



# REGISTER OF HERITAGE PLACES - 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.

### 11.1 AESTHETIC VALUE\*

*Leighton Battery* is situated in an attractive, large, public open space with native vegetation and few obvious above ground built features. (Criterion 1.1)

The hillside on which *Leighton Battery* is located is a local landmark and is clearly visible to those travelling along Stirling Highway and on the Perth to Fremantle train line. It provides an aesthetically pleasing break from the surrounding residential and light industrial places. From the place can be found panoramic views of the Indian Ocean to Rottnest and Garden Islands, Fremantle Port, over the surrounding suburbs and east to the Perth city skyline and the Darling Range. (Criterion 1.3)

### 11.2. HISTORIC VALUE

*Leighton Battery* is a remnant of a much larger military complex which occupied most of Buckland Hill since 1941, and has played a significant part in a larger, national system of coastal defence strategies during World War Two, using both artillery and anti-aircraft weapons. (Criteria 2.1 & 2.2)

Buckland Hill, the site of *Leighton Battery*, played a significant role in the military defence operations of Western Australia during World War Two. (Criterion 2.2)

*Leighton Battery* is part of the area popularly believed to have been explored by Willem de Vlamingh's party in 1697. (Criterion 2.2)

*Leighton Battery*, and in particular the underground tunnel complex, is an example of technical achievement during World War Two. (Criterion 2.4)

### 11.3. SCIENTIFIC VALUE

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\* For consistency, all references to architectural style are taken from Apperly, Richard; Irving, Robert and Reynolds, Peter *A Pictorial Guide to Identifying Australian Architecture: Styles and Terms from 1788 to the Present* North Ryde NSW, Angus & Robertson 1989.

*Leighton Battery* has potential to yield information about coastal defence strategies in Australia and Western Australia in particular during World War Two. (Criteria 3.1 & 3.2)

*Leighton Battery* has importance as an example of technical achievement in the construction of a tunnel complex in a hillside for the purposes of military defence. (Criterion 3.3)

#### 11. 4. SOCIAL VALUE

*Leighton Battery* is valued by members of the Royal Australian Artillery Historical Society who have contributed their efforts to the conservation and interpretation of, and public access to, the site. It is valued by the present and past military community, and the general community for its historic and military associations, and for passive recreation. (Criterion 4.1)

Buckland Hill, the site on which *Leighton Battery* is located, is a significant place to the local community as evident by the Buckland Hill Action Group's fight to stop the residential development of the place in the late 1980s. (Criterion 4.2)

## **12. DEGREE OF SIGNIFICANCE**

### **12.1. RARITY**

*Leighton Battery* was the only 5.25 inch gun battery to come into operation in Australia. (Criterion 5.1)

*Leighton Battery* is important in demonstrating a distinctive method of defence that is no longer practiced. (Criterion 5.2)

### **12.2 REPRESENTATIVENESS**

*Leighton Battery* is significant in that it demonstrates some of the characteristic components of artillery sites, their design and technical features as well as aspects of military customs and conditions for personnel. (Criteria 6.1 & 6.2)

The design of *Leighton Battery* is representative of other defence systems; above ground built structures, gun emplacements and underground tunnel systems, situated along the Western Australian coastline and islands. Other batteries include Albany as well as Robb's Jetty, Oliver Hill and Point Bickley on Rottnest Island. (Criterion 6.2)

### **12.3 CONDITION**

The above ground structures such as the built structures, paths, landscaping and planting have recovered from previous neglect and are in good condition. The revegetation has altered the place which in previous decades had been sparsely vegetated. Vandalism is a constant problem. Underground, the command post and the tunnel complex are in good condition.

There are minor problems, such as wood rot, which are associated with the subterranean nature of the site and the high humidity underground. The salt on the surface of the brickwork appears not to be causing significant spalling, probably due to the low rate of evaporation. The tunnel complex appears to be structurally sound and the two points of cracking to the walls appear to have stabilised. There is no sign that the limestone has collapsed or crumbled on the other side of the tunnel linings.

The place is currently managed by the Town of Mosman Park and the Royal Australian Artillery Historical Society of Western Australia.

### **12.4 INTEGRITY**

The integrity of *Leighton Battery* is moderate to high. The place has its major structure basically intact. The World War Two use of the site has been clearly interpreted. The current use of the place as public open space and interpreted site enhance the significance of the site and allow for its long term viability. The Royal Australian Artillery Historical Society is committed to the long term preservation of the site and continuing development of its interpretation.

