GML) (2009):

- Lake Burley Griffin, in the context of Griffin's Plan for Canberra, its subsequent realisation as a designed landscape, the original Griffin plan and later design overlays are all the subject of significant and ongoing research in the areas of urban planning, architecture, landscape architecture and the history of those subjects, as well as research into the work of key practitioners: Walter Burley Griffin, Marion Mahoney, John Sulman, Charles Weston, Lindsay Pryor, Sir William Holford, Dame Sylvia Crowe, Richard Clough, Peter Harrison, Trevor Gibson, and John Overall.
- The design of some of the features of the lake, including the German designed and built fish belly flap gates of Scrivener Dam and the bridges provide the opportunity for further research and teaching potential.
- The occurrence of threatened species in the Yarramundi grasslands (striped legless lizard and Perunga grasshopper) and at Stirling Park (Button Wrinklewort), and threatened ecological communities (yellow box—Blakely's red gum woodland and temperate natural grassland) provide opportunities for ecological research of habitat and population relationships. The lake's wetlands offer similar opportunities for the study of resident and migratory birds.
- The Lake Burley Griffin Management Plan notes that the lake presents opportunities for research into freshwater ecosystems; this would, however, be limited to the context of artificially impounded water bodies in urban environments.
- The Indigenous archaeological sites possess research potential as evidence of the traditional lifeways and economy of Aboriginal people in this region prior to European settlement.

### **3.4 Criterion d: the place has significant heritage value because of the place's importance in demonstrating the principal characteristics of:** **i. a class of Australia's natural or cultural places or**

## ii. a class of Australia's natural or cultural environments

As a designed landscape from the early 20th Century, Lake Burley Griffin and Lakeshore Landscape embodies a system of water features of river, creeks, formal basins, and islands impounded by a dam, Scrivener Dam of engineering significance. It is also spanned by two graciously curved early twentieth century style bridges, Kings Avenue Bridge and Commonwealth Avenue Bridge which was also given pillars at either end to denote the importance of the Commonwealth Avenue as a symbolic route from City Hill to Capital Hill.

Canberra is described as a synthesis of early design styles of the *City Beautiful* with its vistas to termini and *Garden City* with its numerous parks and gardens in its early suburbs. It also initially incorporated the Garden City feature of leasehold land. Lake Burley Griffin and Lakeshore Landscape is central to those design styles to provide a water spatial dimension to the carry the vistas to the naturally vegetated hills and reflect the sky.

As a 20th Century designed landscape, the lake system embodies contemporary ideas on the importance of landscape as an urban design and social element. The lake and lakeshore landscape complex reflects landscape water systems established in America towards the end of the 19<sup>th</sup> Century in the works of Frederick Law Olmsted, with the inclusion of arboreta, parks, gardens, naturalistic landscapes, wetlands and landscape features with strong evergreen planting at the Eastern and Western lake horizons. Olmsted's views stemmed from the creation of a composition in which all parts were subordinated to a single, coherent effect with a purpose to give people greater enjoyment of scenery. WB Griffin's lake planning emulates Frederick Law Olmsted with a rich variety of public landscapes with diversity of colours, arboreta, trees and water forms flowing through a city with formal and naturalistic character (Vernon 2005:4-6). Griffin intended dark evergreen green features to terminate the western and eastern extent of his lake with a *Cupressus* spp. Cluster, known as Roman Cypress Hill at its western terminus and a plantation of *Sequoia sempervirens* at its Eastern extent, a relict of this plantation remains.

The National Capital Development Commission (NCDC) in the 1960s executed the landscape planning for the entire lake shores reducing the size of the lake and some of the formality of the basins. The landscape development by the NCDC provided a picturesque naturalism to the lake system with selected plantings to retain the character of the natural landscape, to have predominantly natural colour, the light fresh green on the lake margins with dark conifers for background, autumn colours for dramatic parts, flowering trees massed in small enclosure, and formal planting on the Central Axis and Kings and Commonwealth Avenues. While retaining a sense of unity, the design also encouraged recognisable character areas (Clough and Gray 1964:2).

The surrounding parklands contain a series of landscape expressions that range from formal areas with a predominance of hard landscaping, to intimate planted gardens, recreation and horticultural parks, naturalistic picturesque landscape areas, wetlands and arboreta that flow together as an entire lake and perimeter parkland creating a green urban system.

### **3.5 Criterion (e) the place has significant heritage value because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;**

Lake Burley Griffin and Lakeshore Parklands is outstanding to the nation for its beauty and other aesthetic properties, highly valued by the Australian community. It provides a tranquil place, a central city oasis and a landscape setting for the many naturalistic vistas of landscape and water and distant mountain ranges. It is the central core of waters and landscape that is linked to tree covered hills and distant mountains by the city's fundamental geometry of its land and water axes. The lake and its parklands provide a reflective setting for the national monumental architecture along the southern side of the Central Basin. The lake waters and dark rim of water edge plantings

and landscape perimeter add a reflective dimension while at times misty weather provides ethereal dimension to the Central City beauty. The lake and its landscaped surrounds provide a forecourt vista for national buildings such the provisional Parliament House and Parliament House.

The outstanding merit of Griffin's design is the attention he paid to the natural land form. The natural terrain of the Molonglo flood plain needed only a little help from the hand of its designer for its transcendence into magnificent ornamental waters; likewise the gentle slopes of the foreshores for transformation into parklands, natural gathering places for the enjoyment of spectacle on the water, enjoyment of the national imagery of the parliamentary triangle and scenic vistas of rare relief in the heart of a city. The scale of the lake basins remains perfectly in harmony with the surrounding natural environment while restraint continues to be exercised in maintaining low scale built form along the foreshores.

Griffin demonstrated in his design for Canberra that water, spaces and horizontality were key elements. Marion Mahony Griffin's renderings aesthetically demonstrate the unbroken horizontal plane of the lake waters, retaining walls and vegetation in the lake edge space. The expression of the lake in its completed form essentially follows the basin arrangement set by Griffin but the fine detailing for the lake edges, spaces and planting was developed and executed by the National Capital Development Commission.

At a time almost a century after the initial design, the lake shore offers serial views and vistas loved by the community, documented in the Study of the Social Value of Lake Burley Griffin and its Setting (Pipitone 2009). The draft report Lake Burley Griffin Heritage Assessment (Godden Mackay Logan 2009) noted in the analysis of the aesthetic qualities of the lake, the way the lake waters unify the city, the calm, quiet, peaceful presence of the lake, the reflective qualities, the ethereal qualities from mists and lake edge plantings, and visual diversity of the lake and lake shores from the designed landscapes to the more natural and 'organic' areas at the eastern and western extents. Bird life on the lake waters adds interest and ephemeral qualities.

The lake parklands provide a variety landscapes that offer a range of aesthetic experiences. The landscapes components extend around the basins and lake shores such as: formal hard landscapes of the southern Central Basin, decorative gardens of Lennox Gardens; the arrays of mature plantings, gardens, spaces and tiered water features of Commonwealth Park; the natural landscape of Black Mountain Peninsula and the West Lake shores, the arboreta plantings, mature trees of horticultural plots and windbreaks at Weston Park, naturalistic plantings of Grevillea Park and Kings Park, the river environment of Molonglo Reach and the bird habitat area and wetlands of Acacia Inlet, Yarramundi Inlet, Warrina Inlet and Jerrabomberra Wetlands. The lake edge landscape spaces are the intentional interface between the city and the waters with apart from Kingston foreshore retain the predominantly intact landscape perimeter promoting a flowing horizontal visual expression. A much loved aesthetic feature of the lake edge landscape is waterbird population that include sizeable populations of pelicans, coots, swamp hens, ducks, cormorants and Black Swans (*Cygnus atratus*) that also features on the Canberra coat of arms.

