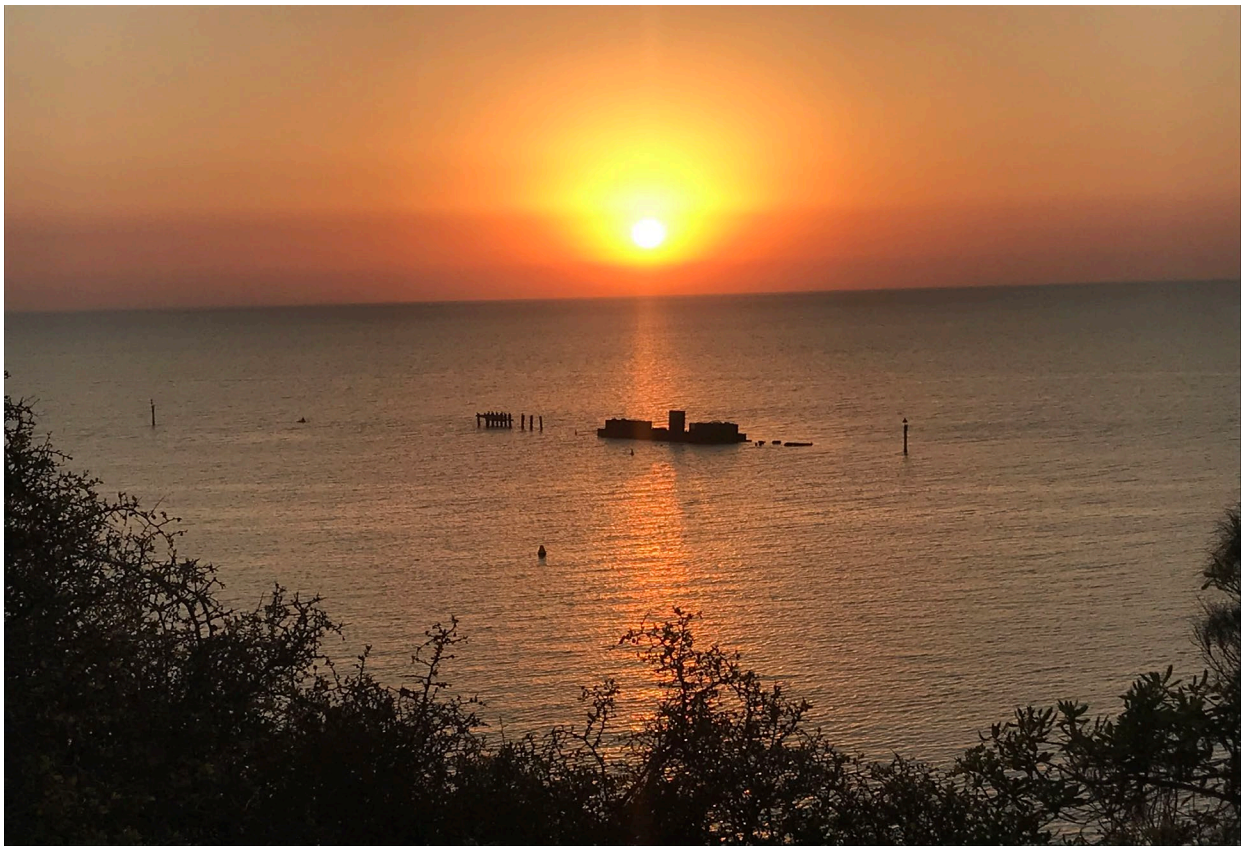
THEMATIC PAPER TWO

A THEMATIC STUDY OF DEFENCE FORTIFICATIONS AND INSTALLATIONS OF

PORT JACKSON AND PORT PHILLIP



The sun sets on HMVS *Cerberus*, Black Rock, Port Phillip. Photo: Don Garden

Prepared by the Federation of Australian Historical Societies
for the Australian Heritage Council
under a
Protection of Natural Heritage Sites Grant
November 2019

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The significance of Australia's coastal fortifications lies only partly in the fortifications that were built and the extant remnant built heritage sites. At least as important is what the sites represent about Australian cultural history – the strong sense of isolation and external threat that has been an embedded part of the Australian psyche, how Australians have viewed themselves and how they have seen Australia in relation to the wider world.

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OVERVIEW/INTRODUCTION

As outlined in Thematic Paper One, prior to the 1860s most defence plans and resulting fortifications in Port Jackson and Port Phillip were based on the need to stop close attacks on Sydney and Melbourne once enemy vessels had entered the harbours. The technical limitation of the armaments of the period, together with the cost and logistics of establishing adequate defences at the entrances to the bays, determined this policy. Nevertheless, some preliminary defence works were commenced near the mouths of both harbours in the 1860s.

From the 1870s, stimulated by the withdrawal of British garrisons, periodic international scares, the development of breech-loading rifle-bore guns, armour-plated vessels and other more sophisticated armaments, and enabled by prosperity and increasing colonial development, defence policies changed. They moved more towards 'keep them out' at the entrances to the harbours. As a result, most of the older ring of closer defences were abandoned, although Fort Denison and Williamstown were maintained for the time being.

Over the last two decades of the century a new range of larger and more sophisticated fortifications was built to defend the harbour entrances, and they continued to evolve with the adoption of new and more sophisticated technologies. A small number of these fortifications in both Port Jackson and Port Phillip, when considered as a cluster or group, arguably have sufficient cultural heritage significance and extant integrity to be considered as two separate groups for National Heritage Listing. Included as part of the NHL clusters are three sites that already have NHL status, HMVS *Cerberus* and Point Nepean in Port Phillip, and North Head in Port Jackson. It is also proposed that Bare Island in Botany Bay should be included as part of the Sydney cluster.

Many of the sites are now substantially dismantled or degraded, but much of the significance of the fortifications lies in what the sites represent for Australian cultural heritage rather than the extant ruins. Even so, the calibre of fortification and other defence measures was less than what one might expect given the sustained and loudly expressed fears and sense of vulnerability among the colonists. Throughout the nineteenth century, the threat of immediate war might stir some action, but it would then lapse as apathy, the cost of any works and equipment, and concern about being superseded by changing technology took over. As Dean Boyce has commented about Sydney:

> There was not a year in which the state of Sydney's defence did not arise in the Sydney newspapers… The assessment of potential threat arose, changed, or passed according to overseas events beyond the colony's control. Many thousands of pounds were spent on Sydney's defence in response to crises. Defence works or armaments were often left unfinished, or obsolete when finished, inadequately manned; and even when new weaponry arrived, guns were left lying uncommissioned. Batteries built on obsolescent plans could not easily be adapted for constantly developing weapon technology. When each crisis died down, inaction allowed the defences to slide into gentle decay and irrelevance.[1]

This Thematic Paper Two will assume prior reading of the contextual chapters to 1901 in Thematic Paper One, and will continue with contextual chapters for the period 1901-1946. It will outline the major modifications to many of the sites in the lead-up to and during WW1, during the 1920s and 1930s and then during WWII. These are followed by individual site analyses of each of the sites recommended to be in the groups for NHL nomination.

Since WWII nearly all of these sites have been decommissioned as active military defences, although some still have minor military support functions, and most have fallen into very poor repair through decommissioning action, neglect and vandalism. A small number are still in Commonwealth hands, but many are now state-owned and form parts of recreational and national parks.

While the physical condition of many is poor, their historical and cultural significance is of high value, and they have outstanding heritage significance for the nation. A cluster of the sites in Port Jackson and Port Phillip are recommended as group listings:

Port Jackson (and Bare Island) Defence Group

Port Phillip Defence Group

It is worth noting the following comment by Allom Lovell & Associates in their 1982 CMP for the Queenscliff Fort, about the cluster of fortifications at Port Phillip Heads. This may equally apply to Port Jackson.