### **12.5 AUTHENTICITY**

The authenticity of the site as a whole is moderate. The present site is much smaller than the original defence complex, the setting has altered, some of the structures have been removed and the place has much more vegetation than during its military use era.

The structural components of *Leighton Battery* have a high level of authenticity.

Approximately 90% of the concrete, brick and timber components are original form and fabric. Some fabric is reconstructed, for example the tunnel entrances, and some adaptations have been made for the current use, for example security, safety and interpretation provisions.

### 13. SUPPORTING EVIDENCE

The documentary evidence has been compiled by Adele Adelphi, Heritage Consultant. The physical evidence has been compiled by Adele Adelphi, Heritage Consultant, with contributions from John Kirkness, Architectural Designer. Additional research has been completed by HCWA staff.

It is recommended that the Registration for *Leighton Battery* should include both lot 456 and lot 455. The view across lot 455 is highly significant and the appropriate management of lot 455 to support the heritage values of the entire site is important.

#### 13.1 DOCUMENTARY EVIDENCE

*Leighton Battery* comprises a complex of underground tunnels, rooms and an observation post, a semi-buried command post, two 6 inch gun emplacements (all 1942), two 5.25 inch gun emplacements one of which remains buried (1944-45), a radar hut (c1947), an access road and limestone retaining walls (c1990). The place is part of a former, coast defence battery site constructed by the Australian Army in 1942. The site covers 7.4 ha of land on a western slope to the west of Buckland Hill.

Before, and in the early years of, European settlement, Aboriginal people camped in the area around Buckland Hill. Aboriginal artefacts have been found near the Swan River not far away from Buckland Hill.<sup>1</sup> In Nyungar legend, the Wagyl formed the hills in this place and the hills represent a gateway to the spirits of the dead.<sup>2</sup>

In 1696, Commander Willem de Vlamingh, under the Dutch East India Company, brought three ships to the coast of what is now Western Australia to survey and chart the coast as well as to search for a missing ship. Between 5 and 12 January 1697 men came ashore, possibly in the vicinity of Leighton Beach, and explored 'high ground' believed to be Buckland Hill. De Vlamingh also explored parts of the river and in the process named the Swan River.<sup>3</sup>

Captain James Stirling explored the same area in 1827 and named the hill in honour of William Buckland, FRS, then a Reader in Geology at Oxford University and later Dean of Westminster.<sup>4</sup> Buckland Hill was part of a range of seven hills known as the Seven Sisters, much of which disappeared through the quarrying which began in the Rocky Bay and Mosman Park areas in the 1890s.<sup>5</sup>

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<sup>1</sup> Elizabeth Tuettemann, *Between River and Sea: A History of Mosman Park, Western Australia*, Town of Mosman Park, 1991, pp. 8-9.

<sup>2</sup> Buckland Hill Action Group, 'Buckland Hill Regional Park Concept Study', 1988, p.6.

<sup>3</sup> Tuettemann, op. cit., pp. 9-11,196; Buckland Hill Action Group, op. cit., p.6. This claim is disputed by Philip Playford, in his book *Voyage of Discovery to Terra Australis*, (WA Museum, Perth, 1998). In this account of Vlamingh's 1640 journey to Western Australia, Playford argues that Vlamingh landed further north than Cottesloe.

<sup>4</sup> Tuettemann, op. cit., p.196.

<sup>5</sup> *ibid.*, p.88.

Land between Stirling Highway and the Swan River was vested in the University of Western Australia at its foundation in 1913.<sup>6</sup> During World War One, Buckland Hill was a naval signal station known as 'Port War'.<sup>7</sup>

There were plans to use Buckland Hill as an alternative site for the Fort Forrest guns when they were relocated from North Fremantle in the early 1930s due to harbour development. However, these plans were rejected by Defence planners and the guns were moved to Swanbourne. It was at this time that the coastal batteries at Oliver Hill and Point Bickley were installed on Rottnest Island.<sup>8</sup>

In 1941, Buckland Hill was compulsorily acquired by the Government. The Army occupied the western slopes of Buckland Hill and the Navy established a rest-and-recreation centre along Boundary Road. In 1948, the Army purchased the western area of Buckland Hill, which it had been occupying, from the University of Western Australia.<sup>9</sup>

After the outbreak of World War Two in September 1939 and because of Western Australia's strategic position in relation to the Indian Ocean, Fremantle became a focal point in naval and military operations.

