



Fort Lytton

Historical context for the interpretation of digital imagery

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Between 2013 and 2017, the colonial bastion of Fort Lytton (Australia) was digitally documented by 3D laser technology thanks to a collaboration between CSIRO, the University of Queensland's School of Architecture and the Queensland National Parks and Wildlife Service. The results of this collaboration are a series of virtual models and digital scan data, or pointclouds. This booklet aims to provide a historical context for the better interpretation of the produced material.



Aerial view of the military camp at Lytton circa 1890's, showing Queensland militia's undergoing training exercises. Attribution: John Oxley Library, SLQ neg: 6149

Fort Lytton

Introduction

Situated in the mouth of the Brisbane River in Moreton Bay, on the eastern coast of Australia, the Fort Lytton National Park preserves the remains of the oldest colonial fortress in Queensland, built in 1880-1882.

The fort acted as a defence for the port of the capital city, Brisbane, situated 15 km inland, and represents the colony's first response to the need to provide for its own defence system following the withdrawal of the British Imperial Garrisons in the 1860s and 1870s.

Between 1870 and WWII, Fort Lytton became a major training point in South East Queensland. It continued to be Brisbane's main coastal defence point until WWII, when it became an inner defence fortification protecting the largest US Navy submarine base in Australia.

The highly intact remains demonstrate the transformation of the former British colony of Queensland into an independent state within the Commonwealth of Australia and the development of its military between 1880 and 1945.

Country	Australia
Culture	Anglo-Australian
Historical period	1880 - 1945 CE
Location	-27.410556, 153.151069
Site authority	Department of National Parks, Recreation, Sport and Racing
Partners	University of Queensland, Queensland University of Technology, CSIRO, Queensland Parks and Wildlife Service



Gun pit number 3, modified in 1941 to accommodate a 7-inch quick firing gun. The gun shown in the image is not the original. University of Queensland, 2016



Entrance into gunpit #1, originally built in the 1880s. UQ, 2016



Located in a faux island surrounded by a wet moat, the general appearance of Fort Lytton presents the characteristics of a British colonial bastion. During its use by the military between 1880 and 1945, its design was altered to reflect the development of military technology and armament during this period.

The 3D model shows three of the four gun pits situated in the internal court of the stronghold, two of which conserve the original 19th C encasements, adjacent magazines and loading gallery, while the third one shows the design changes caused by the development of quick-firing, breech-loading artillery before WWII: instead of the deep, round gun pits of the 19th century, the pit is considerably shallower and is completely open at the back. The higher efficiency of the machines in terms of gun loading and lack of recoil, meant there was less need for complex auxiliary structures such as loading galleries and magazines, which in the older gun pits connect directly to the muzzle of the gun.



Magazine between gunpits 1 and 2, one of the original 1880 rooms in the fort. The loading galleries are located behind. UQ, 2016



1936 view of parade ground with Casemate One in foreground, the magazine stores and Casemate Two. Fort Lytton Collection

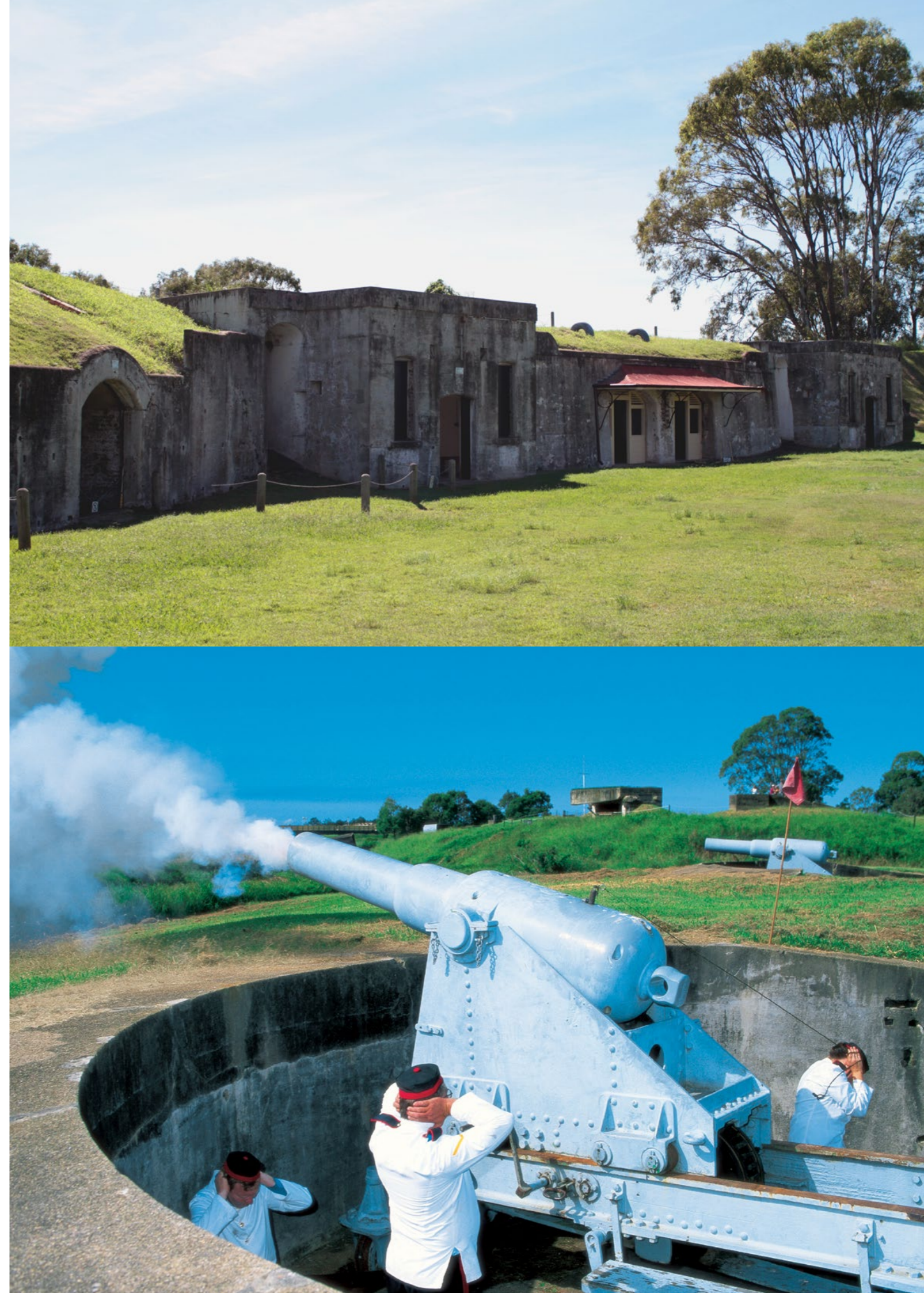
Opposite: Top: View of Parade Ground and Gun Casements. University of Queensland, 2015.
Below: Living History Group firing 64pdr cannons. Queensland Parks and Wildlife Centre, 2003