The open Rond Terraces designed as a low open auditorium by Griffin, provide a visual sweep to the Land Axis Vista as it leads the eye from the plane the lake to Mount Ainslie, and as well, provide an open area for experiencing the vista to Parliament House. The vistas are highly valued by the community and visitors (Pipitone 2009). The land and water axis provide extensive vistas while visitors when travelling along Commonwealth Avenue, the symbolic route to Parliament House confront vistas across West Basin and the lake to the Bullen and Brindabella mountain ranges beyond when leaving City Hill. Valued vistas of the lake, admired by citizens, are a major feature experienced from the National Arboretum, the National Botanic Garden, Black Mountain and Mount Ainslie and from all the lakeshore walks.

Key landscapes that provide naturalistic backdrops that contribute to the aesthetic image the entire perimeter landscape space, Black Mountain, Mount Ainslie, Mount Russell, the National Arboretum and Stirling Park. In the lake form itself has a varied outline providing bays and peninsulas as well as small islands that contribute aesthetic interest. The low arch of the Commonwealth and Kings

Avenue Bridges contribute a gentle structural form that is in keeping with the overall lake aesthetic quality.

All of the landscape offers venues for recreation while Commonwealth Park and Rond Terraces also offer venues and spaces for celebration, recreation and games, and have an aesthetic ambience of joy and fun.

### **3.6 Criterion (f) the place has significant heritage value because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period;**

Lake Burley Griffin and Lakeshore Parklands is outstanding for its design and creative achievement that is of significance to the Australian nation for being an essential component of the Griffin visionary plan that links and unifies the land and water axes and vistas of the Australia's most successful urban plan. Although East Lake was not constructed, the effective water system created a reflective and aesthetic beauty to the heart of the city, and provides climate amelioration.

Griffin, inspired by the great American landscape architect Frederick Law Olmsted had a love of geography and botany. He gave to Australia a unique landscape vision to make a city where landscape features, low level buildings and an abundance of spaces are a most significant features. The land and water axes connect the mountains and hills with the central city waters. The triangular geometric pattern bisected by the axes sets the framework for the national capital and city's urban form. The lake waters embody the water axis that intersects with the land axis in the Central Basin. The lake waters and parklands is a major segment of the captured land axis view that engages the eye, sweeps down from Parliament House, fans out at the lake and then sweeps up at the Rond Terraces to terminate in the now forested conical Mount Ainslie with the war memorial nestled at its base, and the return vista, from Mount Ainslie to Parliament House is equally impressive.

The lake and the lakeshore parklands as a critical component of the central vista expanse are Australia's outstanding landscape design achievement that has been respected and safeguarded during Canberra's one hundred years of planning and development. Although major planning additions were undertaken by Sir William Holford in 1955 that reduced the size of the lake from the original larger Griffin delineation, the Holford plan respected the open landscape space the perimeter landscape.

The development of the graciously curved Commonwealth Avenue Bridge (completed in 1963) and Kings Avenue Bridge (completed in 1962) were constructed of pre-tensioned concrete and include award winning integral illumination. The bridge structures along with the Carillon and Captain Cook Jet help focus the vista within the Central Basin. Subsequent landmark buildings, planning and landscaping work undertaken by the eminent planners and landscape architects of National Capital Development Commission (NCDC) have all respected the visual masterwork of the lake, lakeshore parklands and land axis vista.

The Lake Burley Griffin and Lakeshore Parklands design was scientifically underpinned by hydrology flow research and by structural engineering of the dam, the bridges and the retaining walls. Scrivener also utilised post-tensioning concrete technique and is operated by fish belly flap gates.

Landscaping design and works including the shaping of the lake and its islands, creation of terraces, retention and reinforcement of native plantings, water edge plantings, and mass plantings for seasonal and contrasting colour, form and spaces. The landscape design and works was the largest landscape project undertaken by the NCDC under the direction of Richard Clough and implemented by the Parks and Gardens Section of the Department of the Interior. The NCDC was awarded the Australian Institute of Landscape Architecture Award of Landscape Excellence in 1986 for its Lake Burley Griffin entry.

The structural features of lake landscape, Scrivener Dam, and Commonwealth and Kings Avenue Bridges are individually outstanding achievements of design of technology. Commonwealth Park, Kings Park, the National Gallery of Australia Sculpture Garden, the Nara Garden, the Peace Park and the Beijing Garden are designed landscapes of merit. West Basin's Acton Park, Grevillea Park, Yarramundi Reach, Bowen Park and Weston Park retain a naturalistic environment allowing mixed recreation activities and 'loose space' for informal use while Jerrabomberra Wetlands Nature Reserve, Yarrumundi Grasslands and Stirling Point have significant natural importance. The achievement is that all of these major features linked by landscaped foreshore open spaces to form the richly diverse lakeshore parkland that interacts with the structural and landscape features to contribute to the greater landscape masterwork of Lake Burley Griffin and Lakeshore Parklands that is outstanding to the nation for its technical and creative achievement.

**3.7 Criterion (g) the place has significant heritage value because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;**

For Australians Lake Burley Griffin plays an important role in representing the image of Canberra to the nation—and potentially internationally. Its symbolic and landmark value as part of the national capital's landscape is well recognised and widely valued. For Australians, especially those who have visited Canberra, Lake Burley Griffin is a well-recognised symbol of Canberra, forming the centre point of the national capital designed landscape. For the Canberra Community Lake Burley Griffin is highly valued by the Canberra community as a unifying element in an iconic cultural landscape that helps define their city as the nation's capital, and contributes significantly to their identity, lifestyle and sense of purpose. The achievement of creating the lake has been, and continues to be, regarded with pride by the Canberra community (Godden Mackay Logan 2009).

The Lake Burley Griffin and Lakeshore Parklands is a popular nucleus of the city attracting countless visitors to its walks, cycle paths and picnic grounds with the recently established R.G. Menzies' walk being a most popular and well utilised recreation resource. The landscape area of Rond Terraces links Commonwealth Park and Kings Park and due to its openness to enable the major land axis vista it is a significant space that is the venue for national and international events such as triathlons and is the gathering area for visitors and the local community enjoying celebratory events such as night fireworks, monument lighting, and social cultural entertainment events such as 'Stopera' operas several of which have been held at Rond Terraces.

Griffin's planned purpose for the Rond Terraces to be a gathering place for recreation and entertainment as well as the West Lake naturalistic and public recreation area. While Commonwealth Park was designed for horticultural displays. At the inauguration of the lake, Prime Minister the Hon Robert Menzies noted:

*...I see this lake ultimately not as something purely artificial in its surrounding but as a haunt of tourists coming through will be able to feed the swans and this will be quite a feature of the city.*

*...This is of the essence, this is the heart of the city, and I hope it will be a heart that will be quietly beating, not noisy, not uproarious – a quietly beating, restful heart for the rest of our lives.*

The array of landscapes offers a variety of scenery and aesthetic experiences valued by Australian citizens. Commonwealth Park is the venue for Floriade that brings thousands of visitors annually to Canberra and in 2008 a lakeside walk, the RG Menzies walk, was completed extending from Commonwealth Avenue Bridge to Kings Avenue Bridge.

The social heritage importance covering attachment by community members, the use of the lake and parklands for recreation, promenading, enjoying celebratory local, biking, rowing, picnicking, swimming, national and national international events such as triathlons by the Canberra community and visitors to the national capital. Sandy beach areas created at Grevillea Park, Black Mountain Peninsula, Weston Park, West Basin and Yarralumla Bay are important recreation

resources for national events and public use. The value of the lake and its landscape to citizens substantiated by the reports by Pipitone 2009, Marshall et al 2010 and Godden Mackay Logan 2009.

