



## REGISTER OF HERITAGE PLACES AMENDED ENTRY ASSESSMENT DOCUMENTATION

### 11. ASSESSMENT OF CULTURAL HERITAGE SIGNIFICANCE

The criteria adopted by the Heritage Council in November 1996 have been used to determine the cultural heritage significance of the place.

#### PRINCIPAL AUSTRALIAN HISTORIC THEME(S)

- 1.1 Tracing climatic and topographical change
- 2.1 Living as Australians earliest inhabitants
- 3.4.1 Hunting
- 3.4.2 Fishing and Whaling
- 8.1.4 Enjoying a natural environment

#### HERITAGE COUNCIL OF WESTERN AUSTRALIA THEME(S)

- 109 Environmental Change
- 405 Sports, recreation and entertainment
- 409 Environmental awareness
- 601 Aboriginal People
- 602 Early settlers

#### 11.1 AESTHETIC VALUE\*

*Lake Richmond* has a unique aesthetic character due to the rock-like Thrombolite structures, which occur in 15 metre wide zones around much of the lake. These structures are unique in their internal structure which is not known to occur elsewhere in the world. (Criterion 1.4)

*Lake Richmond* has aesthetic value for its natural features and man-made park setting. (Criterion 1.1)

*Lake Richmond* is an attractive body of water in an urban setting, comprising walking trails and a northern boardwalk surrounding the lake, with associated recreational facilities. (Criterion 1.1)

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\* For consistency, all references to architectural style are taken from Apperly, R., Irving, R., Reynolds, P. *A Pictorial Guide to Identifying Australian Architecture. Styles and Terms from 1788 to the Present*, Angus and Robertson, North Ryde, 1989.

For consistency, all references to garden and landscape types and styles are taken from Ramsay, J. *Parks, Gardens and Special Trees: A Classification and Assessment Method for the Register of the National Estate*, Australian Government Publishing Service, Canberra, 1991, with additional reference to Richards, O. *Theoretical Framework for Designed Landscapes in WA*, unpublished report, 1997.

## **11. 2. HISTORIC VALUE**

*Lake Richmond* provides significant geological evidence of how the coastline of Western Australia was formed. (Criterion 2.2)

*Lake Richmond* was used as an important Aboriginal ceremonial and mythological site. (Criterion 2.1)

*Lake Richmond* was exploited as a source of food, water and shelter by traditional Aboriginal people. (Criterion 2.1)

*Lake Richmond* is associated with the early pioneering families of Rockingham who used it as a source of fresh water and grazing water for livestock. (Criterion 2.1)

## **11. 3. SCIENTIFIC VALUE**

*Lake Richmond* has the potential to yield further information about seaward advancement of the coastline, which caused the lake to become separated from the ocean 4000 years ago. The movement is marked by a series of dune ridges, which are rare in the metropolitan area due to the encroachment of urban development. (Criterion 3.1)

*Lake Richmond* has the potential to yield archaeological information regarding traditional Aboriginal practices, ceremonies and traditions, as well as information regarding European and Aboriginal interaction. (Criterion 3.2)

*Lake Richmond* is used by the community for educational purposes, to highlight both biodiversity and conservation issues. (Criterion 3.1)

## **11. 4. SOCIAL VALUE**

*Lake Richmond* is important to the community of Rockingham as a social, recreational and tourist site, which has been adapted over time to suit current recreational trends and needs. (Criterion 4.1)

*Lake Richmond* has cultural significance for the Noongar community. (Criterion 4.1)

*Lake Richmond* is valued by the local community as an educational site, where the Naragebup Regional Environment Centre facilitates education and the awareness of the conservation values of the area. (Criterion 4.1)

## **12. DEGREE OF SIGNIFICANCE**

### **12. 1. RARITY**

*Lake Richmond* is host to the critically endangered Ecological Communities. The Thrombolites and Sedgelandes located at *Lake Richmond* are of extreme high risk of extinction in the immediate future. (Criterion 5.1)

The *Lake Richmond* Thrombolites are rare as there are few other places in the world that live Thrombolites can be found, and have a unique internal structure which is not known to have occurred anywhere else in the world. (Criterion 5.1)

*Lake Richmond* is unusual as a deep freshwater lake in close proximity to the ocean, of considerable size and depth, and is unlike other inland lakes, which are usually shallow and saline. (Criterion 5.1)

## 12.2 REPRESENTATIVENESS

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### 12.3 CONDITION

The condition of *Lake Richmond* with its surrounding vegetation, bushland and wildlife were reviewed as part of *Lake Richmond Management Plan 2008 for the City of Rockingham prepared by Ecoscape (Australia) Pty Ltd.*

The vegetation and bushland surrounding *Lake Richmond* is noted to be fair to good however, two ecological communities at *Lake Richmond*, the thrombolites and the surrounding sedge lands, have been identified as Endangered at a National level and Critically Endangered at a State level.