The birth of Queensland military

British occupation in Australia started with the establishment of the penal colony of Port Jackson, near current-day Sydney, in New South Wales, in 1788. In 1825, the colonial government decided to create a secondary detention centre for recidivist convicts in the waters of Moreton Bay, about 900 km north of Port Jackson. After the closing of the penal settlement in 1839, the area was open for free settlement. In 1851, Queensland became a separate colony from New South Wales and gradually moved towards self-government.

As the Australian colonies achieved sovereignty, the British government adopted the view that colonial autonomy should mean self-defence. Britain saw its role as that of adviser rather than to actively deploy troops in the Antipodes. The last Imperial troops were withdrawn from the Australian Colonies in 1870.

In order to establish an independent defensive system, in 1877, the Australian colonies invited British Royal Colonel Sir William F.D. Jervis and Lieutenant-Colonel Peter H. Scratchley to assess the continent's defensive situation and provide strategic recommendations to the developing colonies in response to a fear of attack by other imperial states such as France or Russia. Their report identified marine attacks as the most significant danger for the developing colony of Queensland and proposed a series of measures to ensure the defence of the Australian coasts, such as the construction of defensive structures near key ports.





Opposite: Above: View of internal courtyard at Fort Lytton. University of Queensland, 2016.
Below: View of the entrance from the bridge over the moat. University of Queensland, 2016.

The first military bastion in Queensland

Sir William F.D. Jervois and Lieutenant-Colonel Peter H. Scratchley's report identified the area of Lytton, in the mouth of the Brisbane River, as an ideal location at which to build a defensive fortress with the goal of protecting the Port of Brisbane, located 10 km inland, from potential raids.

Fort Lytton's design, developed by Jervois and Scratchley with assistance by colonial architect F.D.G. Stanley, reflects the characteristics of 19th-century military architecture in the British colonies: a geometrical pentagonal plan surrounded by a sloped earthwork parapet, or glacis, and a wet moat crossed by a bridge.

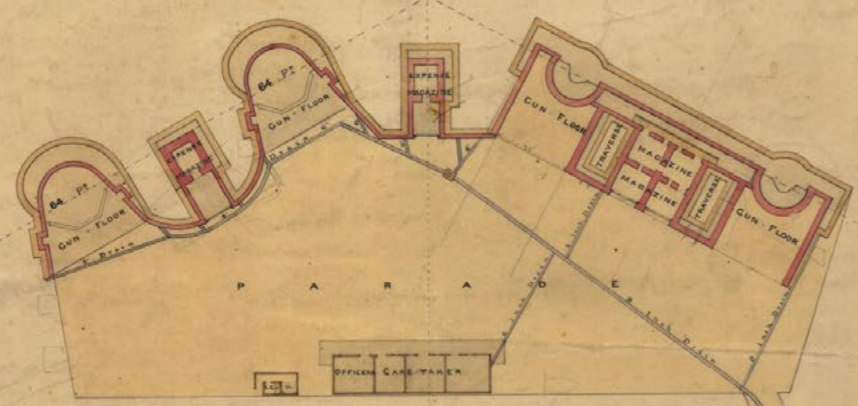
Jervois and Scratchley's initial defence strategy included an electrical submarine minefield across the river and four machine guns. The minefield was the main defensive system as it would impede the entrance of boats to the river mouth. It was controlled from the test room and was connected to the observation firing room. Because this minefield could be subject to attack by small unarmed boats, the plans included the installation of two 64 pounder muzzle-loading rifled guns in pits 3 and 4 to defend the structure.

In 1885, the tension between the colonial powers of Russia and Britain caused a general military alert in the Australian colonies. Worried about potential Russian raids on Queensland ports, the government decided to improve Fort Lytton's defence systems by building two new gun pits outside of the fort and replacing the 80pdr muzzle loaders with new 6inch Armstrong breech loading disappearing guns on pneumatic mounts.

PLAN
OF
LYTTON BATTERY

SCALE 20 FEET TO 1 INCH.

No 1.