By January 1941, the Fremantle port defences had been strengthened with the installation of anti-submarine and anti-torpedo booms across the mouth of the harbour and an 'indicator loop' between Swanbourne and Rottnest, to warn of any ships passing over it.

Early in 1941 an Area Combined Headquarters (HQ) and a Combined Operational Intelligence Centre (with its own mercantile movements section) was established at Fremantle to ensure naval and air cooperation of trade defence in the nearby focal area. There was also a Combined Defense HQ to coordinate all three armed services in the defence of the vital Fremantle port.<sup>10</sup>

The entry of Japan into World War Two in December 1941 and the fall of Singapore in February 1942, prompted the upgrading of coastal defences in Western Australia.<sup>11</sup> This was primarily for two reasons; the relocation of the British Navy to a new base at Cockburn Sound and response to Western Australia's remote and vulnerable position.<sup>12</sup>

*Leighton Battery* was constructed as part of the coastal defence system for the Fremantle Port. The system included batteries at Rottnest and Garden Islands, Swanbourne, Arthur Head, Fremantle Harbour, South Beach and

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6 Tuettemann, op. cit., pp. 196-7.

7 National Trust of Australia (WA), Historic Places Assessment Form, *Leighton Battery*, 1996. In Mosman Park, Downey states 'A flagstaff and some huts stood on the top of the hill'. (pp. 40) Nothing remains of this signal station.

8 National Trust of Australia (WA), Historic Places Assessment Form, *Leighton Battery*, 1996; Pamphlet by The Royal Australian Artillery Historical Society of Western Australia, 'The Leighton Battery Site, Buckland Hill'.

9 Town of Mosman Park, 'Municipal Inventory of Heritage Places in the Town of Mosman Park', prepared by Adele Adelphi, 1998, pp. 20.

10 Lindsay J. Peet, 'An Outline History of the Armed Forces in Western Australia During World War Two', August 1995, pp. 1.

11 R. K. Glyde, *The Coast Defences of Western Australia 1826 - 1963: A Study by R. K. Glyde for Personal Use*, 1991, p.19.

12 Lindsay J. Peet, op. cit., pp. 1-3.

Point Peron.<sup>13</sup> This system played an important deterrent role and it has been suggested that it may have saved Fremantle from the attention of German sea raiders known to have been in the vicinity during the war.<sup>14</sup>

An anti-aircraft gun station was established at Buckland Hill in September 1941.<sup>15</sup> Construction of *Leighton Battery* commenced in 1942 and in February of 1943 two 6 inch guns were relocated from Arthur Head to gun emplacements at *Leighton Battery*.<sup>16</sup> *Leighton Battery* and Swanbourne Battery were known as 'examination batteries'. Their purpose was to keep a look out for ships and when in view, to advise HQ if the ships were giving the correct signals. If the ships did not signal properly, the batteries sighted the guns ready to shoot a warning shot across the bow of the ship.<sup>17</sup>

The threat from air attack instead of naval prompted the construction of gun emplacements for three 5.25 inch dual role coast artillery/air weapons in mid 1944.<sup>18</sup> The 6 inch guns were relocated from *Leighton Battery* to Princess Royal Battery in Albany in 1945.<sup>19</sup>

A historical summary of the *Leighton Battery* states

Associated with the 6 inch guns was an underground complex housing ammunition, technical equipment, rest areas, communications and observation posts. Over 300 metres of tunnels were excavated 10 metres underground.<sup>20</sup>

The tunnels were built to service the 6 inch gun batteries. The tunnels had concrete floors, with clay brick walls and timber ceilings. The timber ceilings were damaged in places due to fires lit by vandals and squatters. (The timber ceilings were originally covered with bituminised hessian attached by nails.<sup>21</sup>) Ventilator shafts and ammunition hoists structures are still extant.<sup>22</sup>

The war in Europe ended in May 1945, followed by the end of the war in the Pacific in August 1945. Materials for the 5.25 inch gun emplacements were diverted into more urgent, civil projects and the gun emplacements project was put on hold. Work recommenced in 1947 and in November 1947, the 5.25 inch guns were finally proofed.