### 12.4 INTEGRITY

Since its formation 4000 years ago, *Lake Richmond* has been used for several different purposes including Aboriginal occupation, as a resource by early European settlers and for recreation and education.

*Lake Richmond* has been continuously functioning for the last 50 years as a recreational facility for the local community. During the 1970s and 1980s the lake was zoned for water skiing for public use, and today (2011) the lake is popular with birdwatchers and nature walkers.

*Lake Richmond* is of high integrity it is very likely to continue its function as a recreational and educational facility in the future.

### 12.5 AUTHENTICITY

*Lake Richmond* retains much of its original natural bushland and vegetation, including a number of nationally and state listed Threatened Ecological Communities (TEC).

The Thrombolites of *Lake Richmond* have been subject to historical disturbances through alterations to the salinity levels, lake levels and other water quality parameters.<sup>1</sup>

The *Lake Richmond* area has been developed to incorporate walking trails, boardwalks, and picnic facilities.

The authenticity of *Lake Richmond* moderate to high, it retains much of its original natural features, and has only been physically disturbed by the development of the site into a recreational and educational facility.

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<sup>1</sup> *Lake Richmond Management Plan 2008 for the City of Rockingham, prepared by Ecoscape (Australia) Pty Ltd.* p. 38.

### 13. SUPPORTING EVIDENCE

This document has been based on *Lake Richmond Management Plan 2008* prepared by Ecoscape, with amendments and/or additions by the State Heritage Office and the Register Committee.

#### 13.1 DOCUMENTARY EVIDENCE

*Lake Richmond*, located within the Quindalup Dune system, is an urban wetland situated 40 kilometres to the south of Perth in the suburb of Rockingham. The freshwater lake, which was formed after becoming isolated from the sea 4000 years ago, contains unique and critically endangered Thrombolite communities.

The Quindalup Dune system was formed 7000 years ago during the Holocene period.<sup>2</sup> The Quindalup Dunes system is one of the three chains of wetlands within the City of Rockingham than run roughly parallel to the coast, also included within the Quindalup system, are Lake Cooloongup and Lake Walyungup.<sup>3</sup>

*Lake Richmond* was created when part of the marine portion of Cockburn Sound filled during the last 4000 years, creating beach ridges and separating the body of water from the sea.<sup>4</sup> Once formed, the lake was fed from rainfall and seepage from the groundwater through the dunes in the Safety Bay region and later the inlet drains that were installed.<sup>5</sup>

Thrombolites appear in *Lake Richmond* as rock-like structures, which occur in 15 metre wide zones around the circumference of the lake, the most visible being on the east side. The Thrombolites are organosedimentary structures which are formed by the precipitation of a particular form of calcium carbonate (aragonite) within the microenvironment of the Ecological Community.<sup>6</sup>

Thrombolites are basic microbial structures, which along with Stromatolites, represent the oldest living organism on earth,<sup>7</sup> however the two differ greatly as Stromatolites have a layered internal structure, and Thrombolites have an unlayered, clotted internal structure. The *Lake Richmond* Thrombolites are unique as they differ substantially in composition and structure from all other known Thrombolites in the world.<sup>8</sup>

The Nyungar Aboriginal people originally inhabited the area now known as Rockingham, and utilised *Lake Richmond* as it provided freshwater and a year round source of food.<sup>9</sup> *Lake Richmond* represents a significant ceremonial and mythological site for the Nyungar people,<sup>10</sup> who believed that the Waugal, which represents the life and spirit of water, created water bodies surrounded by dune

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<sup>2</sup> *Rockingham Lakes Regional Park Draft Management Plan 2003-2013*. Department of Conservation and Land Management. p. 20.

<sup>3</sup> *Lake Richmond Management Plan 2008*. p. 24.

<sup>4</sup> Thrombolite (microbial) community of coastal freshwater lakes of the Swan Coastal Plain (Lake Richmond). <http://www.environment.gov.au/biodiversity/threatened/communities/thrombolites.html>

<sup>5</sup> Draper, Richard, *Rockingham – The Visions Unfold: The History of the Rockingham district to 1997* (1997). City of Rockingham. p. 290.