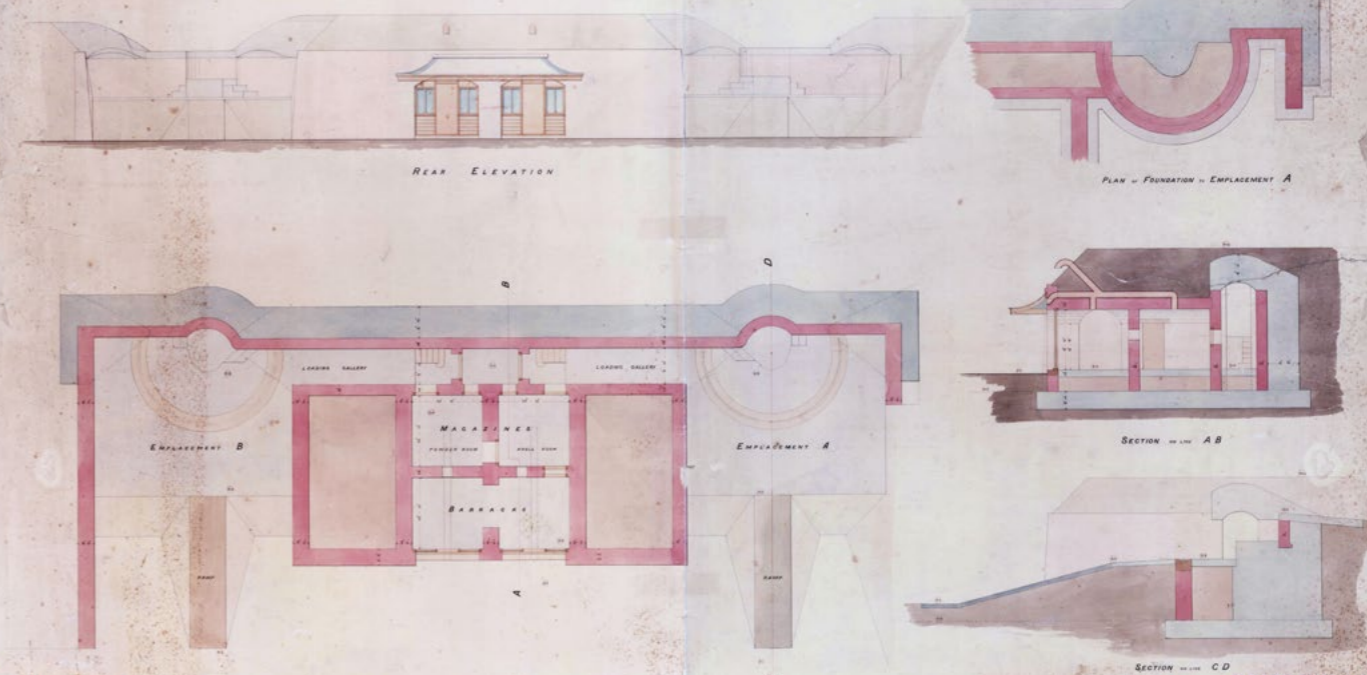


PLAN SHEWING FOUNDATION OF GUN-FLOORS & MAGAZINES

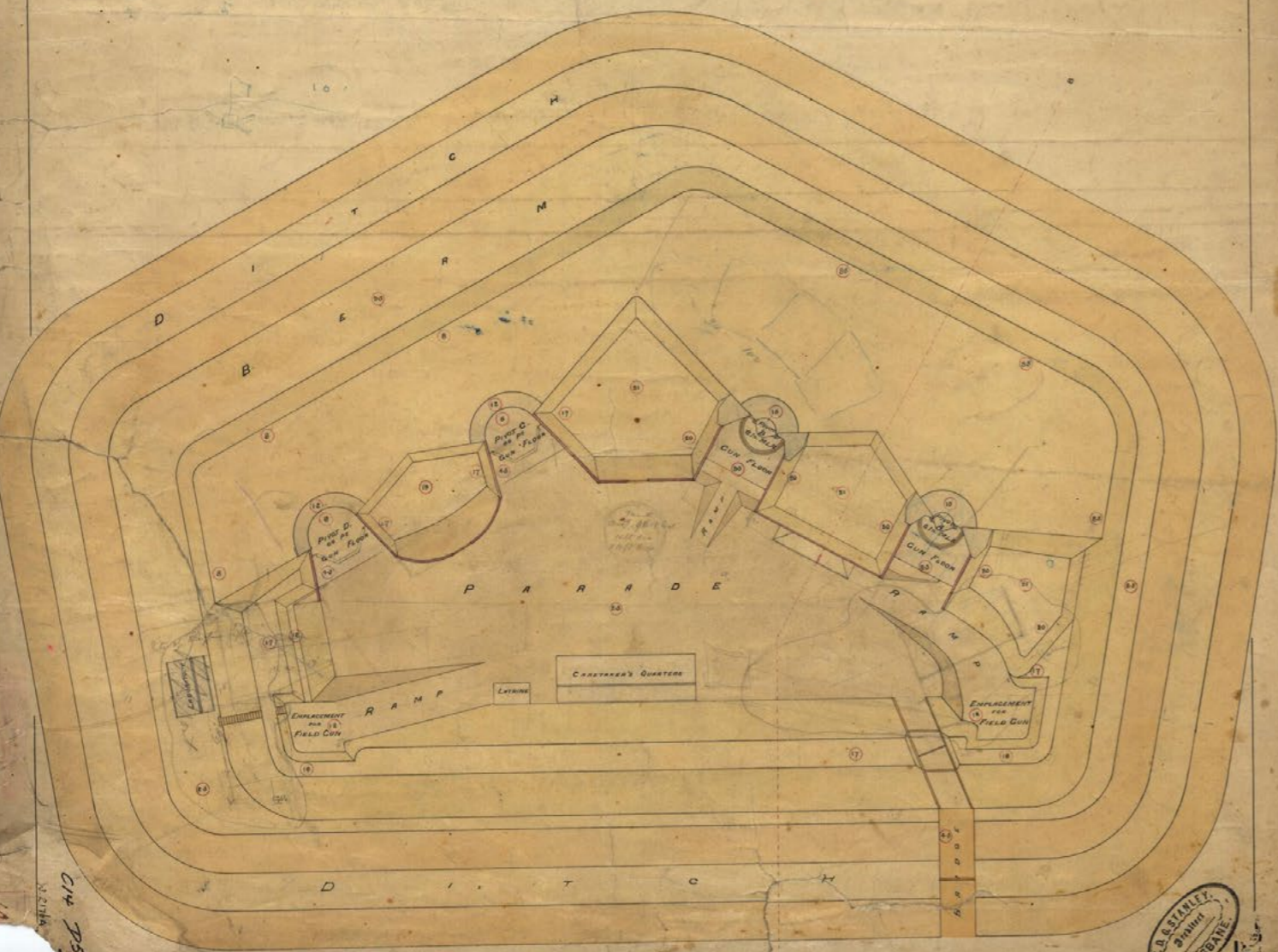
1880 Plan of Lytton Battery stamped by F.D.G. Stanley, architect. Fort Lytton Collection.