The Significance of Port Phillip Defences

> Although not specifically included in the study brief, on examining other fortifications around Australia, the consultants consider that some comment is required on the significance of the nineteenth century defences to Port Phillip Bay as a whole. The forts that make up the outer defence system of Port Phillip Bay are basically all substantially intact. Although alterations have occurred to their ordnance and buildings the original intent of the forts is quite clear and readily evident. They not only represent one of the most substantial constructional undertakings of the Victorian Colonial Government in the nineteenth century, but also illustrate the major advances that were occurring in military design and engineering of the time. No other example of such a substantial and cohesive nineteenth defence development as this exists in Australia. As such they are of major cultural significance, both individually and as a group and should be recognized as such. The consultants recommend in particular that a submission be made to the Australian Heritage Commission for immediate

> inclusion of all the fortifications that make up the defences to the entry to Port Phillip Bay on the register of the National Estate, and that those areas under State control should be recommended to the Victorian Government Buildings Advisory Council for designation. In addition consideration should be given to nominating these fortifications for inclusion on the World Heritage Register.[2]

Unfortunately, after nearly forty years of further neglect and vandalism most of the fortifications are no longer 'substantially intact', yet the comments about their 'major cultural significance' are still apposite.

NATIONAL HERITAGE LISTING RECOMMENDATIONS

Some of the sites studied in Thematic Paper Two already have National Heritage List status – North Head, Point Nepean and HMVS *Cerberus*. Others might be worthy of individual listing, and yet others are less certain.

However, when the sites are viewed not individually but as parts of two integrated and coordinated schemes of defence, this enhanced perception of their social/cultural and military/technological significance arguably qualifies them for National Heritage Listing. They were designed to work as co-ordinated groups to defend their separate cities.

This Thematic Paper Two therefore recommends that as they possess outstanding heritage significance for the nation, the Port Jackson Defence Group and the Port Phillip Defence Group be assessed as part of the PPAL for the National Heritage List.

PORT JACKSON (AND BARE ISLAND) DEFENCE GROUP

Fort Denison/Pinchgut – representative of the early stage of fortifications close to the town of Sydney.

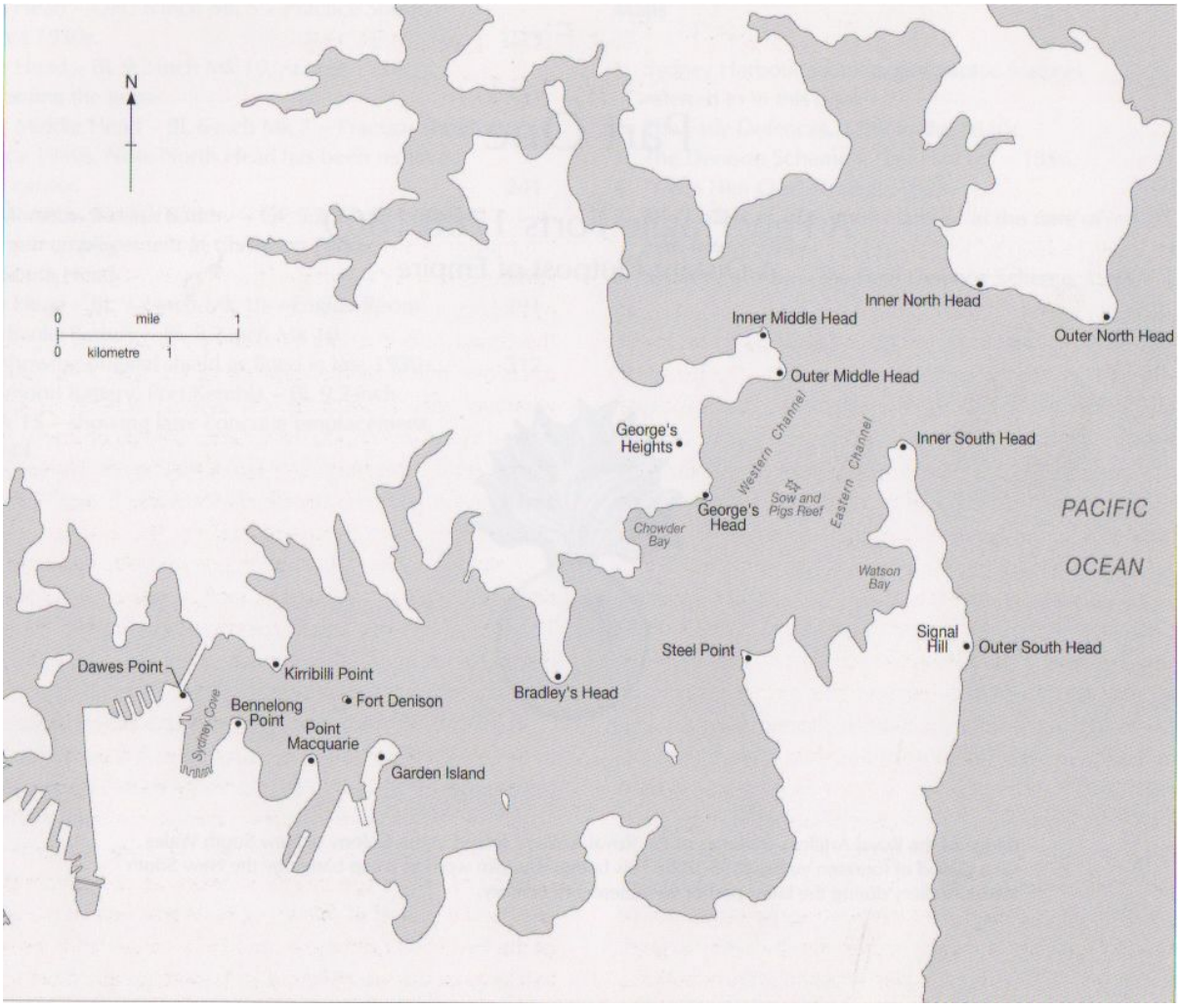
Middle Head and Georges Head – part of the evolving later nineteenth century forward defences of Port Jackson

South Head – part of the evolving later nineteenth century forward defences of Port Jackson

Bradleys Head – part of the evolving later nineteenth century forward defences of Port Jackson

Bare Island – part of the evolving later nineteenth century forward defences, but situated in Botany Bay as a defence against a 'back door' landing by an invading force.

North Head – existing NHL but largely for its quarantine role. To be considered for including in the Port Jackson Defence Group. Representative of WWII defence preparations and fortifications.



Port Jackson showing the main defence sites other than Bare Island in Botany Bay, further south. Source: Peter Oppenheim, *The Fragile Forts: The fixed defences of Sydney Harbour 1788-1963*, Canberra, 2004

PORT PHILLIP DEFENCE GROUP

Fort Gellibrand, Williamstown - representative of the early stage of fortifications close to the town of Melbourne as well as 1880s and 1890s developments.

Queenscliff Forts – developed from the 1860s as a central element in the evolving forward defences of Port Phillip. The best preserved of the coastal fortifications.