<sup>6</sup> *Lake Richmond Management Plan 2008* for the City of Rockingham. p. 37.

<sup>7</sup> *Rockingham Lakes Regional Park Draft Management Plan 2010*. p.30.

<sup>8</sup> Ibid. p.37.

<sup>9</sup> *City of Rockingham Municipal Inventory* prepared by Palassis Architects for the City of Rockingham (2008). p. 8.

<sup>10</sup> *Lake Richmond Management Plan 2008*. p. 43.

systems through its movement across the lands,<sup>11</sup> and *Lake Richmond* was seen as the embodiment of this belief. The Department of Indigenous Affairs have registered one site at *Lake Richmond* under the Aboriginal Heritage Act, 1972 (AHA) on the Register of Aboriginal Sites. This site is categorised as ceremonial and as a campsite with spiritual significance (RAS #15974).

Before the Swan River Colony was officially founded in June 1829, Captain James Stirling had visited the Rockingham district in March 1827, exploring the area, and becoming particularly interested in the island he renamed Garden Island. Two years later settlers and soldiers, including Captain Charles Fremantle, arrived, first anchoring at Cockburn Sound before making preparations for the arrival of additional ships and further settlers.<sup>12</sup>

Settlers first came to the Rockingham district in December 1829 when Thomas Peel and four hundred indentured workers arrived on the *Gilmore*, followed by the *Industry*, the *Hooghly* and the *Rockingham* between January and May 1830.<sup>13</sup> A few settlements were established and later abandoned during the earliest period of settlement including a townsite 'Clarence' to the west of Lake Coogee, and 'Rockingham Town' on the area now known as East Rockingham. After forfeiting his original portion of land near the Canning River due to his late arrival, Peel was granted 250,000 acres of land from Woodman Point to Mandurah, which formed the main part of the Rockingham district, just missing the future townsite, but including *Lake Richmond*.

Rockingham townsite itself was surveyed and marked out in April 1842,<sup>14</sup> and by July 1846, was officially gazetted as a townsite.<sup>15</sup>

*Lake Richmond* was gazetted as a Reserve for freshwater in 1904, when it was also designated as Lot 146 and surveyed.<sup>16</sup> It is thought that the lake was named after the London borough of Richmond - rather than the Duke of Richmond who had many places in New South Wales were named after.<sup>17</sup> During the war years, the lake was utilised by the 10<sup>th</sup> Light Horse Regiment, who are believed to have established an encampment neighbouring the lake. Settlers and pioneers used *Lake Richmond* until at least the 1930s as an area for grazing and as a source of fresh water for stock.<sup>18</sup>

Along with the other lakes in the district – Lake Cooloongup, Lake Walyungup, Tamworth Hill Swam and Port Kennedy – *Lake Richmond* was identified as a potential regional park in 1983.<sup>19</sup> It was subsequently included in the larger Rockingham Lakes Regional Park which was established in 1997<sup>20</sup>.

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11 O'Connor, R., Quatermine, G. and Bodney, C., *Report on an Investigation into Aboriginal Significance of the Wetlands and Rivers in the Perth-Bunbury Region*, Western Australian Water Resource Council, Western Australia, Publication No. 2/90 (1989), quoted in *Lake Richmond Management Plan 2008*. p. 43.

12 *City of Rockingham Municipal Inventory* (2008). p. 11.

13 Idem.

14 Draper, *Rockingham – The Visions Unfold: The History of the Rockingham district to 1997* (1997). p. 33.

15 Ibid. p. 37.

16 Ibid. p. 290.

17 Ibid. p. 291.

18 Ibid. p. 43.

19 *Rockingham Lakes Regional Park Draft Management Plan 2003-2013*. p. 1

20 Ibid. p. 3.

Over time, various groups have utilised *Lake Richmond* as a site for recreation. Up until 1956, duck shooting was permitted,<sup>21</sup> and for a brief period in 1961 the Lake Richmond Ski Club used the lake for water skiing, however this was discontinued after opposition by local residents.<sup>22</sup> Despite this, *Lake Richmond* and its surrounding reserve has been continuously used by birdwatchers and nature walkers, who enjoy its unique landscape.

In 1992 the Lake Richmond Area was placed on the Register of the National Estate, which highlighted the significance of the lake's unique freshwater Thrombolites, and its unusual method of lake formation. Additionally, in 2000, one site at *Lake Richmond* was registered under the Aboriginal Heritage Act, 1972 (AHA) as a site of spiritual importance (Site # 15974 Camp [Other: Spiritual significance]).