DEFENCES OF QUEENSLAND
LYTTON BATTERY DETAILS

SCALE 4 FEET TO ONE INCH



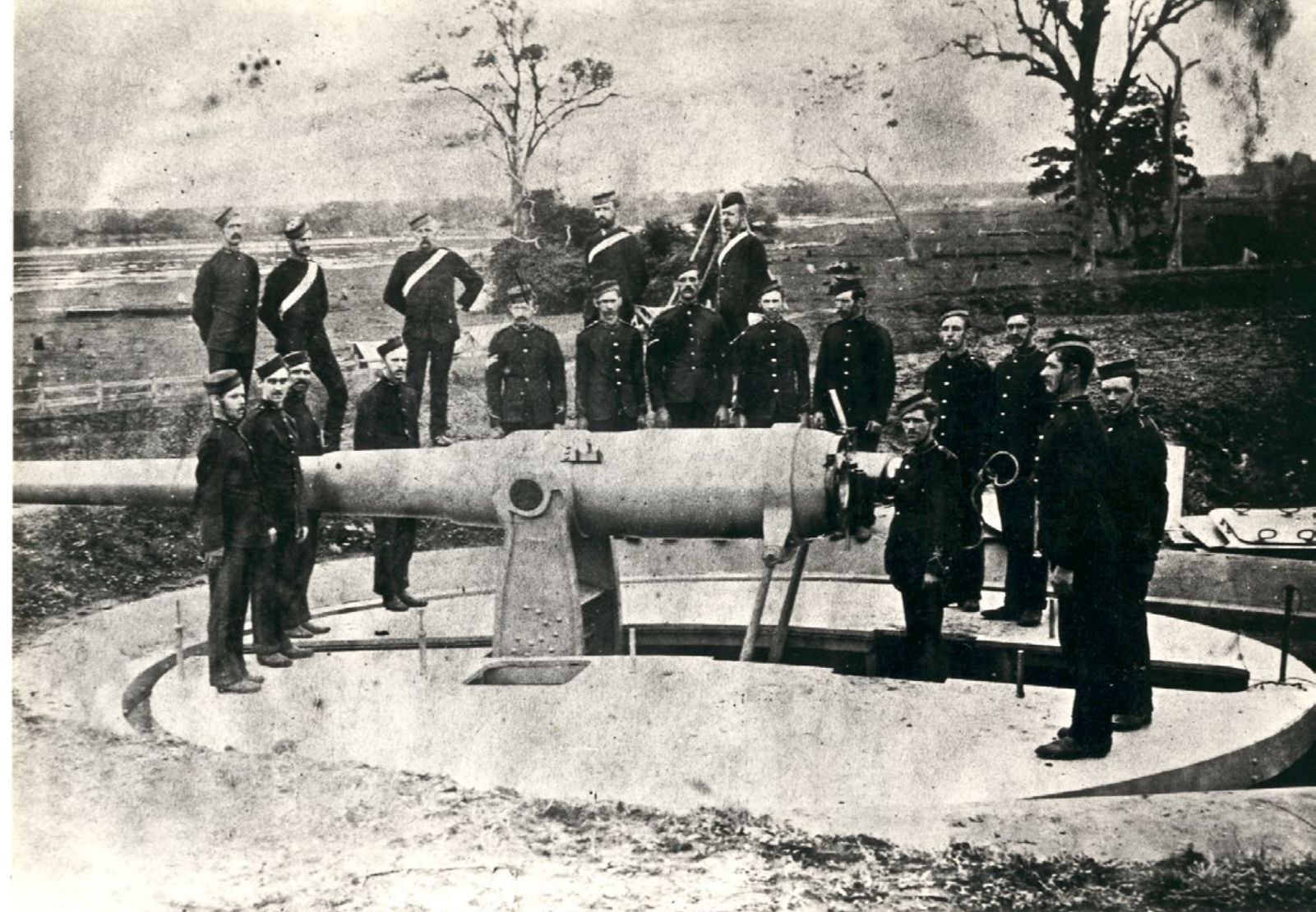
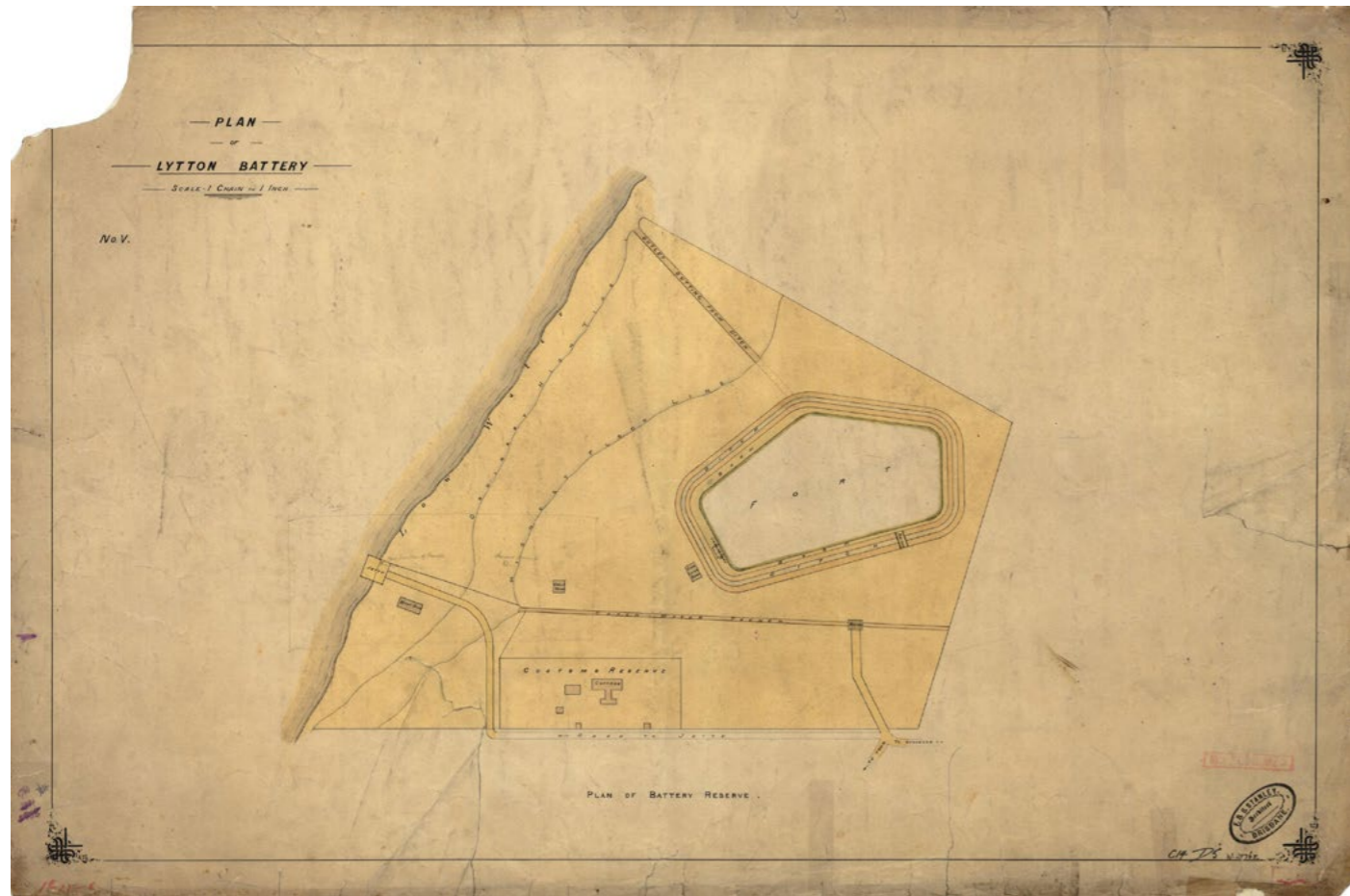
1879 Fort Lytton Magazine and Loading Gallery. Author unknown. Fort Lytton Collection