### **3.8 Criterion (h) the place has significant heritage value because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history;**

Lake Burley Griffin and Lakeshore Landscape is most famously association with Canberra's eminent designer, Walter Burley Griffin and was named in his honour when Prime Minister Robert Menzies inaugurated the lake in 1964. It has a strong association with Griffin's wife and partner, the architect Marion Mahoney Griffin who shared Griffin's love of nature and was responsible for the exquisite renderings of the prize-winning plan.

The lake as a water impoundment also has a strong association with Charles Robert Scrivener, the surveyor who investigated and recommended the Molonglo River and Limestone Plains for the site of Canberra and after whom Scrivener Dam is named.

Lake Burley Griffin has a strong association, Sir Robert Menzies who played a pivotal role in the implementation of the lake construction. The lake has an association with the English urban planner, Sir William Holford, commissioned to finalise the plan of the lake and lakeshore parklands and John Overall along with the National Capital Development Commission who managed the implemented the works.

Thomas Charles Weston and Lindsay Pryor also have a strong association for their role in afforestation of the parklands prior to the lake works and its filling. Peter Harrison, Chief Town Planner Richard Clough chief landscape architect for the NDC was responsible to directing the design and implementation of all the landscaping works during the construction of the lake. Dame Sylvia Crowe provided the landscape design for Commonwealth Park. All the associations are of outstanding national value. All the associations are of outstanding national value.

### **3.9 Criterion (i) the place has significant heritage value because of the place's importance as part of Indigenous tradition.**

Excerpt from *Lake Burley Griffin Heritage Assessment Final Report*, Godden Mackay Logan (2009: 187):

Although Lake Burley Griffin Study Area holds significance for the current Indigenous community, no group was of the opinion that the lake itself was significant as part of Indigenous tradition. The prevailing view of Indigenous stakeholders was, however, that the Indigenous sites in the study area, and below the surface of the lake, meet the threshold for Commonwealth Heritage Listing under this criterion. Representatives of Aboriginal stakeholder groups have indicated that each of the recorded sites is valued by the local Aboriginal community as important as part of local Indigenous tradition. These sites are the 12 previously recorded sites at Yarramundi Reach and the possible Aboriginal scarred tree at Stirling Park.

In addition, 12 of these places have been formally recognised by the ACT Government as being places of heritage significance, and have been listed as Registered Places on the ACT Government's Heritage Register.

The sites, comprising isolated finds and small artefact scatters, remain as the only evidence of the traditional lifeways and economy of the Aboriginal people prior to European settlement. This evidence has remained despite the drastic changes to the landscape that occurred as a result of the flooding of the valley floor and the activities that have taken place in the immediate vicinity of

the artefacts, which include past agricultural activities, tree clearance, tree plantings, commercial forestry activities and infrastructure (roads, buildings) construction. The site of the former Old Canberra Hospital on Acton Peninsula also holds value for the Ngunnawal because a large number of the current Indigenous community were born there, have been treated for illnesses, or have died or lost family members at that place. Sites of birth and death hold significance to the Ngunnawal.

## 4 Description

### 4.1 Extant Cultural Features

Lake Burley Griffin and Lakeshore Landscape is a designed landscape that includes three formal water basins (Central, West and East Basins), the West Lake area, islands, Scrivener Dam, Commonwealth Avenue and Kings Avenue Bridges, and the lakeshore parklands. Several heritage listed places in the National Heritage List, the Commonwealth Heritage List or Register of the National Estate are adjacent to, within the immediate visual catchment or are included within this proposed heritage area, these are Parliament House Vista (CHL), The Australian War Memorial and Memorial Parade, Blundells Farmhouse (CHL), the Carillon (CHL), the High Court - National Gallery Precinct (NHL), the National Library of Australia (CHL), Weston Park (RNE 17934, ACT Heritage Register), Westbourne Woods (RNE 1337), Yarralumla and Surrounds (CHL) and Stirling Ridge (RNE 13359).

Lake Burley Griffin covers an area of some 634 hectares and has a total volume of about 33,000 mega litres. It has a length of about 9 kilometres, an average depth of 4.5 metres and a maximum depth of 20 metres. Shore length is approximately 40.5 kilometres. The Lake surface is maintained at 556 metres (1825 feet) above sea level subject to temporary variations due to flood management requirements and other catchment inflow effects. The lake is also a sediment trap that helps protect the Murrumbidgee River and Burrunjuck Reservoir from excessive siltation. The flooding of Lake Burley Griffin has resulted in the creation of wetland habitats importantly the Jerrabomberra Wetlands.

Lake management is a Commonwealth responsibility administered by the National Capital Authority, with day-to-day management undertaken by arrangements with various agencies within A.C.T. Territory Government. Catchment protection in NSW was undertaken until 1998 under a Commonwealth -State Agreement.

Scrivener Dam is a concrete gravity dam, 33 metres high and 235 metres long. Three sluice valves at the base of the dam are used to maintain the lake level. During low flow periods, water is released from Googong Dam to maintain the lake within .25 metres of its normal level (NCPA 1995). Its spillway consists of 5 bays of free overflow crest, controlled by hydraulically operated fish belly flap gates, with capacity of 8,500 cubic metres per second (Smith and Colheart, and C.J. Price). The dam structure incorporates a roadway that provides one of three crossings of the lake.

Commonwealth and Kings Avenues are major city bridges. Each is a twin structure, with separate parallel carriageways. Kings Avenue parallel structures use longitudinal precast pre-stressed concrete T beams forming separate carriageways, each of 7 spans totalling 270 metres. Underpass roads for exit and entry are provided at the south end only within the bridge spans. Kings Avenue Bridge was designed with wide piers to block out East Basin, viewed at the time as 'not so attractive'.

Commonwealth Avenue bridge structures are of 5 spans totalling 310 metres, of fully continuous pre-stressed design. It has a higher camber than Kings Avenue Bridge, a design feature to allow for yachts to sail beneath. The end pylons give added importance to the bridge as the main route to Parliament House. To provide an exit and entry clover leaf layout, separate structures are built on the main bridge's south approaches, totalling 49 metres each, in 4 approximately equal spans.



Original woodland trees and pre-Canberra plantings from pastoral properties remain in scattered locations in the lakes parklands. These include *Eucalyptus blakeli*, *E. melliodora* (Yarralumla), *E. bridgesianna* (Acton Peninsula), *Pinus radiata* and *Salix* spp. (Duntroon), *P. radiata* and *Cedrus deodara* (Yarralumla), *Cupressus macrocarpa* (Yarralumla and Lennox Gardens), *Populus nigra* 'Italica' (near the Hyatt Hotel), *Salix babylonica* (near Blundells Cottage and at Molonglo Reach).

The lakeshore landscape retains much of the tree structure planning executed by the National Capital Development Commission. These plantings are documented in a report by Richard Clough and John Gray (1964). Several of the groups of trees planted for the lake edge have been recognised as notable trees (Pryor and Banks 1991) and include *Taxodium distichum* (Weston Park, Black Mountain Peninsula and Nerang Pool) and *Salix fragilis* (Acton Park). Within Commonwealth Park are several commemorative trees and a number of notable trees, some of which are locally rare in Weston Park and the lakeshore arboretum (Pryor and Banks 1991).