### 13.2 PHYSICAL EVIDENCE

*Lake Richmond* is an urban wetland situated 40 kilometres to the south of Perth in the suburb of Rockingham. The unusually large and deep lake is bordered by flats, which are vegetated with sedges and rushes, and surrounded by dunes.

The dunes surrounding *Lake Richmond* are classified as part of the Quindalup Dune System, the youngest and most westerly soil system. The dunes reach about 5 metres above sea level and consist of calcareous sands of Aeolian origin, with greater than 50% skeletal fragments or marine organisms.<sup>23</sup>

The vegetation types within the Lake Richmond Reserve consist of flora, bushland, and introduced weeds. *Lake Richmond Management Plan 2008* records 89 native flora species, degraded bushland and 52 weed species at *Lake Richmond*.<sup>24</sup>

*Lake Richmond* is an elliptical shaped lake and sits about 1m above sea level, at unusually close proximity to the ocean. The water body covers 40ha,<sup>25</sup> and measures 1000m in length, 600m in width and up to 15m in depth. Although the lake historically contained saline water, it is now a perennial freshwater body, fed from stormwater and groundwater. Regular monitoring by the Department of Water between 1970 and 1986 noted that the water at *Lake Richmond* had been becoming progressively fresher.<sup>26</sup>

The Thrombolites of *Lake Richmond* appear as rock-like structures, which occur in 15 metre wide zones around much of the lake, the most visible being on the east side. The Thrombolites are organosedimentary structures which are formed by the precipitation of a particular form of calcium carbonate (aragonite) within the microenvironment of the Ecological Community.<sup>27</sup> The *Lake Richmond* Thrombolites are unique as they differ substantially in composition and structure from all other known Thrombolites in the world.<sup>28</sup>

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<sup>21</sup> *Lake Richmond Management Plan 2008*. p. 289.

<sup>22</sup> Draper, *Rockingham – The Visions Unfold: The History of the Rockingham district to 1997* (1997). p. 289.

<sup>23</sup> *Rockingham Lakes Regional Park Draft Management Plan 2003-2013*. p. 23.

<sup>24</sup> *Lake Richmond Management Plan 2008*. p. 29-34.

<sup>25</sup> <http://www.environment.gov.au/biodiversity/threatened/communities/thrombolites.html>., accessed 05.05.2011.

<sup>26</sup> *Rockingham Lakes Regional Park Draft Management Plan 2003-2013*. p. 24, 27.

<sup>27</sup> *Lake Richmond Management Plan 2008* for the City of Rockingham. p. 37.

<sup>28</sup> *Rockingham Lakes Regional Park Draft Management Plan 2010*. p.37.

These rock-like structures occur on the relic foredune plains of the Holocene sands of *Lake Richmond*. They are unusual in form as unlike Stromatolites, which have a layered internal structure, they have an unlayered clotted internal structure, and are so unique in composition that the species is not known to occur anywhere else in the world.

*Lake Richmond* provides an important habitat for local birds, mammals and fish. A number of surveys have been conducted to determine the fauna in the area. The 1998 survey conducted by Naragebup NRM Office reported Long Necked turtles, five species of frogs and two species of snakes existing at *Lake Richmond*.<sup>29</sup> Over 100 bird species have been identified as being supported by the lake and the surrounding reserve, as well as feral species such as foxes, rabbits and cats.<sup>30</sup>

In 1968 drains were constructed by the Metropolitan Water Board to prevent the regular winter flooding of the land around *Lake Richmond*.<sup>31</sup> There are three inlets into the lake and one outlet drain that incorporates sluice gates to prevent saltwater intrusion.<sup>32</sup>

Additional infrastructure has been added to the Lake Richmond site to accommodate growing recreational activities and requirements. Concrete and soil pathways, several footbridges and lookouts, 3.6 km of fencing, interpretive signage, a picnic area and several car parks have all been constructed in recent years.

The Naragebup Regional Environment Centre (Rockingham regional Environment Centre, Naragebup) is located to the north west corner of Lake Richmond on Safety Bay Road. The non-for-profit centre was established in 2002 as an education and resource facility for the community, it offers educational programs in association with *Lake Richmond* and the local area for schools and community organisation, as well as school holiday programs. The programs often venture into the *Lake Richmond* Reserve, for native frog and wildlife spotting, as well as wildlife exploration treasure hunts.<sup>33</sup>

### 13.3 COMPARATIVE INFORMATION

There are not many places in the HCWA database that are comparable to *Lake Richmond* due to its uniqueness as an urban freshwater lake, and one that is host to very rare and critically endangered Thrombolites.