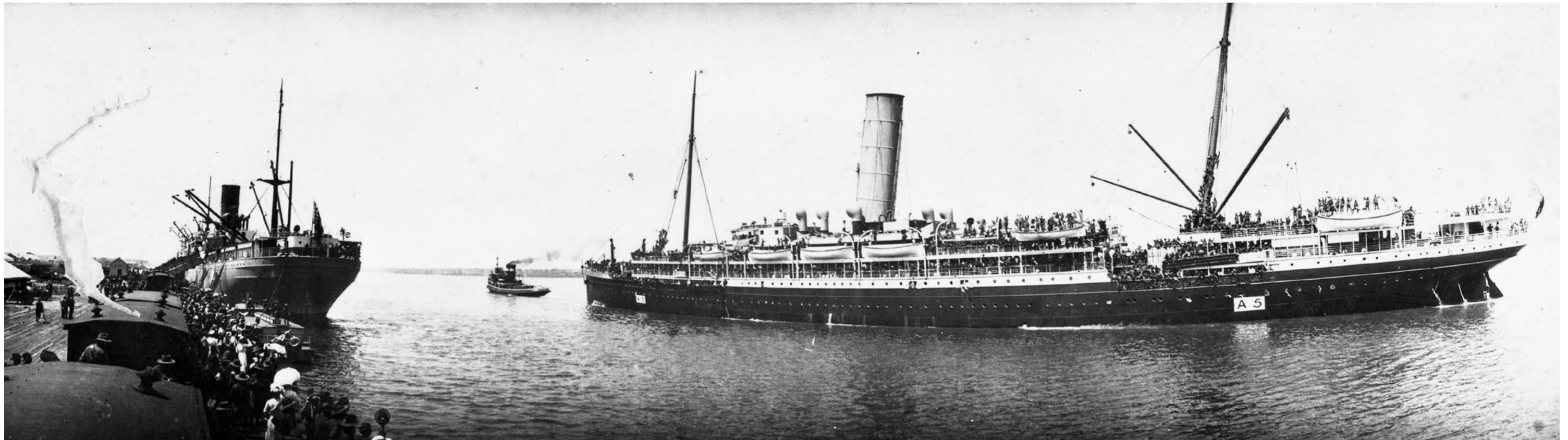
GENERAL PLAN SHEWING EARTHWORKS &c.



1886 Queensland Defence Forces plan of Lytton Township. Engraved by W. Knight. Fort Lytton Collection.



Above: 1880 Plan of Lytton Battery Reserve stamped by F.D.G. Stanley, architect. Fort Lytton Collection
Opposite: Nineteen members of Queensland Defence Force Artillery standing on top of Armstrong Disappearing Gun Shield at Fort Lytton Gun Pit One circa 1890's. Fort Lytton (Fred Parker) Collection
Submarine Miners pose with a 100 pounder mine circa 1900. Fort Lytton Collection



Troop ship HMAT Omrah departing Pinkenba 24th September 1914, carrying the 9th Battalion AIF (the first soldiers to depart Brisbane for WWI). Fort Lytton is in the distance. Fort Lytton Collection