The Lake's foreshores contain extensive parklands that offer a range of passive and active recreation opportunities, some of which is developed as designed gardens and formal landscaping such as Commonwealth Park, Kings Park, the Sculpture Garden, the Peace Park, Parkes Place foreshore area, Lennox Gardens, Yarralumla (the Governor General's Residence). Parklands and recreation areas with designed but more informal landscaping such as Aspen Island, Bowen Park, Weston Park, Yarramundi Reach, Springbank Island, Spinnaker Island, Grevillea Park, Molonglo Reach. Black Mountain Peninsula has naturalistic landscapes, and Jerrabomberra Wetland, Acacia Inlet, Yarramundi Inlet and Warrina Inlet have been developed as wetlands for native fauna. West Basin offers an important space for parking for events such as Floriade and open space use.

The lake waters have defined sailing and rowing courses and the water is also used to irrigate some of the nearby parklands and the Royal Canberra Golf Course.

## 4.2 Natural environment description

In ecological terms, the lake has created valuable wetland habitats, offers some protection against excessive siltation downstream, and the Dam fills an important flood control function. However, Lake Burley Griffin does not provide the necessary environmental conditions for the successful breeding of many introduced and native fish species and as a result does not maintain viable fish populations without regular restocking (Environment ACT 2000). Although the 1995 Lake Burley Griffin Management Plan recognises that despite being artificial in origin, the lake has become one of the most significant aquatic ecosystems in the ACT, many of its natural values are contained within the Jerrabomberra Wetlands Nature Reserve.

Despite the presence of exotic plants, the margins of the main water bodies of Jerrabomberra Wetlands provide significant aquatic habitat with a mix of rushes and sedges growing in conjunction with mainly exotic tree species such as willows *Salix* spp. and poplars *Populus* spp. Some amenity plantings of native species have been undertaken around the public use areas. Key habitat features of the area include large parts of Dairy Flat (a depositional floodplain of the Molonglo River), as well as open water areas such as Jerrabomberra Pool, Jerrabomberra Reach, Kelly's Swamp, Shoveller Pool and Molonglo Reach. The wetlands also provide areas of reed beds, marshlands, mudflats, gravel beaches, grasslands and drowned trees, all of which add to the area's high level of habitat diversity.

Seventy seven species of waterbird have been recorded within the Nature Reserve. This represents most of the waterbird species that are found in south-eastern Australia. Sixteen of these species use the area to breed. Notable amongst the waterbirds to use the area are the Latham's snipe *Gallinago hardwickii*, the common greenshank *Tringa nebularia*, the red-necked stint *Calidris ruficollis* and the sharp-tailed sandpiper *Calidris acuminata*, all of which are protected

under the Japan Australia Migratory Bird Agreement and the China Australia Migratory Bird Agreement.

Ninety six species of terrestrial birds have also been recorded within the wetland area. They generally utilize the reed beds on the shores of the open waterbodies.

In addition, platypus *Ornithorincus anatinus*, eastern snake-necked tortoises *Chelodina longicollis*, and eastern water-rats *Hydromys chryocaster* have also been recorded in the area. Black swans (*Cygnatus atratus*) that feature on Canberra's coat of arms, breed in the lakeshore and are frequently seen with their cygnets.

### **4.3 Social and Aesthetic Qualities**

The Lake unifies the central precincts and national areas of Canberra and gives central Canberra a high aesthetic quality. It successfully expresses the water axis - a major component of the Griffin's design concept. It provides a system of linked water bodies and recreation parklands.

The lake waters and lakeshore parklands of the Central Basin capture the base of the land axis vista landscape designed by Griffin and perpetuated by subsequent planners as an visual aesthetic masterpiece that combines plantings, spaces, the water plane, hills and tree canopies to lead the eye from Parliament House to Mount Ainslie and vice versa. Commonwealth Park and Kings Park are extremely popular for active and passive recreation. Commonwealth Park with Nerang Pool and tiered water features, gardens, tree plantings and open lawn areas is a highly valued recreation and aesthetic resource. The grassed areas between the two parks is the nexus of the parklands and land axis vista and its open space is important for experiencing the vista. The low curved forms of the bridges and the vertical features of the Carillon and Captain Cook Jet assist in delineating and focusing the vista space.

The Central Basin is the centrepiece of the National Area in the immediate foreground of the Parliamentary Zone, and unites the wider cityscape and public spaces on its foreshores, which provide settings for major national buildings. The completed project brings into focus the natural beauty of distant mountains and adjacent hillsides and visually unites them with a landscape setting for public institutions, complemented by low profile graciously curved bridges.

The lake is a most admired component of the Canberra plan providing a reflective setting for public buildings, a tranquil nucleus for Canberra City. It provides extensive ephemeral and at certain times ethereal aesthetic qualities. It is a major feature of Canberra's viewpoints at Black Mountain, Mount Ainslie and Red Hill and vistas across the lake to background hills and ranges.

Buildings enhanced by the lake setting include the National Library, Commonwealth Place, the High Court and the National Gallery. Cultural landscape features that enhance the lake's aesthetic qualities include Commonwealth and Kings Avenue bridges, Captain Cook Jet, the Carillon, all the water edge plantings including the poplars at Yarramundi Reach, the Swamp Cypresses at Weston Park, the Cypresses at Acton Peninsula, Weeping Willows, and planted and existing eucalypts.

Jerrabomberra Wetlands Nature Reserve continues to provide an important environmental education resource. Bird hides and paths have been constructed near Jerrabomberra Pool and Kelly's Swamp for community recreation and education. Dairy Road, the main access point for the Jerrabomberra Wetlands, was altered to prevent through-traffic. This has greatly reduced the amount of background noise in the immediate area and has enhanced the wildlife experience for visitors to the wetlands.

The water surface and foreshores provide the city with many venues for recreation, social and public events and community gathering and present easy access to national buildings set in adjacent landscape. A great range of water sports is conducted on the lake and boat sheds or clubhouses are located at Yarralumla Bay, Orana Bay, Lotus Bay and Black Mountain Peninsula

and there is a ferry terminal at Acton.

Commonwealth Park is used for celebratory events and festivals such as the Canberra Day, fun runs, the hugely successful Floriade, Australia Day citizenship ceremonies, and fireworks displays events and contains many arts works. The Carillon on Aspen Island, a gift from the British Government to commemorate the Golden Jubilee of the National Capital of Australia. A display centre has been developed at Regatta Point. The recently completed R.G. Menzies Walk is most popular for walking, cycling, jogging. The Rond Terraces following Griffins vision are a place for gatherings, celebratory events viewing vistas, fireworks and monument lighting, recreation and entertainment activities.

West Basin, north side provides a naturalistic interface between Commonwealth Park and the Australian National Museum. It provides space for overflow parking for national events and transmits vistas viewed from the symbolic route of Commonwealth Avenue across the lake to the Brindabella and Bullen Ranges. The West Lake area of Lake Burley Griffin and its lakeshore parklands is particularly an area of naturalistic landscape with tree-lined foreshores and water-bird life that extends around the northern and western edges of West Lake. Black Mountain Peninsula is a significant central landscape feature of the West Lake naturalistic area. As a narrow strip of land it is entirely devoted to recreation activities within the naturalistic landscape setting.

Black Mountain Peninsula is a foreground feature of vistas to Black Mountain landscape from the southern shores of the lake and more particularly from Weston Park and Black Mountain Peninsula Park. Some of the lakeshore plantings at Black Mountain Peninsula such as the *Taxodium distichum* and the *Alnus glutinosa* are species that were historically researched by Dr Betty Phillips and Professor Lindsay Prior and subsequently planted as water edge plantings in the 1950s while the eucalypt plantings at Nara Grove developed in 1996, is considered a place of significance by the ACT Government that has an annual festival and continuing plantings. Lake Burley Griffin and Foreshores were noted by the National Capital in 2006 as intending to provide a range of recreational, educational and symbolic experiences of the National Capital, both formal and informal parkland settings with particular landscape character or themes.