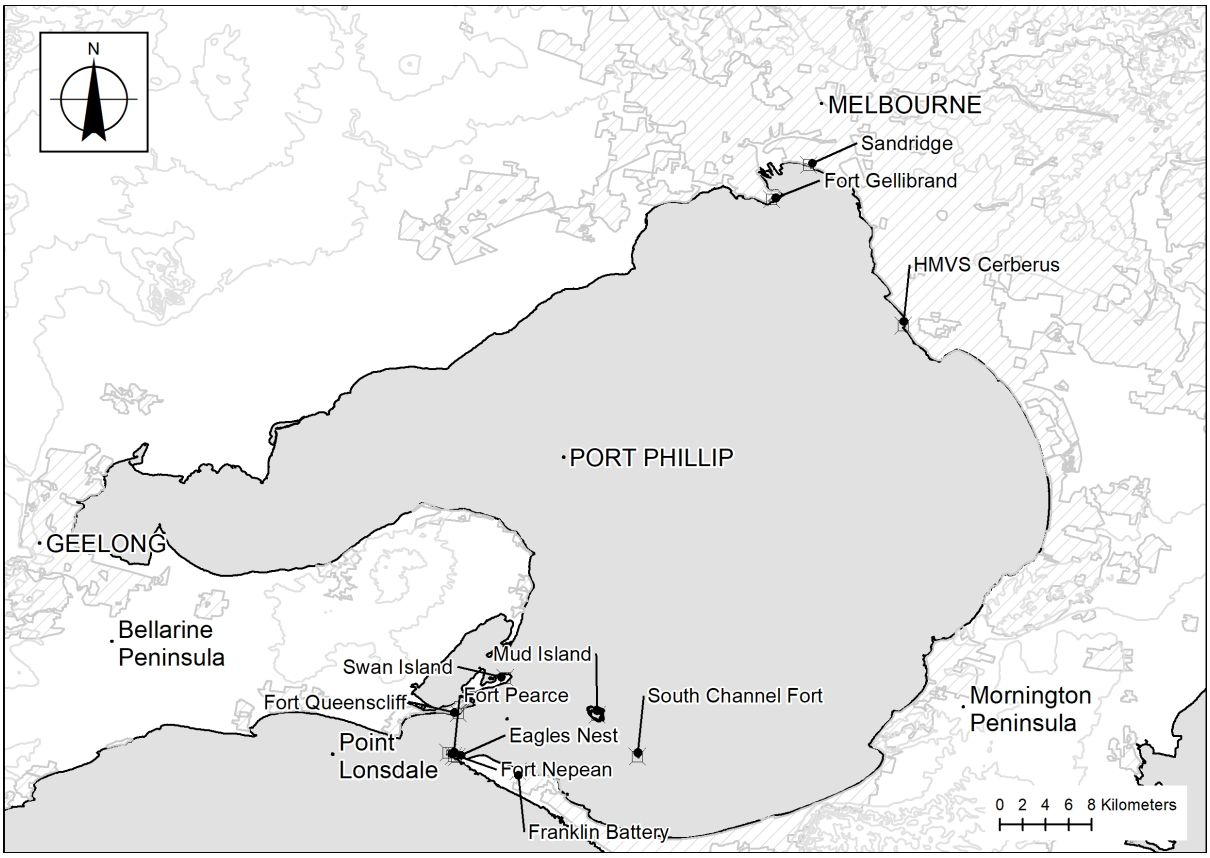
HMVS *Cerberus* – existing NHL. Recommended for inclusion in the wider defence group because of its central role as a 'floating fort' complementing the land fortifications.

Point Nepean – existing NHL but substantially for its quarantine role. Recommended for inclusion in the group with an enhanced recognition of its defence role.

South Channel Fort – a fortified man-made island first constructed in about 1880 as part of the Jervois-Scratchley plan to prevent unwanted entry to Port Phillip. Later expanded.

Swan Island Fort and defence base - first constructed in about 1880 as part of the Jervois-Scratchley plan to prevent unwanted entry to Port Phillip. Later expanded.

Point Lonsdale/Shortland Bluff – played a significant role from the 1840s as a signal station and lighthouse, and although land was reserved for a fortification in the 1860s, and there were many proposals in the nineteenth century to establish defences, this did not happen until the twentieth century when a substantial network of defence works was constructed, especially during WWI and WWII. It is recommended to be included in the group as representative of twentieth century fortifications. However, it has a second value for its crucial role in Port Phillips' maritime and mercantile history and in defence and civilian communications.



Port Phillip showing the main nineteenth century military and fortification sites. The protective cluster at the Heads is very apparent. Drawn by Iain Stuart.

SUMMARY STATEMENT OF SIGNIFICANCE

The Port Jackson (and Bare Island) Defence Group and the Port Phillip Defence Group have outstanding heritage value to the nation because they represent major themes in Australian cultural and defence history. Unique in occupying a whole continent, as well as many islands, Australia has an extraordinarily long coastline of perhaps about 60,000 kilometres (calculations vary according to the criteria of measurement). Before air flight changed human travel and the nature of modern military defences, such a coastline offered almost unlimited opportunities for seaborne landing and invasion.

Australia's Indigenous people occupied the land for more than 60,000 years and those who inhabited northern coastal regions had some continuing contact with peoples who sailed to the Australian coast from the islands to the north. Otherwise, the Aborigines had remained isolated for millennia from external contacts until European explorers began to touch on the coast in the seventeenth century. From the late eighteenth century the Aborigines found that invasion and settlement were all too easy for a powerful country with the capacity to cross the seas, to establish themselves in desirable sites and by violence and dispossession to occupy the land.

Following the establishment of a convict settlement at Sydney Cove in January 1788, the British gradually took over the whole continent, ruthlessly displaced the Aborigines and occupied the continent and the island of Tasmania, establishing six colonies, each with its main capital town/city as well as other coastal communities. During the nineteenth century the colonies developed successful and even prosperous societies. Ironically, this success contributed to a sense of the colonists' own vulnerability, a fear that they in turn might be invaded and displaced as they had done to the Aborigines.

This fear of the external 'other' is one of the principal cultural themes that developed in the colonies in the nineteenth century. It created an almost permanent sense of isolation, tension and fear about perceived vulnerability to external attack by one of Britain's enemies. One result was the ring of fixed fortifications that was constructed around the coastline at what were considered vulnerable points, principally in the last three decades of the nineteenth century.

Port Jackson and Port Phillip had relatively minor fortifications prior to the 1870s, but in the last thirty years of the nineteenth century there were particularly significant clusters of co-ordinated sites established at their Heads' entrances, making them among the best-defended commercial harbours in the world, and certainly in the southern hemisphere. The defence sites demonstrated, as far as the colonial governments were able to acquire them, the latest in defence technology, design and equipment, including guns and gun carriages, fortification designs, mines, torpedoes, searchlights, etc.

In the twentieth century, partly in WWI but particularly during the early years of WWII, these coastal sites were further developed and expanded against the threats from Japanese attack.

The two groups of sites represent a highly significant theme in Australian history. They demonstrate how fears of vulnerability and invasion stimulated sustained debate about security and resulted in very high expenditure that established sophisticated and coordinated fixed systems to defend Sydney and Melbourne, particularly at the entrances to Port Jackson and Port Phillip.

It is proposed that these groups may have value under the following criteria.

(a) The place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history.

The sites represent a material response to a central theme in Australian cultural history – the strong sense of external threat, isolation and fear of the foreign that has been an embedded part of the Australian psyche. It has shaped but is also a manifestation of how Australians have viewed themselves and how they have seen Australia in relation to the wider world.

(b) The place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.

As in (a), but noting that some of the sites are relatively unprotected and may be termed 'endangered' through demolition, neglect and natural decay.

(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.

These sites represent a major theme in Australian history (isolation, vulnerability and fear of the 'other') and therefore have the potential if they become protected heritage tourism sites to contribute to an understanding of Australian Cultural history.

Some of the sites (or part) have been restored and are in relatively good order, but many are in poor condition or substantially degraded, but particularly the latter. All, but particularly the latter, have considerable potential for archaeological research, especially into the evolution of defence engineering and design.

(f) The place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period

These sites demonstrate the nineteenth century technical evolution of armaments, defence engineering and fortification design that were applied to the protection of Australia's two main cities. By the end of the century, both cities claimed that their level of defence fortifications made them 'the Gibraltar of the south'.