*Leighton Battery* was the only place in Australia where the plans for the 5.25 inch battery actually became operational.<sup>23</sup> 5.25 inch gun batteries had

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13 A. D. Holder, *Fremantle and Rottnest Island Coast Defence Batteries: A Brief History*, on behalf of Gun Emplacements Research Committee for the Rottnest Island Board, September 1985, p.1. In RAAHS files.

14 Glyde, op. cit., p.2.

15 *ibid.*, p.185.

16 *ibid.*, p.61.

17 Site inspection with Don Rae, 6 January 1999.

18 Glyde, op. cit., pp. 74-75.

19 *ibid.*, p.62. One of the guns which were relocated to the Albany Battery are still extant.

20 Pamphlet by The Royal Australian Artillery Historical Society of Western Australia, 'The Leighton Battery Site, Buckland Hill'.

21 Site inspection with Don Rae, 6 January 1999.

22 *ibid.*; The National Trust of Australia (WA), Historic Places Assessment Form, *Leighton Battery*, 1996.

23 Glyde, op. cit., pp. 74-76. The National Trust Heritage Assessment of Leighton Battery states that 'Of all the numerous sites planned and initiated in Australia for this type of weapon, the Leighton Battery was the only one to become operational'. The assessment goes

been planned by the Australian Defence Forces to be installed for the defence of every major port in Australia. As Fremantle was considered to be the most strategically important port, plans were made immediately to construct 5.25 inch gun emplacements there.<sup>24</sup>

*Leighton Battery* and Robb's Jetty, Cockburn were the two places earmarked for the location of the new 5.25 inch emplacements and three emplacements were to be constructed at each site. Unlike Robb's Jetty which was built into soil, the limestone at Buckland Hill had to be quarried for the underground tunnel system and the emplacements. In addition, although emplacements were constructed at Robb's Jetty, guns were never installed and the battery was never operational as it was at *Leighton*.<sup>25</sup>

The radar hut was constructed in 1947/1948.<sup>26</sup>

Through its military life, the *Leighton Battery* comprised, at various times, two 6 inch gun emplacements, three 5.25 inch gun emplacements, four 3.7 inch anti-aircraft gun emplacements, a Bofors gun, the tunnels with two magazines, a projectile store, hand operated hoists and an observation post, a command post, a power station, barracks and administration buildings, radar equipment, searchlights on the beach and a searchlight directing station on the west side of Stirling Highway.<sup>27</sup> At its peak, there were 120 to 135 personnel, both men and women.<sup>28</sup>

From 1950, *Leighton Battery* was used for regular Army training, and from 1952 by the Citizen Military Force which was a significant part of the National Service Scheme.<sup>29</sup> The development of air power and of more advanced weapons and tactics resulted in coastal defence becoming obsolete.<sup>30</sup> The Coastal Artillery branch of the Royal Australian Artillery was disbanded and the National Service Scheme was discontinued. The facilities at *Leighton Battery* were dismantled and the guns and other equipment were sold for scrap in 1963.<sup>31</sup> The Army continued to use facilities at *Leighton Battery* until 1979. When the Army left the battery, the tunnels were closed by bulldozing the entrances.<sup>32</sup>

Fremantle Port Authority placed a non directional beacon on the radar hut at some time after 1963. Railings were also installed by the FPA. The

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on to say 'It is one of two remaining 5.25 inch battery locations in the world'. The National Trust of Australia (WA), Historic Places Assessment Form, *Leighton Battery*, 1996.

24 Site inspection with Don Rae, 6 January 1999.

25 Ibid.

26 Don Rae and Robert Glyde, personal communication with Adele Adelphi, July 1998.

27 Glyde, op. cit., pp. 61,63,79.

28 Note from the files of the Royal Australian Artillery Historical Society re *Leighton Battery* Heritage Site, 21.3.89 p.2.

29 Glyde, op. cit., p.76; Rae & Glyde, op. cit.

30 Holder, op. cit., p.11.

31 Glyde, op. cit., pp. 27,78. When the tunnels were excavated c. 1989, the only piece of equipment found which dated back to this time was a metal telegraph desk. Site Inspection with Don Rae, 6 January 1999.