#### **4.4 Condition - May 2016**

- Lake Burley Griffin Lakeshore Landscape is well managed and maintained with constant upgrading works required. Water pollutants are a constant concern.
- Scrivener Dam had major engineering remediation works undertaken in 2014 and is in a sound condition,.
- Cypress and pine plantations in the Yarramundi Reach area were extensively damaged by bushfires December 2001 and replanted.
- Most of the Jerrabomberra Wetland area is situated on the Dairy Flat floodplain, an area that has been used for grazing and cropping for decades. As a result, the terrestrial areas of the wetlands are mostly degraded pastures containing exotic species.
- Water quality assessments are undertaken regularly and in 2015 and \$11 million scheme was initiated to improve water quality in the ACT.
- In recent years there have been complaints about the quality of the lake waters from users citing persistent degradations and occasional closures of lake due to pollution, debris and water quality issues. This aspect is of concern for the lake managers, the Australian Institute of Sport's rowing and triathlon events. The Study of the Social Values of Lake Burley Griffin (Pipitone 2009 vol.1, p.21) that conducted 758 surveys noted that 7.9% of those surveyed commented on poor maintenance. The lakeshore landscape can provide

more biomass-bound nutrients (mainly from leaves) than ever the fringing vegetation can trap. There are significant wetlands & other sediment traps on contributing streams and more are planned; these together will do more than fringing vegetation to trap nutrients.

- Black Mountain Peninsula Park has been subjected to the development of an industrial complex that adversely impacts on the recreational and aesthetic values of the Park. A slipway and Commercial Boat Maintenance Facility was completed in May 2016.
- Threats to the lakeshore landscape from urban and recreation servicing development is continual. Plans have been approved for a Boat Shed construction on Grevillea Park and the park gazetted for more sheds for water sporting facilities that will obliterate the community use of the park and its beach.
- A major threat to the lakeshore is the proposed West Basin Estate development as a component of the City to the Lake Project. The development involves infilling some of the lake to provide additional land needed to accommodate a commercial/residential estate. This will damage vistas across the basin to the hills beyond from City Hill and Commonwealth Avenue and as well will impose a mid-height urban building mass across vistas from the south to the city.

## **5 History**

### **5.1 Planning history**

In 1901, following the opening of Parliament, the first congress of engineers, architects and surveyors advocated that the site for a Federal Capital city should have an abundant water supply to furnish the creation of lakes, gardens and fountains (Reid, 2000: 13). At that same congress, Charles Bogue Luffman stressed the need for parks and woodlands while botanist Joseph Maiden through the Royal Society of New South Wales, also advocated an ornamental arboretum as the foundation for the national capital (Gray 1999: 58). In the instructions from the Minister for Home Affairs to the surveyor Scrivener, noted, 'the potentialities of the site will demand most careful consideration from a scenic standpoint, with a view to securing picturesqueness, and also with the object of beautification and expansion.' (Gray 1999: 80).

The government surveyor Charles Scrivener investigated a number of possible sites for Australia's federal capital and recommended the Canberra site on the Molonglo River because of the ability to utilise waters of the Molonglo and Queanbeyan Rivers for ornamental waters for the city. This site for the city was agreed by the Prime Minister and the Premier of New South Wales. The Commonwealth then negotiated rights over the Molonglo and Queanbeyan Rivers. In order to incorporate a lake in the city planning, gauging weirs were established on the Molonglo near Yarralumla Dairy and on the Queanbeyan River near Bradley's Creek.

In 1911 a design competition for planning the federal capital city in the Molonglo Basin, was launched with requirements for ornamental water, parks and gardens. Locations for weirs and river gauging flow stations were included. A thousand copies of the conditions and design material were sent to 10 cities around the world and 137 design entries were received, including 42 Australian entries.

At the time of the competition, two major urban planning philosophies 'City Beautiful' and 'Garden City' coincided. The City Beautiful style consisted of a conceptualised city with integrated classical style urban buildings, public parks and tree lined streets building as a campaign against city ugliness. The style was a mix of natural beauty, formality, axes neo-classicism and the Beaux Arts in its combination of architecture, landscape, sculpture and water features (Freestone p160-163). Garden City planning was initiated by Ebenezer Howard to combine the best features of town and country and interpretations of the style were implemented in Australia's early Twentieth Century

suburbs. The engineer, JA Smith, was one of the majority of judges and awarded first prize to Walter Burley Griffin in 1912 for his entry in the Federal Capital Design Competition. The other two judges (an architect and a surveyor) were divided about Griffin's entry, and Minister King O'Malley accepted the majority view.

Walter Burley Griffin was awarded first prize for his design for Canberra that embodied the existing landscape as a major feature. Griffin's plan was superior to other competitors, blending the mountains and hills as features of the geometric layout, and incorporating his philosophy of equality, democracy and progress. The water feature of the lake crossed a grand triangle which linked the functions of the city and had three minor hills as its vertices (Firth, 2000).

Griffin, having worked in the Chicago offices of Frank Lloyd Wright was knowledgeable about natural geography and botany and in his American landscape work he used indigenous plants and sought 'to rehabilitate landscapes to recapture primeval nature (Vernon1998:91). Griffin was known to have been inspired by the 1898 World's Columbian Exposition, Chicago and its planner Daniel Hudson Burnham and landscape architect Frederick Law Olmsted. The major natural feature of the Chicago Exposition was water as a system of basins, canals and a lagoon. By the time Griffin was entering his professional life, Olmsted was renowned for his major landscaping achievements such as Central Park, New York and the Boston Park System, promoting overall naturalistic landscapes with variety of scenery, including arboreta, woodlands, picturesque interludes, open meadow like areas and the restoration of fens (wetlands) with their waving reeds. In the late 19th Century the 'gardenesque' style was at its heyday but its excesses were an anathema to Olmsted and the style never employed in his landscapes (Zaitzevsky, 1982:21).

Though from Chicago the city which founded the skyscraper, Griffin's view was that Canberra should be a 'horizontal city; he proposed conscious use of landscape space as a design element. The planner, Peter Harrison noted in 1995 that 'the great accomplishment of Walter Burley Griffin, and of the Australian nation which selected and up to now has supported the Griffin plan, was the capacity to conceive space itself as the basic design issue (Harrison 1995).

The original design for the lake presented in Walter Burley Griffin's award winning plan for Australia's capital city of 1912, was modified slightly in 1913 after he had seen the site. It consisted of a formal central water basin of curved edges, two circular formal basins to the east and west of the central basin and larger lake water bodies further to the east and west. The water system of basins lakes formed part of Griffin's geometry for the Canberra Plan. The east basin was at a higher level and was planned to be fluctuating so that the central basins levels could be maintained.

Reid (2002: 73) notes how Griffin described the central Canberra area as 'a theatre with the lake as the orchestra pit, separating the Government Group on the triangular stage from the audience on the lower slopes of Mount Ainslie. The front row of the Recreation Group of buildings for the populace'. The recreation group buildings were cultural buildings to be arranged on either side of the land axis vista.