There is one place in the HCWA database that compares to *Lake Richmond*.

**Thrombolites, Lake Clifton** (RHP 17171), part of Yalgorup National Park (RHP 16114). Lake Clifton provides the unique saline conditions that make it possible for the thromoblites to survive. The community of Thromoblites grow in the brackish water of Lake Clifton and are unusually large and densely populated at 3000 per square meter. It is one of the largest populations of Thrombolite reefs

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<sup>29</sup> Noted in *Lake Richmond Management Plan 2008*. p. 41.

<sup>30</sup> *Lake Richmond Management Plan 2008*. p. 24, 42.

<sup>31</sup> *City of Rockingham Municipal Inventory* (2008). p. 173.

<sup>32</sup> *Rockingham Lakes Regional Park Draft Management Plan 2003-2013*. p. 23.

<sup>33</sup> Naragebup – Rockingham Regional Enviornment Centre [online]. Accessed on 08.08.11 from <http://www.naragebup.org.au>

found in the world. Thrombolites, Lake Clifton has been on the assessment program since December 2008.

Including *Lake Richmond* there are 42 lakes in the HCWA database, only one of which is permanently entered on the State Register of Heritage Places.

**Lake Leschenaultia** (P8568), located at Rosedale Road in Chidlow, was constructed in 1898 and comprises a dam, recreational facilities, restaurant, picnic, camping area and natural bushland forest reserve. The place is highlighted as an integral part of the Eastern Railway, a key infrastructure project that promoted the development of the Eastern Goldfields, and supplied water for trains on the line for almost 50 years.<sup>34</sup>

There are also four other lakes, which have been added to the HCWA assessment program, these are

**Tranby Lake** (P347) at Peninsula Road in Bayswater, was the original brickwork claypit used to build *Tranby House* (RHP 2411), which was later filled in with water, and has been used since as a small lake.

**North Lake and Bibra Lake** (P5317), Cockburn. Before the arrival of white settlers, both Coolbellup and Walliabup Lakes (now known as North and Bibra Lakes) were exploited by the Beeliar Aboriginal people who camped in the area and used the lakes for food. In 1843 Bibra Lake was renamed after successful local farmer Von Bibra, who developed a market garden bordering the lake.

**Lake Monger** (P8882), in Wembley was originally an aboriginal camping, hunting and fishing ground, important for both food resources and mythological significance. St Kevin's orphanage, the Home of the Good Shepherd school for girls, and St Joseph's orphanage were all built close to the lake between 1885 and 1908.

**Geogrup Lake System** (P9019) in Mandurah, also known as Willy's Lake, is a large open shallow wetland covering 1700ha containing native vegetation along its banks, riparian salt marshes, streams and small islands situated in a scenic river valley. The lake was traditionally a camping area for Indigenous people, however was also a place where European settlers and Nyungars interacted.

Although there are 9 entries in the HCWA database for places including Stromatolites or Thrombolites, only two, including Thrombolites, Lake Clifton (RHP P17171) are in the assessment program. The other is

**Strelley Pool** (P4446) situated 34 kilometres West on Six Mile Creek, Marble Bar, contains some of the best preserved and most widespread exposure of Stromatolites, which are evidence for the earliest known life on Earth. The place is in a picturesque gorge section of the Pilbara region, where scientists have found new varieties of Stromatolites in Strelley Pool Chert, 3.43 billion years old.

Compared to the other lakes and/or Thrombolite or Stromatolite structures in various locations in Western Australia, *Lake Richmond* is unique as a freshwater, rather than saline lake, that is host to very rare and critically endangered Thrombolites. No other places in the HCWA database, assessment program, or Register of Heritage Places demonstrates this combination of characteristics.

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<sup>34</sup> Register Documentation for Entry in the State Register of Heritage Places, Lake Leschenaultia; 30.07.2004.



#### **13. 4 KEY REFERENCES**

*Lake Richmond Management Plan 2008 for the City of Rockingham prepared by Ecoscape (Australia) Pty Ltd.*

*Rockingham Lakes Regional Park Draft Management Plan 2003-2013. Department of Conservation and Land Management.*

#### **13. 5 FURTHER RESEARCH**

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