Some of the sites also demonstrate the evolution of military technology in the first four decades of the twentieth century, especially during two world wars.

(h) The place has outstanding heritage value to the nation 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.

Most of the sites in the groups are associated with three British military engineers who had a major influence on the selection of fortification sites, the design of fortifications and the selection of armaments and other defence systems in the British Empire during the nineteenth century.

They are Major General Sir Peter Henry Scratchley KCMG, Lieutenant General Sir William Francis Drummond Jervois GCMG CB FRS and Lieutenant General Sir James Bevan Edwards KCB, KCMG.

PART ONE – TWENTIETH CENTURY CONTEXT

CHAPTER ONE: TWENTIETH CENTURY REVOLUTION IN MILITARY TECHNOLOGY

As discussed in Thematic Paper One, fixed coastal fortifications were a principal focus of colonial defences in the nineteenth century, and later in the century were complemented by a small number of armed vessels of diverse sizes and armament capacity. From the 1880s the main sites were equipped with fixed mines, searchlights, propelled torpedoes, torpedo boats and other mobile armed platforms. Changing military technology in the twentieth century quite rapidly superseded much of this investment, and fixed coastal fortifications consequently declined in significance and after WWII were essentially irrelevant.

There were many elements in this technological transition to 1946 including wireless and radar, but three stand out.

The first was acceptance of the rationale behind a major component of the report by Major-General C.B. Edwards in 1889 that recognised the changing nature of seaborne warfare that was reducing the dependence on fortifications. (See Thematic Paper One for details). He pointed out the limitations of focussing fixed defences on a small number of sites on the vast Australian coastline. Fortifications were less relevant than they had been in the earlier decades of gunboat diplomacy when the main threat and fear was that warships or raiders would stand off shore and pound a port or city, or threaten to do so, unless a concession was given or ransom paid. By the twentieth century, fast warships with long-range guns were harder targets to hit from fixed defences, and such fortifications were powerless if an invading force landed further along the coast where there were no defences. In light of his reading of the changing strategic situation, Edwards subtly proposed a reduction in the number of guns in many existing fortifications, a small number of new defensive points, an increase in mobile land artillery, and an increase in the number of torpedo boats and other fast, armed vessels.

This is substantially what occurred in the early decades of the twentieth century.

Second, naval and mercantile vessels and ports faced a new type of dangerous armed vessel – the submarine. Primitive at the start of the century, but rapidly increasing in sophistication and

deadliness, submarines changed the nature of war at sea. As well as attacking naval vessels they had a devastating effect on merchant shipping in the two world wars, and on occasion sank passenger and hospital ships. The sinking by a German submarine of the *Lusitania* in 1915 not only marked a new phase in treating civilians as legitimate targets, it produced an enormous emotional backlash that contributed to bringing the United States into WWI. Submarine threats to ports and cities resulted in the introduction of new anti-submarine defences to sense the presence and restrict the movement of submarines in Port Phillip and Port Jackson, and were instrumental in limiting the harm done by three midget submarines that entered Port Jackson in June 1942. It is also worth noting that during WWII some Japanese submarines were equipped with small floatplanes for scouting, one of which undertook reconaissances of Sydney, Melbourne and Hobart, among many places.

That points to the third and most significant technology - the development of aircraft. In 1914 these were primitive and generally not seen to have great military significance except for scouting. However, during WWI small planes were armed and then became involved in aerial dogfights. Later in the war they were used to drop bombs on enemy lines. Most significant for the future, German Zeppelins and then bombers were deployed to drop bombs on London and other civilian targets. This was a new type of war for which at first there were few defences.

The technology of aircraft fighters and bombers developed rapidly in the 1920s and 1930s, as did the construction of aircraft carriers which in WWII were at the centre of a number of major naval battles – for Australia the most notable was the Battle of the Coral Sea, to the north-east of the continent. Aircraft carriers posed a new threat as they could sit over the horizon, many kilometres from an intended land target, and launch their planes to make surprise attacks. Japan was in the forefront of carrier development and demonstrated the power of its new technology in WWII in such events as the attack on Pearl Harbour in December 1941 and the bombing of Darwin in February 1942. By then, fighter aircraft and strategically placed anti-aircraft guns were the chief forms of defence, and in this new form of warfare fixed coastal defences had little role to play.

How war was conceived and fought in the 1940s was thus a world away from how it was fought at the start of the twentieth century. Dean Boyce has again summed up the Sydney experience, identifying developments with Australia-wide reflections:

Sydney's big guns and forts inevitably became obsolete, overtaken by proven new technologies of bombers, missiles and nuclear weapons. From its beginning, Sydney …had considered fortresses and citadels a basic defensive bulwark; rapidly changing technology had made it almost impossible to keep up, and an era was ending. What was left of Sydney's last nineteenth century defence works was sold as scrap or now gently moulders in parklands that became available because there was no military reason to maintain Fortress Sydney.[3]

CHAPTER TWO 1901 - 20

The period between federation in 1901 and the outbreak of WWI in 1914 was one of mounting international tension and insecurity. Alliances and balances were changing. Britain became involved in an arms and industrial race with Germany, and to a lesser extent with the United States, as it sought to maintain its mastery of the seas and its industrial and commercial advantage. To balance the Triple Alliance between Germany, Austria-Hungary and Italy, Britain entered an Entente Cordiale with France in 1904 and in 1907 long-time enemy Russia was incorporated into what became the Triple Entente.

Given their isolationist and racial fears, Australians had been disturbed in the late nineteenth century by the rising military power of Japan and in the new century by the possibility of a Japanese challenge to the 1901 White Australia Policy. In this context a developing friendship between Britain and Japan that resulted in 1902 in an Anglo-Japanese Alliance was very disturbing. Britain was perceived to be too close to Japan, and this risked Australian security. When Japan defeated Russian forces in the Russo-Japanese War of 1904—05 it caused widespread ripples - it was the first modern victory by an Asian nation over a European nation. In Australia this particularly resonated because of the relative proximity to Asia. Thereafter, Australians were constantly on edge about the Japanese 'menace'.[4] Meanwhile relations between the United States and Japan were deteriorating, and in this atmosphere the propaganda tour of the American Great White Fleet to the Pacific in 1908 was welcomed in Australia. The tour was both an assertion of American power aimed at applying a brake on Japan, and a reassuring affirmation of relations with Pacific countries including Australia. The Fleet visited Sydney, Melbourne and Albany where they were given great public welcomes. Many Australians felt that Britain was not doing enough to protect Australia and were pleased to be on such good terms with the United States.[5]

During this period and in this atmosphere independent Australian military forces were developed. In 1901 a Commonwealth Ministry of Defence took control of all the former colonial forces and they were united under a single authority. A unified professional army was formed and over the coming years it was gradually improved, developed and trained. As in the previous century, considerable emphasis was also given to the training of a reserve militia and there were various militia schemes in operation.[6]

The new Commonwealth authorities also took control of the scattered colonial fortifications. Between them at federation they had mounted 162 guns made up of twenty different models and types, besides a number of Maxim and Nordenfeldt machine guns. A significant proportion of the guns were obsolete muzzle loaders, especially in South Australia and Tasmania.[7] This was the largest number of mounted guns in the twentieth century because, in line with Major-General Edwards' recommendations, Commonwealth policy was towards fewer, more modern and scattered guns supplemented by greater use of small mobile torpedo vessels. The number of guns in Commonwealth fortifications was reduced by 1909 to 65 pieces representing nine different types, with all obsolete muzzle loaders having been removed.[8] A number of the less significant nineteenth century batteries were demolished. In 1911 there were only twenty guns guarding Sydney.[9]

Although the new nation contributed financially to the Royal Navy's presence in Australian waters, it was widely held that Australians were not getting a good return on their money. There were few vessels in the region and given the perceived threat from Japan it was not believed that the Royal Navy offered an adequate security umbrella. There was a growing sense of frustration and a recognition of the need for Australia to have its own navy. It took many years for this to be done, at least partly because the British government did not favour such independence. However, late in 1907 Prime Minister Alfred Deakin asserted Australian independence by announcing a new defence policy that included the establishment of an Australian navy and universal military training for young men.[10] Various factors including British resistance to an Australian navy delayed implementation but the necessary legislation was passed in 1910 and the Royal Australian Navy formally came into existence in 1911. Over the next few years it was equipped with a number of warships and other vessels, including the first two submarines which arrived in May 1914. Port Jackson had been chosen by the Royal Navy in the previous century as its main Australian base, and the Royal Australian Navy followed suit, which gave an even greater need to provide the capacity to defend Port Jackson from enemy attack.