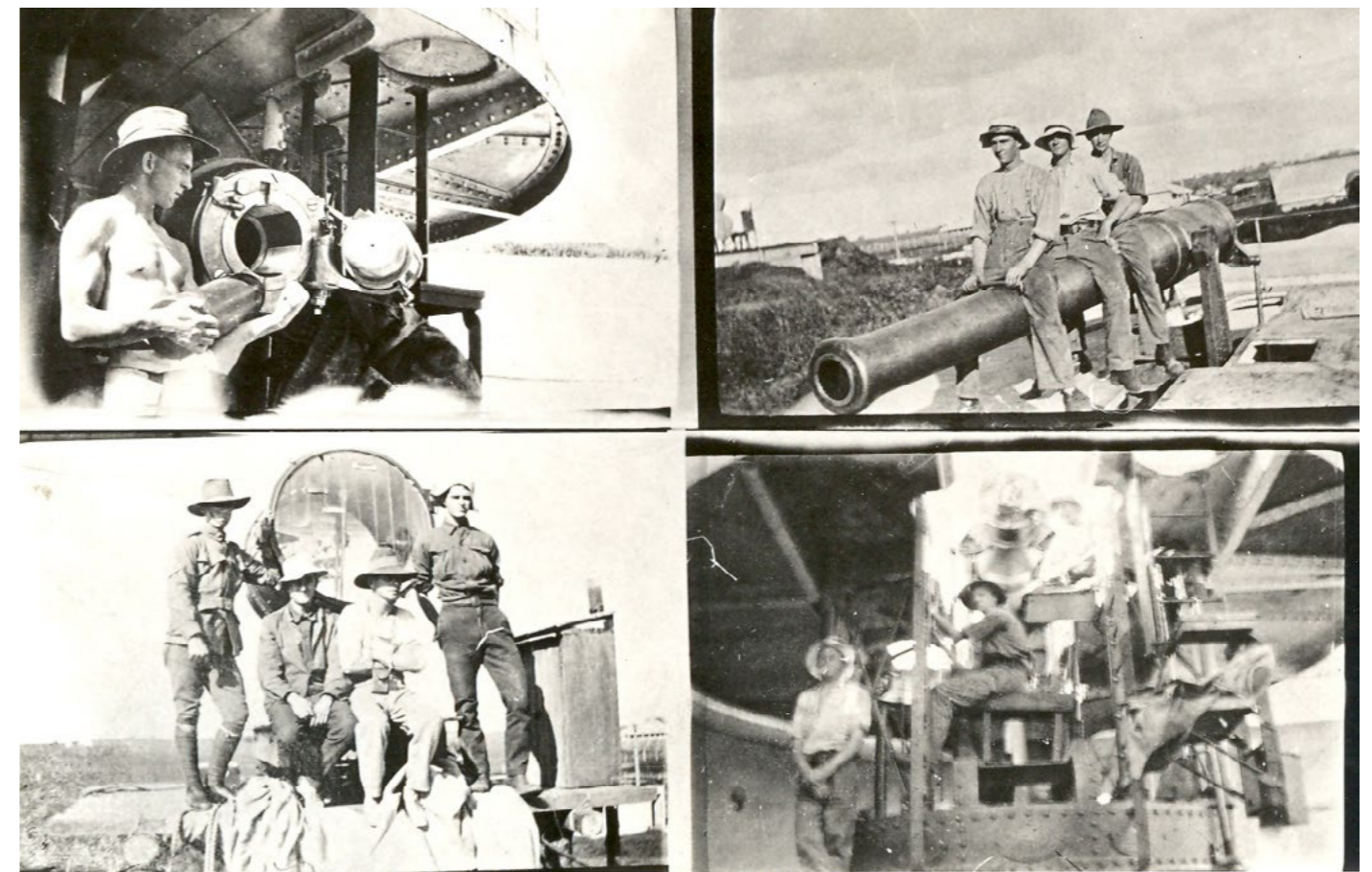
Fort Lytton between 1885 and WWII

The fears of the colonial government never realised and, due to the lack of military menaces, Fort Lytton lost its defensive role, the submarine mining works being dismantled in the 1910s. The bastion became then an army training and embarkation point, hosting the annual Easter encampments that gathered volunteers, cadets and servicemen for a general army training.

Whilst the concerns about Russia were never realised, Queensland troops were despatched to the Boer War in 1899. After Australia underwent Federation in 1901 making it an independent nation from Britain, the Queensland Defense Forces were absorbed into the new Australian Army.

Lord Kitchener inspected Fort Lytton in 1910 and from his Australian visit the government instigated compulsory military training which included boys as young as 12 years old. At the outbreak of the Great War in 1914, troops trained and served as light horseman, signallers, engineers and artillery men at Fort Lytton.

Next page: Left top: Aerial view of the military camp at Lytton circa 1890's, showing Queensland militia's undergoing training exercises. John Oxley Library, SLQ neg: 6149. Left bottom: The military camp at Lytton circa 1899. SLQ neg: 162336. Right: Military camp at Lytton circa 1899. Soldiers and their horses are in training camp at Lytton, on the banks of the Brisbane River. SLQ neg: 162337 (fragment)



Four scenes at Fort Lytton in 1914. PC-REG 1914-3



Opposite: 1937 photograph of the searchlight at Fort Lytton. Fort Lytton (Roy Gibson) collection
Next page (clock-wise): Image 1: Gun crew standing by their 4.7 inch QF Mark IV* naval gun at Fort Lytton. 1943-11-12. The background shows the Command Post at the twin 6-pounder emplacement, with wooden ladders and stairs. AWM 060050; Fort Lytton Collection. Image 2: Gun crew operating a 4.7 naval gun at Fort Lytton. 1943-11-12. Gun Pit Four was changed to accommodate a 4.7 naval gun, with the addition of protective walls and a roof. AWM 060049; Fort Lytton Collection. Image 3: New twin 6-pounder gun equipment being installed at Fort Lytton. 1943-11-12. AWM 060047; Fort Lytton Collection. Image 4: Officers inspecting the newly installed twin 6-pounder equipment at Fort Lytton. 1943-11-12. AWM 060048; Fort Lytton Collection.