The Department of Works commenced implementing the city plan but greatly modified Griffin's design. In 1913 Griffin was invited to Australia by Prime Minister Joseph Cook and appointed Federal Capital Director of Design and Construction. Griffin's 1918 plan shows the lakeshore landscape mostly unannotated except for arboreta on the western shores of West Lake, the open auditorium at the central northern lakeshore, an esplanade on West Lake and boulevards on the shores of the three basins (NCA 2004:110). Investigation and planning for the lake commenced with Percy Owen, Director General of Works. In 1915 they recommended that the eastern lake be postponed. After World War I, the Federal Capital Advisory Committee was established chaired by Sir John Sulman. As an advocate of the Garden City principles, Sulman focused on the development of suburbs to accommodate public servants. Griffin left his position in Canberra in 1920 (Harrison,1983)

From 1925 the Federal Capital Commission headed by Sir John Butters took control of

development of Canberra with greater statutory powers. A proposal to construct a dam in 1926 was postponed. Extensive planting under the office of Parks and Afforestation was undertaken, and Griffin on a visit to Canberra in 1926 pleaded for more native flora planting. Issues regarding the development of the lake were managed by Percy Owen, the first Director General of Works.

Engineering research and analyses over the next 50 years considered how to implement Griffin's concept of central unifying bodies of water in the Molonglo flood plain. The Depression delayed the development of Canberra.

In 1938 the Minister for the Interior announced in Parliament, the appointment of a board of architectural experts, the National Capital Development and Planning Commission (NCDPC) to monitor the development of Canberra. The development of the lake was suggested on a few occasions. The NCDPC removed the East Lake basin and the railway connection to North Canberra as designed by Griffin, from the plans for the Lake.

By the 1950s, Canberra had a generation of residents and consisted of well spaced suburbs that included extensive gardens and tree planting, with the north and south areas separated by the Molonglo river flats. A number of schemes for Canberra's lake were proposed such as the Ribbon of Water Scheme in 1953 and the Molonglo Lakes in 1953 as an alternative to West Lake with a dam at Acton (Hince p.183, 1994). The Senate Inquiry 1954 - 55 'to inquire into and report upon the development of Canberra in relation to the original plan and subsequent modification and matters incidental thereto' reversed the decision for a chain of lakes and West Lake was found to be desirable, and the racecourse and golf links in the flood plain were removed. The Inquiry Committee also recommended a single authority to control Canberra headed by a Commission with guaranteed funding, a central park to be developed, access to Canberra's vistas and look-out points, and a body of experts to advise on aesthetic standards (Reid 2002, p.134).

Prime Minister Robert Menzies, during the 1950s, appointed Sir William Holford, a British planner to advise on how to proceed with the planning and building of Canberra. William Holford was invited by Menzies in 1957 to review the Griffin plan (Firth p.145). Holford proposed a slight reduction in the size and formality of Griffin's plan for the lake, in order to follow the natural contour. The National Capital Development Commission (NCDC) Act was passed in 1957 and John Overall was appointed the Commissioner in 1958 (Reid 2002, p.249).

With regard to civil engineering design, Australians were greatly influenced by American schemes for harnessing water to achieve soil conservation, irrigation, flood control and hydro power. The Snowy River Scheme had a significant effect on Canberra. It provided considerable technical expertise and the organisation of the Snowy Mountains Hydro Electric Authority was used as a model for the statutory authority of the NCDC. The NCDC had full responsibility for the lake and the planning team consisted of Clive Price, Executive Engineer (Design), Bill Minty, Lakes Project Engineer, Peter Harrison, Chief Town Planner and Richard Clough, Landscape Design. During 1959 contracts were let for Scrivener Dam and work had commenced on the bridges. The main agencies for the design of the Lakes Scheme were William Holford and Associates, Guy Maunsell and Partners, the Department of Works, and Rankine and Hill.

The lake earthworks and dam were commenced in 1960 and works proceeded at great speed. By July 1962 the work on the dam was almost completed, the lake edge construction was nearly finished, top soiling and grassing of the parkland progressing, the ponds and footbridge in the Central Park, and the Rond Point Pool and jets completed (Altenburg 1993, pp 39). Cutting and filling in the West Lake area was used to form an island where Springbank homestead once stood. Another island was formed by cutting through a finger of land at Yarralumla, and an island in the Central Basin was formed near Kings Avenue Bridge. Extensive tree planting was undertaken with native and exotic species.

Kings Avenue Bridge was opened in 1962. Commonwealth Avenue Bridge incorporating stones from Waterloo Bridge, a gift from Britain, was opened in 1963. Despite encountering some difficulties in the dam foundations in 1962, Scrivener Dam was completed with the gates being

officially closed on 20 September 1963 and the official impounding begun. The water reached the final level of 556 metres on 29 April 1964 and in April 1964; it was officially inaugurated by Prime Minister Menzies.

The lake was named to commemorate the original designer of the city, Walter Burley Griffin. By giving Griffin's name to the most visually prominent element in the city the Government confirmed its confidence in the NCDC to interpret Griffin's plan (Firth p183). The cost of lakes scheme was given as \$5,039,050 for the cost of the dam, the crest gates, control building and ancillary services, the relocations of power lines, tree removals for the lake floor, the formation of lake basins and edge construction.

At the official inauguration of Lake Burley Griffin by the Hon. Sir Robert Menzies in October 1963 conveyed his vision for the lake in his opening speech:

*'I see this lake ultimately not as something purely artificial in its surrounding but as a haunt of birds, as a haunt of wild life. Indeed, I am optimistic enough to think the day will come when tourists coming through will be able to feed the swans and this will be quite a feature of the city...'*

*'It is what is around the sheet of water that helps to set the beauty of the lake, and all the work that has been done on the foreshores, in the surrounds of -this lake, all the additions of beauty that have been made will, I think, put us under permanent debt to those who have been responsible for their design and their execution.'*

After the lake filled, recreation developments including a tourist ferry terminal, picnic facilities were constructed. In 1966/67 the Water Police Headquarters building was completed. A report 'An Open Space System for Canberra' in the 1970s resulted in increasing the recreational use of the lake. Two vertical memorials were installed in the lake a mile apart on either side of the land axis. The water jet is a memorial to James Cook (completed in 1969) and the Carillon (RNE 018373) completed in 1970, was a gift from the British Government to mark the 50th Jubilee of the founding of Canberra.

## **5.2 Hydrology**

Although it had been suggested 1908 that the Commonwealth secure the water catchment for Canberra's proposed water features that never occurred. The Lake Burley Griffin Catchment Protection Scheme was established in the early 1960s due to concerns that the new lake could be subject to high levels of sedimentation due to the degraded state of much of its rural catchment. A tripartite scheme between the Commonwealth and State governments was designed to reduce siltation and ran from 1965 - 1998 covering the Molonglo and Queanbeyan River catchments and tackled the degradation of rural land which began in the 1820s with the destruction of the 'chain of ponds' drainage networks and continued with tree clearing and overstocking.

Between and 1920's and 1950's a number of reports to parliament were prepared on the form of future development of Canberra and hydrological data was collected about the Molonglo River flows with input from engineers. The NCDC recognized the importance of the lake, and was able to draw on the earlier studies and on the technical resources and hydrological data available through Commonwealth departments and authorities regarding the behaviour of the lake in terms of floods and droughts and of scour and siltation. Other studies provided information on water quality, effects of climate and health, hazards of unsightly margins, mosquitoes and midges and the possible disbenefits from changes in land uses.

Following the construction of and filling of the lake, work began to realign the Jerrabomberra Creek Waterway in 1968-69 to provide a bed load trap to minimise saltation into the Lake. In 1978 the Lake reached a critical condition of water quality with a major pollutant being Queanbeyan sewage effluent.

The regulation of flow into Lake Burley Griffin was improved with the construction of Googong Dam on the Queanbeyan River, inaugurated in 1979. However, the original proposal for a regulating Dam on the Molonglo River has never been implemented.