In 1909, at the invitation of Australian government, Lord Kitchener travelled from Britain to report on Australian defences. His report early in 1910 found that 'the present forces are inadequate in numbers, training, organisation, and munitions of war'.[11] Besides, Australia was vulnerable because of its isolation and small population that left much of the country with few people. He

commented on the length of coast and problems of defending even with the power of the Royal Navy. He recommended the introduction of compulsory military training.[12]

In what is a remarkable illustration of the ongoing sense of vulnerability, the government responded quickly to this last recommendation and in 1911 Australia became the only English-speaking country to adopt peace-time compulsory military service. Boys aged twelve to fourteen were enrolled in junior cadets, which in most cases operated in schools where teachers were paid to give the training. From fourteen to eighteen they became members of the senior cadets, wearing uniforms at evening training sessions. Then from eighteen to twenty-six they became members of the citizens' military forces which required sixteen days' paid training per year until they reached twenty, after which they had to attend an annual muster. The scheme was highly controversial and profoundly opposed in some quarters because of objections to militarism and compulsion. In practice, it had mixed success. There was a great deal of evasion through failure to enrol or poor attendance, while enforcement and penalties (fines and even prison) for the recalcitrants became very controversial. It has been asserted that this preliminary training was one reason why Australian troops proved so successful during WWI, but equally that the unpopularity of compulsory service was one reason why Australians twice rejected overseas conscription during WWI.[13]

While fear of Japanese military power and immigration continued to be major sources of Australian fears, mounting tension between European powers was causing instability and the threat of war. An arms race between members of the two alliance systems, especially Britain and Germany, was making the world increasingly unsafe. The Australian government responded by increasing its armed capacity in the years from 1910 as the army and navy were expanded and professionalised.

There was also some modification and development of coastal fortifications, including new fortifications constructed at Fremantle, and substantial re-equipment of several sites. Now somewhat obsolete, the old submarine minefields were dismantled in Newcastle, Lytton (Brisbane), Albany and the West Channel in Port Phillip.

Between 1901 and 1914 the number of permanent Australian military personnel rose from 1,696 to 6,616 and of militia and volunteers from 29,125 to 44,566. Over the same period, defence

expenditure rose from £959,079 to £4,752,300. The greatest proportional increase was in the navy, from £178,819 to £1,987,101.[14] Such was the cost of warships, which were increasing taking over the role of forward defence that in the nineteenth century had essentially been given to fortifications at harbour entrances and torpedo boats.

Despite all this preparation and expenditure, Australian fortifications were essentially not called upon during WWI, except on two highly symbolic occasions in late 1914. It was with some pride that an Australian coastal fortification fired the first shot by British Empire forces in WWI, on 5 August 1914, within minutes of Britain declaring war on Germany and its allies. The German merchant steamer *Pfalz*, aware that war was imminent, left Port Melbourne and was steaming towards the Heads to escape to the open sea. As it approached the Heads the Royal Australian Garrison Artillery at Point Nepean received a message that war had been declared and was ordered to stop or sink the *Pfalz*. A signal was hoisted commanding it to stop, but when this was ignored a shot was fired across its bow. The vessel then turned back to Portsea where the crew was arrested.[15]

The second significant event was at the far south-western corner of the Continent and involved a period of tense alert at the Princess Royal Fort at Albany. Since federation the fort had been allowed to run down so by 1914 it was in poor repair with obsolete guns and manned only by a skeleton professional force supported by the Albany Volunteer Artillery. When news arrived of the declaration of war on 4 August the volunteers were mobilised and 'held the fort' until reinforced a couple of days later by artillery men and infantry from Perth. Of great national significance, two months later King George Sound became the gathering point for the convoy of vessels taking the first contingent of Australian and New Zealand soldiers to the northern hemisphere. In one sense, this is where the Anzacs were born, when between 24 and 31 October twenty-six Australian merchantmen and ten from New Zealand, with 30,000 troops, were coaled and prepared for their voyage to Egypt. They were protected by the Princess Royal Fort and six warships.[16] Albany continued to be used as a gathering point for convoys during the war.

The departure of the first Anzacs was soon followed by one of two significant actions that took place near Australian shores during the war, both in late 1914. A German armed raider, *Emden*, was active in Asian waters in September and October 1914, sinking and capturing allied commercial shipping and attacking ports. In early November it had sailed into the Indian Ocean in

order to destroy a British wireless station on the Cocos Islands. HMAS *Sydney*, which was escorting the first convoy of Anzacs across the Indian Ocean, was diverted to the Cocos Islands where it discovered and engaged the *Emden*, and destroyed it.[17]

The other event in the region was when the first Australian troops were engaged in enemy action and fought under their own command on enemy territory. In September 1914 an Australian naval and military force was sent to wrest control of the German colonies in New Guinea and New Britain, in order to destroy the wireless stations that enabled communication with the German Asia-Pacific fleet, and to prevent their refuelling. The expedition was successful, meeting only relatively minor resistance, although one of Australia's two submarines mysteriously disappeared among the islands.[18]

All the Australian fortifications had been put on alert on 2 August 1914 as the likelihood of war threatened and was then declared. In Port Phillip and Port Jackson the defence forces prepared to mine the entrances, but did not proceed because of the cost and the absence of any overt threat. Nevertheless, during the war there were some new defence works near the heads of both of the main harbours, including North Head in Port Jackson, and at Point Lonsdale where a searchlight base was constructed. As it became clear in coming months, especially after Japan joined the Allies, that there was little if any chance that Australian cities or ports would come under attack, during 1915 the fixed site fortifications had their alert level reduced and most of their regular troops were sent to northern hemisphere while militia took over much of the daily operations. There was a brief return in 1917 to a higher alert, and a boosting of coastal defences, when another German raider, *Wolf*, laid mines off in New Zealand waters and the east coast of Australia. Otherwise, only skeleton garrisons manned the fortifications for most of the war. They had little to do other than watch and drill.

Australia made a huge per capita contribution to the war effort, but fortunately not on Australian soil.

CHAPTER THREE 1920 - 38

Following WWI Australian military forces were allowed to run down. During the 1920s this was attributable to a mixture of war exhaustion, a low level of threat and a reluctance to spend money. The Depression at the start of the 1930s further retrenched defence expenditure to the absolute minimum necessary to maintain a skeleton force, until the growing threat to peace from Fascism in Europe and the militarism of Japan brought a reluctant turn around from the middle of the decade.