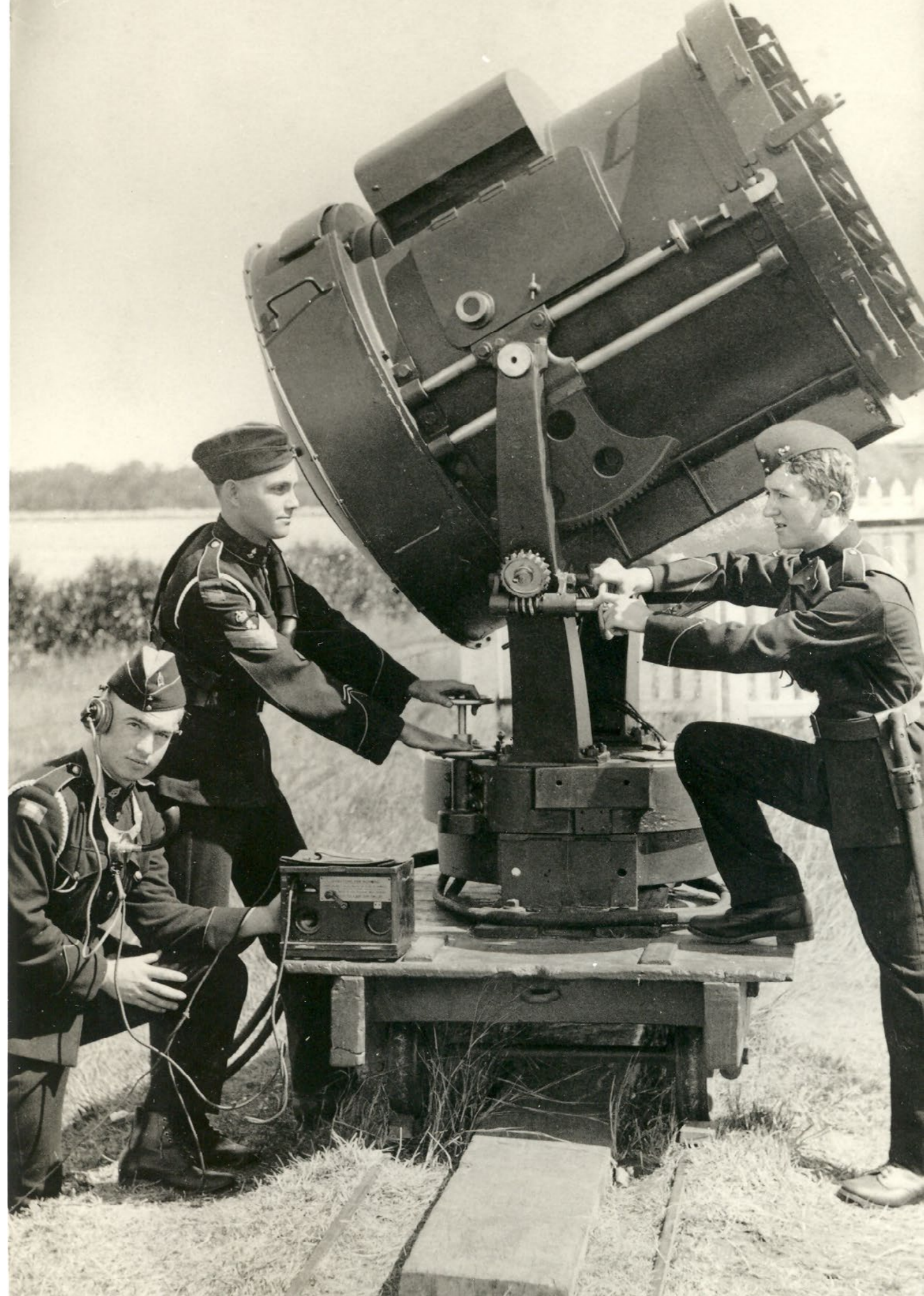
Fort Lytton during World War II

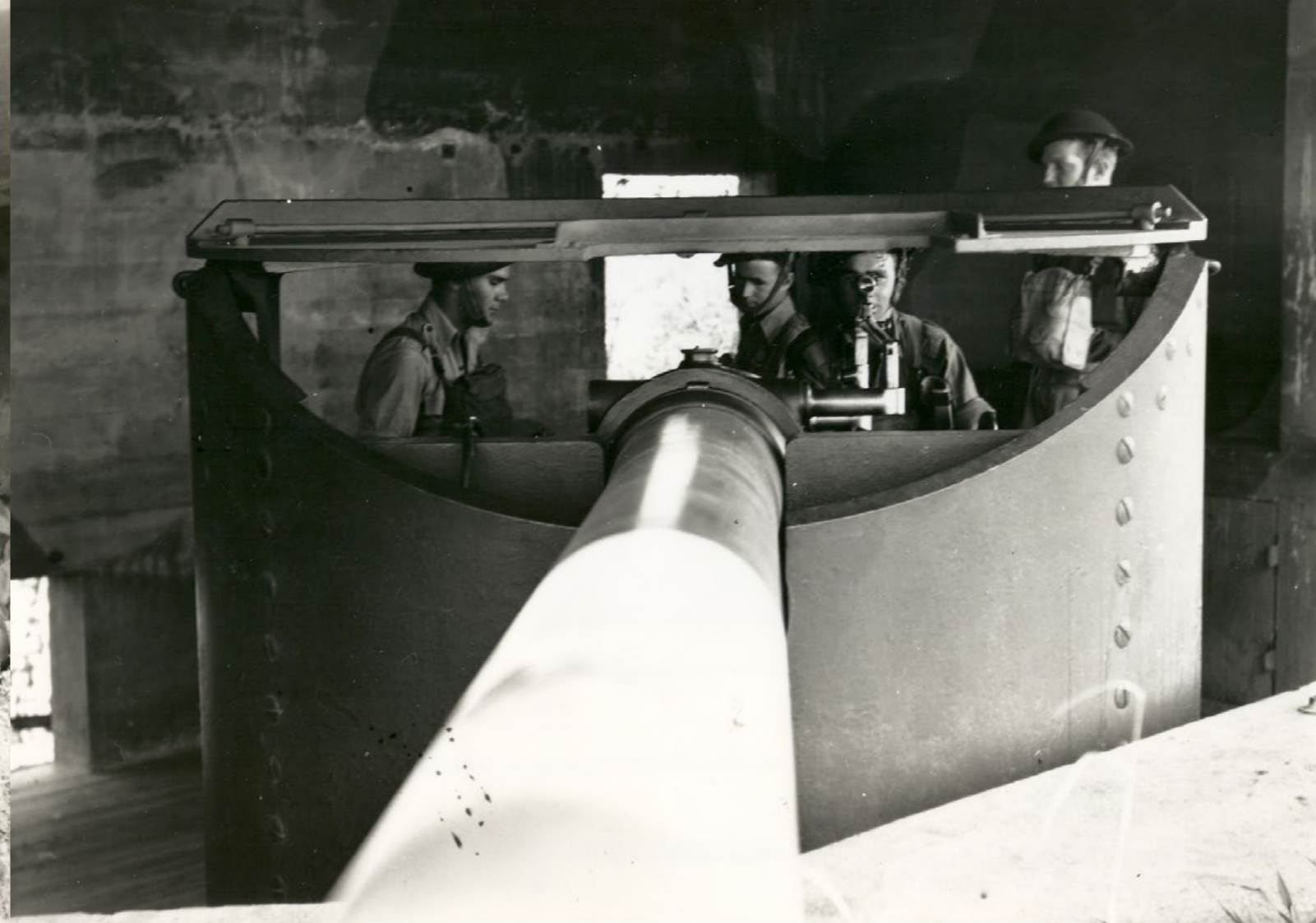
The role of Fort Lytton changed when, in 1935, the Australian government decided to upgrade Brisbane's coastal defences, creating a network of forts in the sandy islands of Moreton Bay, which formed the Outer Examination Battery, with Fort Lytton becoming an Inner Examination Battery on the Brisbane River.