32 Rae & Glyde, op. cit.

beacon was relocated away from this site c.1990 at the cost of the developer. The steps were installed c.1991.<sup>33</sup>

In 1984, the Army relinquished their land at Buckland Hill and the Commonwealth began to negotiate the sale of the land. The Buckland Hill Action Group was formed in 1985 with the primary objective of having a large area of land around Buckland Hill declared an 'A' class reserve. Despite public and local government support for the regional park idea, land was sold to the Western Australian Development Commission in 1987. In 1988, land was sold to Analed Pty Ltd, a Melbourne based company, who developed the land in joint venture with Quintessence Pty Ltd. Development began in 1989. Charles Clifford, a director of Quintessence, was responsible for the development of Buckland Hill Estate, the residential area to the south of *Leighton Battery*. Some land, including *Leighton Battery*, was set aside as public open space.<sup>34</sup>

Clifford worked with members of the Royal Australian Artillery Historical Society to conserve the *Leighton Battery* tunnels and gun emplacements. The developers funded the removal of rubble from the tunnels and one gun emplacement, the reconstruction of the tunnel entrances, removal of graffiti and the installation of electrical services. Of the 5.25 inch gun emplacements, the south was removed, the north was uncovered and conserved, while the centre emplacement remains buried.<sup>35</sup> A full structural survey of the tunnels was carried out in 1989.<sup>36</sup> Work on excavating the underground installations commenced in May 1989 and conservation work continued through 1990. It included the installation of steel doors to the entrances, removal of burnt timbers, and replacement of windows to the command post.<sup>37</sup>

The site has been revegetated over the past several years. Approximately 24,000 native plants have been planted and nurtured. An access road and limestone retaining walls were constructed in approximately 1990.<sup>38</sup>

In 1995 and 1996, *Leighton Battery* received grants from the Australia Remembers Council \$15,000, the Western Australian Tourism Commission \$20,000, and the Lotteries Commission \$20,000. These funds were used to provide vehicle and pedestrian access and for the general development of the site as a potential tourist attraction.<sup>39</sup>

Lots 455 and 456 were set apart for the purpose of public recreation, and classified as a class 'A' reserve, in 1991. The *Leighton Battery* tunnels are on lot 456 with access via lot 455. Between 1991 and 1997, these lots were vested in the Western Australian Planning Commission. In 1997, lots 455

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33 *ibid.*

34 Tuettemann, *op. cit.*, pp. 198-206.

35 Rae & Glyde, *op. cit.*

36 Barnett, Fuller & Partners, 'Assessment of Conditions of Leighton Battery Tunnel Complex, Buckland Hill', a report prepared for Analed Pty Ltd, 1989. A copy of this report has not been located. K Bizzaca searched for both Barnett, Fuller & Partners and Analed Pty Ltd and found that neither company exists any longer.

37 Royal Australian Artillery Historical Society files re Leighton Battery Heritage Site, letters and meeting minutes, 1989.

38 Rae & Glyde, *op. cit.*

39 *ibid.*

and 456 were vested in the Town of Mosman Park. The Town was given power to lease lot 456 only, for a term not exceeding 21 years, subject to consent of the Minister for Lands.<sup>40</sup>

The Australian Heritage Commission placed *Leighton Battery* on the Register of the National Estate on 22 June 1993. The National Trust classified *Leighton Battery* on 13 May 1996.

In February 1998, a 6 inch gun, obtained from Rottnest Island, was mounted at one of the original 6 inch gun emplacements.<sup>41</sup>

*Leighton Battery* was officially opened, under that name, on Saturday 29 November 1997 by His Excellency Major General Michael Jeffery AO MC Governor of Western Australia.<sup>42</sup>

*Leighton Battery* is part of the chain of existing open space areas which are currently proposed to be included in the Vlamingh Parklands. The Vlamingh Parklands will include most of the coast and riverbank in Mosman Park and places on and around Buckland Hill.<sup>43</sup>

Currently, *Leighton Battery* is open to the public on the first Sunday of every month. The Royal Australian Artillery Historical Society conducts guided tours of the tunnels. The surface of the site is accessible and forms part of the public open space of Buckland Hill.

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<sup>40</sup> Western Australia, Crown Land Record, vol. 3093, fol. 871.

<sup>41</sup> Rae & Glyde, op. cit.

<sup>42</sup> Town of Mosman Park files re Buckland Hill Tunnels, programme notes for official opening.

<sup>43</sup> Western Australian Planning Commission, 'A Proposal for the Establishment of the Vlamingh Parklands', Draft, Perth, November 1997.