While not a new fear, there was a deep consciousness and nervousness in the inter-war years about the temptation seen to be posed by Australia's great 'empty spaces'. This has been a theme throughout Australian European history, but it seems to have had particular resonance in the interwar years. Underlying these attitudes was the environmentally ignorant and unrealistic belief that Australia was an empty land of unfulfilled potential. It simply needed more people with the necessary endeavour to turn the continent into one of the most productive places in the world. It had a great 'carrying capacity'. For example, in 1928 J.W. Gregory in *Human Migration and the Future* imaginatively speculated:

> Even cautious experts estimate that Australia could accommodate a population of 45,000,000 people. An estimate which I prepared some years ago made the figure 100,000,000, and I was recently chided by an experienced man of affairs who, after a visit to Australia, told me that my estimate was ridiculously under the mark, as the continent could easily accommodate a population of 200,000,000.[19]

Given such attitudes, it was widely feared that other nations would almost inevitably turn covetous eyes on Australia, especially northern Australia, and seek to conquer it. Increasingly the main threat was seen to be Asian neighbours to the north, and specifically the Japanese This produced a great deal of discussion about potential population levels and gave rise to a range of immigration schemes to encourage 'good British stock' to populate the continent. This was perceived as a primary form of defence for Australian racial and geographical integrity.

However, while alarmist fears were not matched with proportionate military expenditure until late in the 1930s, there was an ongoing evolution in where the defence pound was spent. The navy continued to be invested in as critical for forward defence. To reinforce home defences, the Royal Australian Air Force was formed in 1921 and thereafter aircraft were increasingly seen as a more

vital and relevant form of defence than land-based fixed fortifications – as well as being a potent external threat.

The pre-WWI pattern of reducing coastal defences continued during the 1920s, a reflection of the view that any military threat would likely come initially from aircraft rather than naval vessels. The reduction in the number of guns in coastal artillery fortifications meant that in 1927 there were only 37 still mounted around the continent, and some of these dated from the 1890s. As well as the clusters around the Heads of Port Jackson (where North Head was fortified with new modern armament) and Port Phillip, there were small numbers of mounted guns in Bondi, Coogee and Signal Hill near Sydney, Fremantle, Adelaide, Hobart, Newcastle and Brisbane. Thursday Island, Townsville, Warrnambool, Port Fairy, Portland and Albany were effectively abandoned or mothballed. Some of those still operating were supported by powerful electric searchlights and fixed beams, besides a few machine guns to serve as anti-aircraft defences.[20]

In 1925 a major secret report on British Empire defences including Australia was undertaken by the Committee of Imperial Defence. Oppenheim describes the report as 'the single most influential memorandum prepared on this subject during the period between Federation and the outbreak of World War Two'.[21] Its recommendations shaped the nature of coastal defences throughout 1930s and to the end WWII. At its centre were the expectations being placed on the then partially-built British naval base at Singapore. Through its supposedly impregnable fortress and harbour for the Royal Navy fleet, Singapore was intended to provide a protective umbrella for British interests in south-east Asia and the Pacific. From Singapore, British sea power, could control the seas and thereby defeat any threats of seaborne aggression, including from an increasingly powerful and expansionist Japan. Mobile sea, land and air forces rather than fixed land defences were to be the priority elsewhere in the region, to complement Singapore.[22] As history would show, the plan seriously overestimated Singapore's defence capacity and equally underestimated Japanese tactical capacity.

Because Port Jackson was the major Australian naval base, it received special attention in the CID report. Although it saw a limited likelihood of Japanese attack or attempted occupation of Australia, the report recommended only a small increase of artillery capacity in Port Jackson, Port Phillip and Albany, and little if any change in the other fixed defences except Thursday Island

which should be closed down and a new battery should be established at Darwin. Anti-aircraft guns were only recommended for Albany and Darwin.

The report's recommendations highlighted concern about the vulnerability of Australia's open coastlines and the small populations in the north and west of the continent. While Albany was seen to be of little importance in peace time, the CID report argued that 'in time of war Albany will be the most westerly and the principal Australian Convoy Assembly Point. Convoys may include all Australian and New Zealand traffic which normally use the Suez Canal, Panama Canal and Cape routes.'[23] Strikingly, Albany was listed as the most important Australian port in the table of priority for future defence significance. The others in descending order of perceived threat and defensive importance were Darwin, Sydney, Newcastle, Melbourne, Fremantle, Brisbane, Adelaide and Hobart.

During the second half of the 1930s, as threats to peace rose and defence expenditure increased, there were only moderate changes to the fixed fortifications. There was much debate as to what future defence threats might be and how effective and important fixed defences would be, although it was perceived that for the most strategic ports a few guns, although vulnerable to air attack, would be required to hold off enemy ships. Strategically placed anti-aircraft guns were potentially more important. Another complication was that there had been a clustering of population centres developing in close proximity to some of the existing fortifications. In particular, the expansion of Manly near to North Head was challenging, especially as North Head was being developed as a focus of the Port Jackson defences.[24]

As war threatened in 1938 the Australian government introduced a three-year plan to step up Australian defence expenditure over a wide range of provisions, but notably to fortify Darwin, strengthen the navy and airforce and to expand the militia to 82,000. There was some re-equipment of the most vital fortifications, including at Fort Nepean where light anti-aircraft guns were also deployed.

CHAPTER FOUR 1939 - 46

In a strange repeat of history, the first Allied shot fired in WWII is believed to have been from Point Nepean Fort, as it had been in WWI. At 1.30am on 4 September 1939, within hours of war being declared on Germany, a ship failed to identify itself as it sailed through the Port Phillip Heads. A shot was fired across its bow but, anticlimactically, the ship then identified itself as an Australian freighter, SS *Woniora*.

The principal way in which WWII was different from WWI was that the war came to Australian shores and shore defences were engaged on numerous occasions, although not the fixed fortifications.

After initially being put on alert following the declaration of war, during the period of the 'phoney war' in 1939-40 there was little action. This enabled Australia (like Britain) to undertake a period of rapid enlistment, rearmament and reorientation of the economy and people to a war footing. There was a rush to fortify strategic parts of the Australian coast which saw number of old fortification sites recommissioned and re-equipped, and several new batteries established. The number of mounted artillery pieces on the coast was built up to 120 of all types, plus 567 anti-aircraft guns. To supplement their limited protection, defensive equipment including small batteries and anti-aircraft guns, military personnel, volunteer militia, coast watchers and beach defences were deployed widely along the coastlines and the islands to the north.[25] Wikipedia lists 57 batteries that were in operation during WWII, in every state and the Northern Territory. They were a mixture of fortifications and anti-aircraft defences, using an odd mix of modern and obsolete guns and field artillery.[26] A huge project was commenced in 1940 to link the Garden Island naval base in Sydney to the mainland and to create a large naval dockyard.

The only really notable threat in the phoney war period was in October 1940 when a German armed cruiser laid mines between Sydney and Newcastle.[27] This was a reminder that Sydney with its major naval base, and Newcastle and Port Kembla with their steel works and strategic industries, were likely to be significant targets for any enemy.

In this early phase Australian security continued have some degree of trust in the protective umbrella provided by the massive naval base in Singapore. However, that faith soon proved to be

a chimera. The concentration of British forces in the northern hemisphere in 1940-41, to resist Germany, meant that Singapore lacked necessary strength when Japan suddenly entered the war in a surprise attack on Pearl Harbour on 7 Dec 1941. Japanese forces advanced rapidly into the Pacific and south-east Asia in late 1941 and 1942. In February Singapore fell and Australia was left dangerously exposed until there was a rapid move of United States forces to the region and into Australia. A few days after Singapore fell, on 19 Feb 1942, Japanese planes made their first and most devastating attack on Darwin. Because of the presence of United States military, warships and airforce contingents, Darwin had become strategically important as a base from which to resist Japanese advances in south-east Asia, and therefore it was a logical but poorly defended target. In this initial attack, the town was devastated, several hundred were killed (there is dispute about how many) and many planes and ships destroyed.[28]

Little if any resistance could be offered by the Darwin's fixed fortifications as they were designed essentially to defend attacks from the sea, not the air, so it seems that none of their artillery was fired. Anti-aircraft batteries were involved but with little success. There were at least sixty-four more attacks on Darwin in the following months[29] and several other places in the Northern Territory as well as Broome, Wyndham, Port Hedland and Exmouth Gulf in Western Australia and Horn Island in North Queensland. Altogether there were nearly 100 airborne attacks in northern Australia during the war.