Fort Lytton's role changed when, after the Allied military defeats in the Philippines and Pearl Harbour, the US Navy decided to establish a major naval and submarine base in the Port of Brisbane in 1942. The Fort went through a series of reforms to ensure the protection of the ships and the submarines stored in the safe waters of the Brisbane River. Such reforms include the rearmament of the fort and the construction of a new gun pit and an elevated fire control post. As a response to the threat of air raids, the fort was covered in camouflage paint and netting and heavy anti-aircraft batteries and searchlights were installed nearby.

Because of the threat of submarine attacks, the physical barriers in the Brisbane River were re-installed, and they included an indicator loop (submarine detection systems based on magnetic sensing), a boom gate and an anti-submarine net. When a ship approached the control point, the net was lowered to the bed of the river while Fort Lytton's guns were pointed towards the ship. It took approximately 20 minutes for a ship to pass the control point in order to enter the Brisbane River.

After the end of the war in 1945, the military equipment of the Fort was dismantled and the stronghold maintained a communications role until the 1960s.







Exterior perspective of Fort Lytton created by Zebedee scan data. CSIRO, 2016

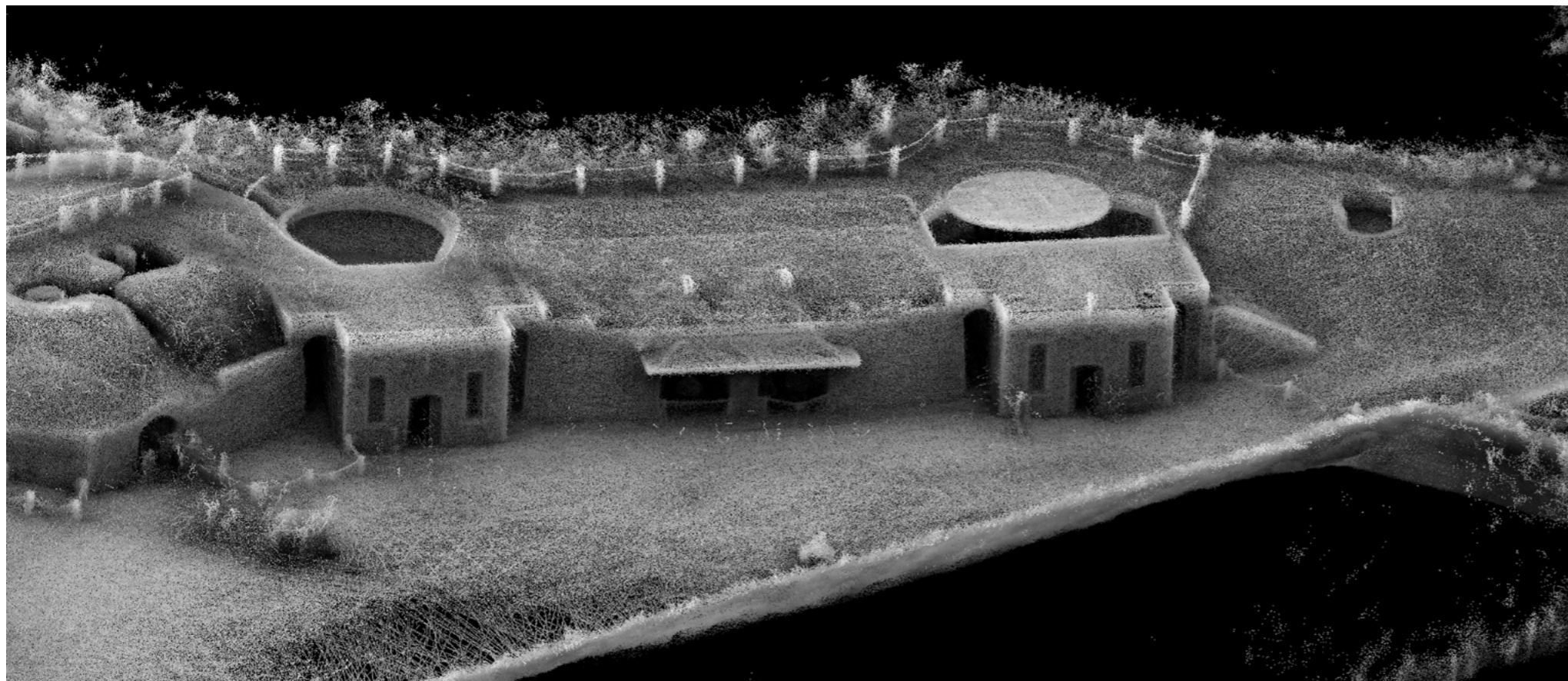
Preserving Fort Lytton

Fort Lytton is currently managed by the Queensland Parks and Wildlife Service and it was declared a National Park in 1989 for its outstanding cultural heritage values. National Parks staff and community based volunteers from the Fort Lytton Historical Association have worked to preserve and interpret the cultural record of the site. In order to help the interpretation of the site, a number of reconstructed artillery pieces have been installed.

In 2013, digital documentation of the site was undertaken using the Zebedee handheld 3D laser developed by CSIRO. The mapping system was trialed at Fort Lytton through a collaboration of CSIRO, the University of Queensland's School of Architecture and the Queensland National Parks and Wildlife Service. Digital models and historical research for this CyArk entry have been completed by students from the School of Architecture over several years.



Exterior perspective of Fort Lytton created by Zebedee scan data. CSIRO, 2016



Perspective of the interior of anterooms, magazines, casements and passageway created by Zebedee scan data. CSIRO, 2016



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