## 13. 2 PHYSICAL EVIDENCE

*Leighton Battery* is a 7.4 ha area of land on a western slope to the west of Buckland Hill. It is part of an area of public open space and includes the remains, mostly underground, of a World War Two artillery coastal defence site.<sup>44</sup>

To the north, east and south the place is flanked by residential subdivisions developed within the last ten years. To the west is Stirling Highway, the railway line in a wide railway reserve, Curtin Avenue, Leighton Beach and the Indian Ocean. The place, being elevated, has panoramic views to Rottnest and Garden Islands, Fremantle Port and the Perth city skyline. These views, and the physical prominence of the site, are of significance in the original selection of a battery location.

The limestone hillside is vegetated by native shrubs and ground cover plants, mostly recent plantings. Limestone retaining and landscaping walls provide some structure. Concrete walking paths connect *Leighton Battery* to the surrounding public open space and residential areas. A bitumen access road links the car park at the north-west corner with the command post in the south-east corner of the site.

Most of the historic built structures are underground. Structures visible on the surface include the concrete entrance and upper part of the command post, the two concrete and brick entrances to the tunnels, the tops of three of the tunnels' shafts, the observation post window and concrete roof, a brick structure known as the radar hut and three gun emplacements. Two guns, indicative but not original, are located at the site.

The two tunnel entrances lead to a complex of tunnels and rooms extending approximately 100 metres north south, and 60 metres east west. The tunnel entrances are constructed of concrete and brick and are a generally accurate reconstruction of the original entrances which were bulldozed in 1979. Entrances are fitted with steel doors. The south entrance accesses a small foyer in which the controls for the modern electrical and ventilation equipment for the tunnels is installed. Rough, in-situ formed, concrete steps lead down to the tunnel complex. Here, the delineation between the original and reconstructed masonry and timber elements is clearly evident.

Most of the tunnels and rooms are on an essentially common level, but the eastern section, including the observation post and associated rest rooms, are at a higher level. In general the tunnels and rooms have poured concrete floors, brick lining walls and jarrah plank ceilings and support posts. Shafts for ammunition, ventilation and escape are either brick or timber lined, some are now sealed at the top while open shafts have modern whirlybird vents. The construction materials and methods appear essentially domestic in nature, although the workmanship is skilled.

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<sup>44</sup> The summit of Buckland Hill is to the east and on it is a reservoir and the obelisk which is trigonometric station Melville 60.

The external brick walls of fired red clay bricks are mostly laid with three courses of stretcher bond with a fourth course of headers, called English garden wall bond or American bond. Brickwork within rooms is generally stretcher bond, but in the former magazines it is English bond. Most corner elements within the tunnels are truncated, with the use of bevel brick specials. Mortar, of a grey cement colour, is finished flush. The former magazines have vaulted concave ceilings of cement rendered brick. The brick walls are in excellent condition for their age and situation. Few bricks show signs of spalling. In many areas salt has formed on the bricks or mortar but does not appear to be causing serious damage. The brickwork feels slightly damp. Two major cracks are apparent in the brick walls; one crack is just east of stand easy room no. 1 in the corridor leading to the observation post, the other crack is to the west of magazine no. 2. Brickwork, particularly at tunnel corners, has physical damage suggesting bullet damage.

The ceilings are formed of jarrah planks, either spanning the width of tunnels and rooms supported by the brick walls, or supported in the middle by jarrah posts and beams. Planking is lapped over at tunnel junctions. Remnants of the battens used to keep a bituminised hessian lining in place can still be seen in some areas. Generally, the timbers throughout remain in sound condition with little bowing, splitting or deflection. There are some signs of previous termite damage, of dry and damp rot, of fungal growth and of fire damage, this damage appears localised to a few areas particularly where water has penetrated, possibly due to vegetation. Some timber components have been replaced.

For clarity, the numbering system used in the plan (attached) produced by the Royal Australian Artillery Historical Society will be followed here.

1. Rubble filled tunnel. Previously an excavation entrance. This has not been cleared, but may be in the future.
2. Observation post. Concrete ceiling and floor, painted brick walls, recent aluminium framed windows and metal security shutters. Concrete sighting instrument plinths intact. View impeded by limestone wall and vegetation. Photographic displays, panoramas of and from the place. The rooms close to the observation post are believed to have been stand easy rooms, one for males and one for females. One room has been set up with four bunks as an AWAS (Australian Women's Army Service) room.