Further south, the attacks were seaborne when there was periodic Japanese submarine activity off the coasts, and a number of ships were sunk. There was a significant strengthening of the defences at the heads of Port Jackson, notably North Head, and at Port Phillip where a number of gun emplacements and support facilities were constructed at Point Lonsdale/Shortlands Bluf which completed the number of sites in the Port Phillip Defence Group at the Port Phillip Heads. These could do little when small Japanese aircraft launched from submarines made several reconnaissance flights over Australian cities in the first half of 1942; generally the aircraft were not spotted or identified, or were recognised too late to take action.[30] A fleet of five Japanese submarines operated off the east coast of Australia in May and June 1942. Their presence was unknown until the night of 31 May when they launched three midget submarines to attack shipping in Port Jackson. One soon became tangled in anti-submarine nets and the crew blew it up. Another fired torpedoes that inadvertently sank a converted Sydney Harbour ferry and killed 21 seamen, before disappearing. Its wreck was discovered outside the Heads in 2006. The third

was disabled by depth charges and captured but the crew had suicided. The Port Jackson fixed fortifications were not involved in any action.[31]

A few days later, on 8 June, two submarines bombarded Sydney and Newcastle from afar, but failed to do much damage. The Sydney fortifications were readied to fire, but the submarine had disappeared.[32] The BHP steel works was the intended target in Newcastle, but it was not hit. However, the guns at Fort Scratchley were brought into action and, reputedly, this is the only occasion in their 150 year history in which any of the Australian fortifications fired upon an enemy warship. Apparently they missed their target.[33]

The submarines remained in the region, off the Pacific coast, and in following weeks succeeded in sinking a small number of vessels. After that the Japanese threat declined. The defeat of a Japanese fleet by the United States in the Battle of the Coral Sea on 4 - 8 May put a brake on Japanese expansion, and began an arduous process of pushing them back that lasted until August 1945.

There was a significant presence of American forces in Australia in 1942-43. General Macarthur made Melbourne his initial headquarters in the region and then moved it to Brisbane for a period. American forces were widely distributed around the coast, including a submarine base at Albany in 1942 until it was decided that the west and south coasts were relatively safe from enemy action.

Oppenheim has estimated that coastal defences reached their peak in the latter half of 1943, when there were 121 guns of all calibres mounted in a coast artillery role, with a further sixteen with a dual role of coastal and anti-aircraft defence. As well, there were 567 anti-aircraft guns mounted throughout Australia. All these were supported by 115 costal defence searchlights, 312 anti-aircraft searchlights, 34 long-range radars, seventeen coastal defence radars and six minefields. The major coastal defence ports had a range of anti-submarine defences, including more than 1800 aircraft defending coastal towns and ports. The number of armaments stabilised at roughly this level although as the Japanese were contained and then pushed back, and the threat level receded, a sense of security developed and the overall level of coastal defences was wound down.[34]

With peace in 1945, most of the fixed fortifications were mothballed or abandoned and they slowly fell into disrepair.[35] Even as the world drifted into the Cold War with its perceived threats of nuclear war and the domino effect of expanding Communism, the nature of warfare had changed the day of fixed coastal defences had passed.

How useful and effective the Australian coastal fortifications had been over the 150 years since the first cannons were mounted to defend the settlement at Sydney Cove is a matter of debate. On the one hand they can be seen as a wasteful expenditure, constructed as a response to the colonists' exaggerated view of their own importance. But, it can be pointed out, what would have happened if they had not been there to deter enemies. In his appropriately named study, *The Fragile Forts*, Peter Oppenheim captures this debate when pointing out the fact that the eastern seaboard was not invaded, which might suggest that:

> … the expenditure on the fixed defences was justified, and the fact that none of the Sydney batteries was called-on to fire in anger proves they fulfilled their major role as deterrents. On the other hand, on the few occasions when the defences were in action or might have gone into action, e.g. the Japanese submarine surface attacks on Sydney and Newcastle, the midget submarine attack on Sydney Harbour, the overflight of Sydney by Japanese aircraft on four occasions, the performance of the defences left something to be desired.[36]

[1] Boyce, Dean, *Invasion of Sydney: Fears and counter-measures of an isolated colony,* Halstead Press, Sydney, 2007, p.13

[2] Conservation Management Plan for the Command & Staff College Fort Queenscliff - Vol. 1 Report April 1982. Consultants Allom Lovell & Associates Pty. Ltd in association with Sweetnam Godfrey and Ord. Conservation Assessment 4.2.3

[3] Boyce, p. 123

[4] Meaney, Neville, *The Search for Security in the Pacific, 1901-14*, Sydney University Press, 1976, Chap 5

[5] Meaney, pp. 163ff; Tanner, Thomas W., *Compulsory Citizen Soldiers*, Alternative Publishing Company, 1980, pp. 125-30

[6] Tanner

[7] Oppenheim, Peter, *The Fragile Forts: The fixed defences of Sydney Harbour 1788-1963*, Canberra, 2004, pp. 191-93

[8] Oppenheim, p. 197

[9] Boyce, p. 126

[10] Meaney, Chaps 5 & 6

[11] Quoted in Meaney, p. 197

[12] Tanner, Chap 12

[13] Waugh, Maxwell N., *Soldier Boys: the militarisation of Australian and New Zealand schools for World War I,* Melbourne Books, 2014; Tanner, esp. Chaps 13 & 14

[14] Meaney, PP. 276-77

[15] Quinton, Keith, Rafe Slaney & Siranne Hose, *Stop the Pfalz – 1914; A study of the official and unofficial accounts of the internment of S.S. Pfalz at Port Phillip - The first British Empire action of WW1*, Fort Queenscliff Museum - Revised paperback edition. 2014 Blurb Books USA

[16] Garden, Donald S., *Albany: A Panorama of the Sound from 1827*, Nelson, 1977, pp. 287-88

[17] Carlton, Mike, *First Victory: 1914; HMAS Sydney's hunt for the German raider Emden,* William Heinemann, 2013

[18] Carlton, pp. 131ff

[19] Gregory, J.W., *Human Migration & the Future*: *a study of the causes, effects & control of emigration,* Seeley, Service & Co. Limited, London, 1928, p. 146; see also Brady, E.J.,

[20] Oppenheim, p. 211

[21] Oppenheim, p. 204

[22] This account and the following from Oppenheim, pp. 203ff

[23] Quoted in Oppenheim, p. 207

[24] Oppenheim, pp. 222ff

[25] Oppenheim, p. 193 & Chaps 15 & 16

[26] https://en.wikipedia.org/wiki/Coastal_defences_of_Australia_during_World_War_II#Queensland

[27] Oppenheim, p. 243

[28] There are many accounts of the bombing of Darwin but see Lewis, Tom and Peter Ingman, *Carrier attack Darwin 1942: the complete guide to Australia's own Pearl Harbor*, Avonmore Books, 2013

[29] Boyce, p. 128

[30] Oppenheim, pp.267-68 & 275; Lester Hunt

[31] Oppenheim, pp. 268-71; Boyce, p. 130

[32] Boyce, p. 130

[33] Oppenheim, pp. 271-72; Boyce, p. 130

[34] Oppenheim, pp. 277ff

[35] Oppenheim, Chap 18

[36] Oppenheim, pp. 264-65

PART TWO – PORT JACKSON AND PORT PHILLIP DEFENCE GROUPS

Very few of the sites can be described as being in good physical condition as most have long been closed and at least partly dismantled . Some have been allowed to crumble or were left open to the ravages of time and vandals. Fortunately, there are others that have been incorporated into national or recreational parks and at least partly restored and protected.