A large water quality project has commenced, the ACT Basin Priority Project, that aims to improve the water quality from six catchments flowing into the ACT and hence into the Murrumbidgee and Molonglo Rivers. Works on two of these (Upper Molonglo and Jerrabomberra/Fyshwick) that enter Lake Burley Griffin will commence mid-2016.

### **5.3 Landscape Development History**

Although Griffin brought new ideas in terms of landscape design to Canberra these were in terms of broad concepts such as utilising natural topographic features and the careful use of spaces. When Griffin came to Australia, the Molonglo River flats contained eucalypts, grasslands, exotic trees and pasture grasses with the slopes extensively cleared. Black Mountain was the only area that had retained natural woodland. Charles Weston, Superintendent of Parks, Gardens and Afforestation (1913-16) commenced lake edge planting with plantings along the shores of the future lake. Weston was given power to choose the nature of the trees to be planted and the style of planting. From 1922, he established a framework of trees on the western ridge behind what is now known as Regatta Point, using exotic and indigenous conifers. The Federal Capital Commission in 1923 recommended that tree planting should be in clumps to create the effect of copses (Gray, 1999:186) and Weston undertook informal tree plantings in other lakeshore areas, including clumps of trees and windbreaks in Weston Park above the 1825ft contour. Tree plantings around the lake were continued by Lindsay Pryor and David Shoobridge. Plantings by Pryor included the Westlake area, now known as Yarramundi Reach where advanced stock of deciduous trees was planted on the extensive grassland (Hince 1994).

Harry Oakman was appointed the first Director of Landscape, with an aim to provide facilities and landscapes at the suburban level in playgrounds, open spaces street trees, sport centres and roads, and at the Capital City level in lookouts, Lake and Parliamentary surrounds. Oakman was succeeded by Richard Clough who regarded broad landscape issues such as relating urban edges to landforms and the natural landscape of great importance (Altenburg 1993 pp.32-33).

The design of the central area was essentially a formal composition in which the lake basins, ridges, avenues and buildings were to be framed and embellished by a strong pattern of planting. The NCDC accepted that: the character of natural landscape should be maintained; the existing brown-grey colour of the landscape should predominate but light fresh green should be used around the lake margins and darker conifers for boundaries and backgrounds; autumn colours should be fully exploited for the formal and dramatic parts of the landscape; flowering trees and shrubs should be massed in small enclosures; the Central Axis and Kings and Commonwealth Avenues should be planted formally; the scale of the planting of open spaces should be related to the expected use; and while preserving a sense of unity, the design should aim at creating recognizable character in specific areas (Altenburg 1993 p. 37).

The landscape around the lake was planned as a huge recreation park. Richard Clough using Holford's recommendation and his own studies produced an overall plan showing the extent and treatment of the lakeside parklands. It was the largest landscape project undertaken by the NCDC and implemented by the Parks and Gardens Section of the Department of the Interior. It was done in two stages; the first involved the establishment of major planting in more than 400 ha of lakeside parklands in conjunction with the engineering construction of the lake. Quantities of topsoil were removed from the river flats and spread on sports grounds, streets verges and stockpiled. The second stage involved the development of public and service facilities, landscape design around buildings, aquatic planting, installation of lawn irrigation and horticultural park development (Altenburg 1993 p. 37).



The western basin was most suitable for boating activities and recommended as an area that should be kept free of any non-conforming features. Activities proposed for the Lake included a triangular sailing course for West Lake, an Olympic rowing course, starting in East Basin near the Power house and finishing in the Central Basin, water skiing in East Basin and a boat harbour near Kingston. Lotus Bay and Yarralumla Bay were thought to offer the best facilities for yacht anchorage and related activities. In addition, boat hire, toilets, kiosks and restaurants, ramps, jetties and wharves were proposed.

Scientific aspects of aquatic plants and marine life were also investigated with the assistance of CSIRO. Water edge experimental plantings were commenced by Dr Betty Philips, an ecologist with the Snowy Mountains Hydroelectric Scheme in the 1950s. She was appointed Botanist at the Canberra Botanic Gardens, in June 1960.

The concept of the Central Park (later renamed as Commonwealth Park) was set in the Holford report, including the shape of the shoreline and the Aquarium Pond. In 1964 Dame Sylvia Crowe advised the NCDC on Commonwealth Gardens and presented 'Recommendations on the Development of the Lakeside Landscape'. Within the park are 200 cherry trees donated by the Japanese Prime Minister Ohira in 1980. A spring floral event named Floriade was developed as a Bicentennial celebration in 1988 and was such an outstanding success it has been an annual festival since that occasion.

The Rond Terrace open space amphitheatre of the Griffin plan was reduced in size by the intrusion of Parkes Way, but its design as landscaped terraces and purpose for community gatherings was retained in the Holford plan of 1958, as well as subsequent NCDC planning and works (Reid 2002, p.269-273).

#### **5.4 Structural works**

The original concept of Burley Griffin's series of formal basins with informal bodies of water upstream and downstream, became one large lake (with surface level as suggested by Scrivener 50 years before), impounded and controlled by a single dam structure, and crossed by two major bridges.

Maunsell and partners in association with William Holford and Partners were the engineering consultants for the supervision of the Ponds area, all the central road works and the fountains at the Rond Point. Messrs. Rankine and Hill were the consultants on the West Lake and West Basin areas. The Department of Public Works was responsible for the lake dam and East Basin. The contract for the dam was awarded to Citra.

Faults in the foundation bed-rock of the river-bed at the dam site could have greatly delayed or increased the cost of the structure, but for post-tensioning techniques recently developed. The control of the water at the 556 metre level (1825 feet) determined by the model test, was only possible with the new fish belly crest gates built in Germany. These gates also freed the dam from an awkward superstructure treatment, and allowed a road to run over it.

Apart from the dam wall, Commonwealth and Kings Avenue bridges, constructed to span the lake, were feats of engineering accomplishment. Both were constructed with an elevation of a single geometrical arc formed by a continuous prestressed concrete box girder having a uniform depth of nine feet. Commonwealth Avenue Bridge as the major route to the Parliamentary Triangle, included design features of pillars in an Art Deco style. Kings Avenue Bridge was opened by Prime Minister RG Menzies, 10 March 1962. Commonwealth Avenue Bridge was opened to traffic in November 1963 and formally opened by Prime Minister RG Menzies, October 1964.

An artificial wall was needed on the south bank with splays at right angles to Kings and Commonwealth Avenue bridges to facilitate the flow of the river through the half-circle it made from Fyshwick to Acton.

The Aquarium Pond (later Nerang Pool) footbridge was constructed as a two span in-situ concrete beam continuous over central pier and

Despite the success of the lake, the design for East Lake by Griffin has never been implemented, and the flood plain at Jerrabomberra wetland has been difficult to control although a wetland with rich bird life has developed from the series of natural and artificial drainage channels when the creation of Lake Burley Griffin obstructed and regulated the flow of the Molonglo River and Jerrabomberra Creek. It was designated as a Nature Reserve in 1990. The causeway included in the Griffin Plan that separated the East and Central Basins has never been developed.