Remnant power/communication cables are evident in this room as well as in 5.25 inch gun emplacement. It is thought that the cable system ran through the brick walls. The communication system originally linked all batteries with the HQ located at Fremantle Port.

3. Stand easy room no. 1. Semi wall division. Remnants of bunks. Photographic displays of conservation works. Recreation of typical observation post set up in alcove to east.
4. First aid room. Original concrete stretcher table. First aid displays.
5. Escape tunnel. Closed at far end. This section of tunnel is unlined limestone. A diorama has been set up depicting drilling methods used during original tunnel construction. Not open to public entrance. Plants roots and associated water penetration clearly evident.

6. Tunnel entrance no. 1. Leads out to partially reconstructed 6 inch gun emplacement.
7. Magazine no. 1. Has original kookaburra frieze in cement above one of the doorways and dated signatures in cement render. Ammunition display. The associated ammunition hoist shaft contains some original windlass equipment, but relocated for security reasons.
8. Projectile store. Has been set up as a small chapel in memory of fallen service personnel. Specially made altar and pew.
9. Artillery store. Painted walls. Timber door jambs. Timber lined ventilation shaft to east. Artillery plotting equipment display.
10. Stand easy room no. 2. Four of the original twelve bunks have been reconstructed. Displays relating to personnel and their equipment.
11. Magazine no. 2. Corner masonry detail to facilitate flash proof lighting. Diagrammatic displays. Ammunition hoist shaft to the south.
12. Tunnel entrance no. 2. Current principal access to tunnels.

The command post is a semi-subterranean structure of concrete with off-form concrete walls, roof and floor. The original external doors are steel and the reconstructed windows are steel framed. Concrete steps lead down into a large main room which is used as an exhibition area with photographs and diagrams of the World War Two coastal defence of Fremantle. The main room is surrounded on two sides by smaller rooms used as offices, kitchen, toilet and store. (Kitchen and toilet were added c. 1990s.) A previous second stairway has been blocked off. The command post is used as an administrative area and as a gathering point for the tunnel tours and has been conserved with minor adaptations to meet this purpose.

Both 6 inch gun emplacements have been partially reconstructed, the northern one having survived more intact. Of the three 5.25 inch gun emplacements, only the northern one has been conserved, the centre one remains buried and the location of the demolished south emplacement is no longer within the site boundaries. The conserved gun emplacement is circular, set into the ground and is constructed of concrete with the steel holding down rods still set into the mounting plinth. A concrete structure of underground rooms including engine room, two small rooms, a passage and entrance steps connects to the 5.25 inch gun emplacement.

The radar hut is a small, brick building with a steel door and no windows. Steel steps access the flat, concrete roof of the hut which is paved in irregular, decorative stone with a mosaic gun motif. There are metal rails around the roof.

The site includes two guns. A 6 inch gun barrel is mounted on a concrete pedestal at the north 6 inch gun emplacement. An anti-aircraft gun is positioned to the north-west of the tunnel entrances. Neither are original.

### 13.3 REFERENCES

Australian Heritage Commission, Register of the National Estate Database Place Report, 'Leighton Battery', Database No. 018358. 1993.

National Trust of Australia (WA), Historic Places Assessment Form. 'Leighton Battery', 1996.

#### **13.4 FURTHER RESEARCH**

A copy of the following engineering report should be obtained: Barnett, Fuller & Partners, 'Assessment of Conditions of Leighton Battery Tunnel Complex, Buckland Hill: A Report Prepared for Analed Pty Ltd' 1989.

K Bizzaca conducted a search for Barnett, Fuller & Partners and Analed Pty Ltd but was unable to find a listing for either one. This needs to be investigated further.

The possible long term results of root damage, and associated water damage, to the underground structures should be investigated. It is possible that vegetation above the tunnels should be minimised. A management plan would be useful.

Don Rae is in the process of searching for a copy of an image which was produced by a private firm c.1997/98. This image, an aerial shot, shows the underground tunnel system including a tunnel which apparently extends out to the west of the site under Stirling Highway. A copy will be sent to HCWA.

To investigate National Trust's comment in their assessment about the possibility that Leighton Battery is 'one of two remaining 5.25 inch battery locations in the world'.