In 1995, the Federal Government and the ACT Government agreed in principle to swap ownership of National Land at Kingston Foreshore with Territory Land at Acton Peninsula. This agreement was formalised in the designation of National Land under Amendment 29 to the National Capital Plan approved in April 2000, which included the following addition to 'Section 4.5 Special Requirements for Urban Areas' of the National Capital Plan: *Development in the Kingston Foreshore area . . . is to retain a working boat harbour and lake maintenance facility* (Weirick 2013:

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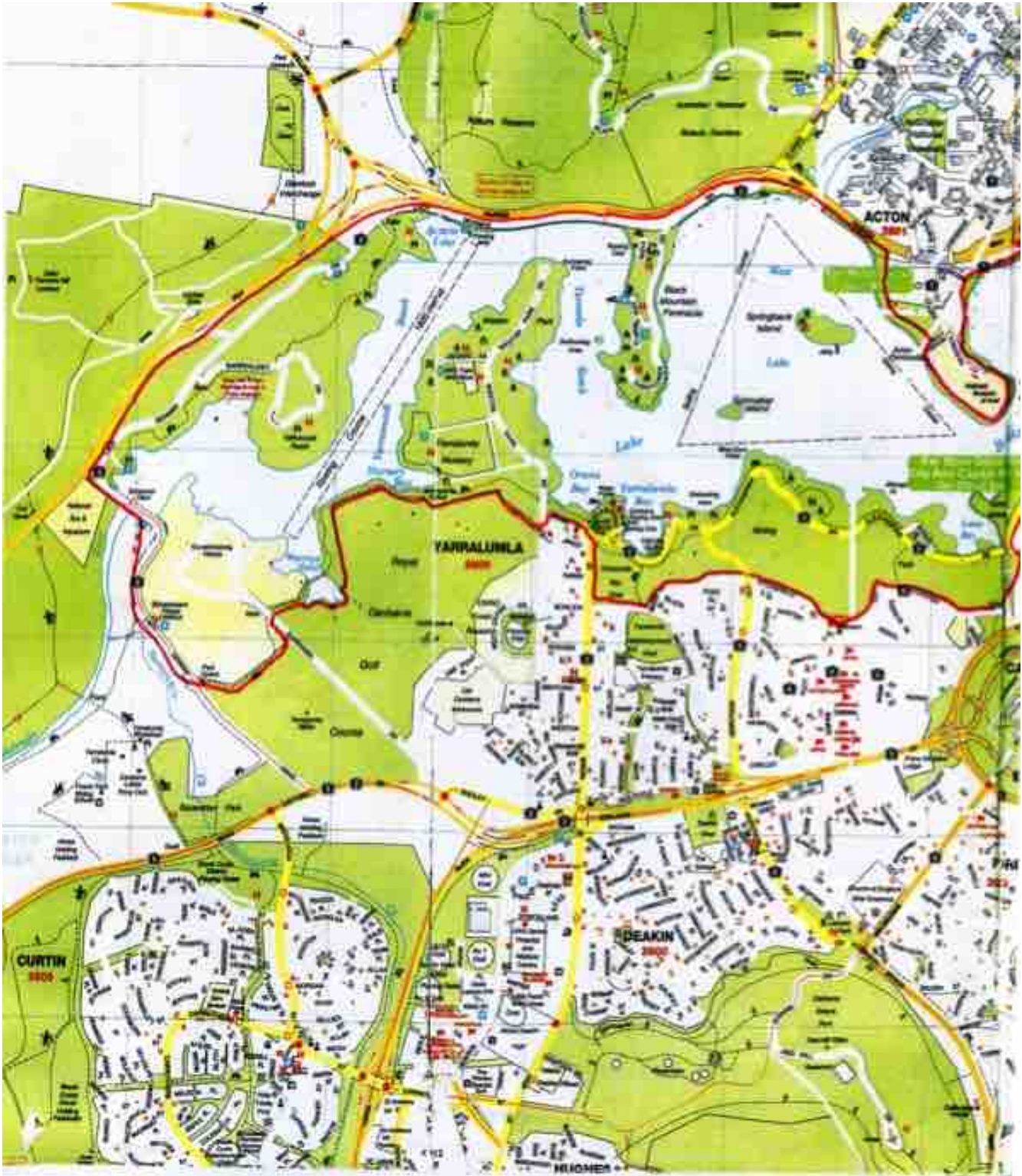
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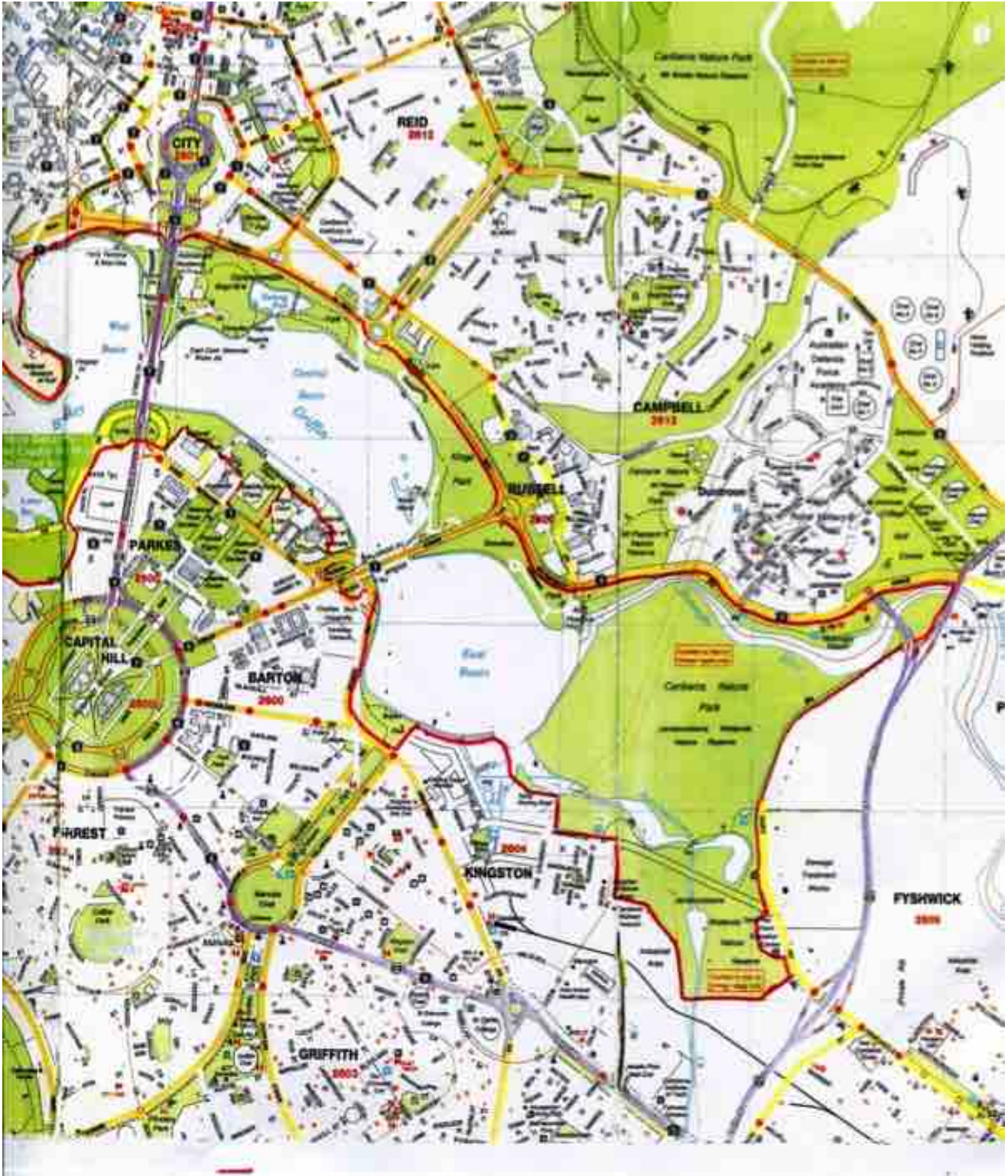
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**Boundary the area of heritage significance of Lake Burley Griffin and Lakeshore Landscape Western Area**



**Boundary the area of heritage significance of Lake Burley Griffin and Lakeshore Landscape Eastern Area**