The sites are of such symbolic significance in Australia's cultural history that they are worthy of recognition and some attempt at future protection and conservation.

The sites also demonstrate the evolution of military technology of fixed coastal defences over a period of about eighty years.

PORT JACKSON DEFENCE GROUP (and Bare Island)

Fort Denison/Pinchgut – representative of the early stage of fortifications close to the town.
Patrick Wilson

Middle Head and Georges Head fortifications – part of the evolving forward defences of Sydney Harbour
Denis Gojak, with supplementary work by Don Garden

South Head fortifications – part of the evolving forward defences of Sydney Harbour
Patrick Wilson

Bradleys Head fortifications – part of the evolving forward defences of Sydney Harbour
Don Garden

Bare Island – in Botany Bay, as a defence against a 'back door' landing by an invading force.
Denis Gojak

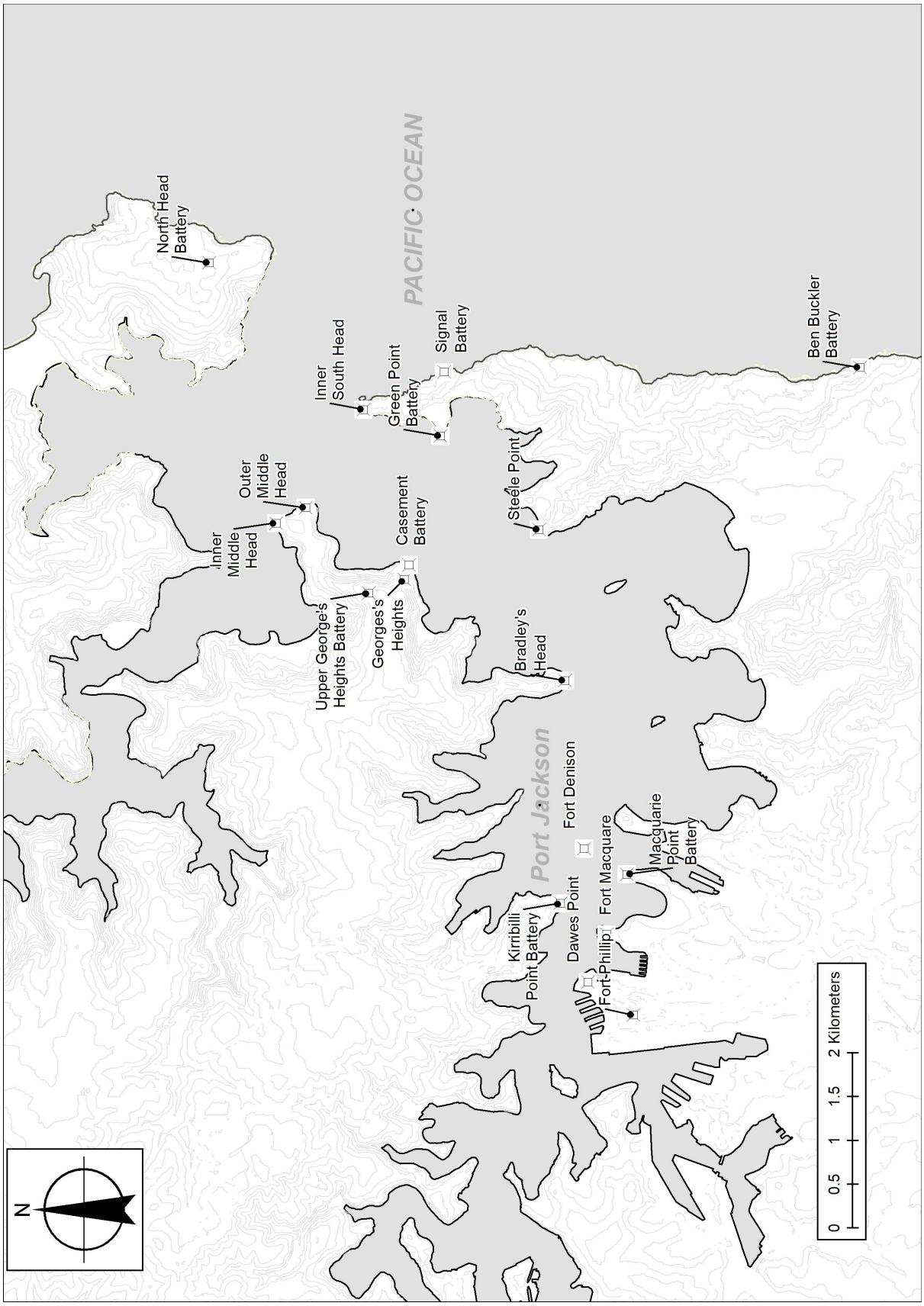
North Head – existing NHL but largely for its quarantine role. Of significance militarily especially as representative of 20th century (especially WWI and WWII) defence preparations.

The 2007 Strategic Plan by Paul Davies Pty Ltd for the military sites in Port Jackson and Botany Bay that are under the jurisdiction of the NSW National Parks + Wildlife Service came to a number of conclusions and made recommendations relevant to the wider range of site in this thematic paper.

> As a group, the fortifications of Sydney (including sites not owned by NPWS) are also of National significance in their role in the defence of the colony, then NSW and also Australia at its major harbour and naval facility. The facilities are also linked to other fortifications on the NSW Coast (and around Australia) and form part of a broader significance.

A summary statement of significance for the whole collection of sites is set out following:

> The fortifications of Sydney Harbour and Botany Bay are of exceptional significance for their collective ability to demonstrate all aspects of the fortifying of first the remote colonial settlement of Sydney and later the port and main defence of the State and Commonwealth based in Sydney Harbour.
>
> The elements range in age from 1801 to the Vietnam War and exhibit complete and intact installations from each phase of the development of fortifications as well as extensive layering of sites over each other as the need for defences changed. Although most of the ordnance has now been removed from sites they retain the ability to graphically present how Sydney was fortified and provide opportunities for interpretation of the development and defence of Sydney from 1800 to the present day.



Port Jackson showing main fortified sites, nineteenth and twentieth centuries. Drawn by Iain Stuart

The fortifications collectively demonstrate the political climate of each major stage of works as the relationship between the colony and Great Britain was defined and New South Wales and later Australia increasingly became independent of British support following the withdrawal of Imperial troops and the need for the colonies to provide their own defences. The various developments also demonstrate the ineptitude of much of the British advice that was given with nearly all of the Victorian fortifications redundant by the time they were constructed. While the early structures are impressive in their scale and engineering they were largely ineffective as defences. In contrast the later twentieth century installations, while not being required to engage in active defence, were more suitable and pragmatic as responses to potential threats.

The early fortifications, in particular, also provide important insights into the perceived vulnerability of the early colony where threats were seen from Napoleon, Russia, the Americas and the French. While none of these eventuated, largely due to the distance of New South Wales from any potential enemy, it is unlikely that the fortifications would have provided effective protection if there had been an attack.

The fortifications, particularly as a group, provide the largest collection of fortifications in Australia and are nearly all related visually and functionally occupying the key headlands in the Harbour and Botany Bay. Their inter- relationship, which was functionally required to provide protection to the Harbour, has the potential to be interpreted.

Each site within the group provides important historical technical information about design, construction and operation of the fortifications and each site has archaeological potential with many features infilled and new features being uncovered over time.

The development of fortifications in Sydney is associated with many prominent people over a long period of time. Key political and military figures were associated with the developments along with military advisers and designers such as Scratchley and Jervois from England and important local designers such as Barnet.

All of the sites fall within the Sydney Harbour National Park and have important natural values in addition to their cultural heritage values. They all sites of outstanding scenic beauty and interest, most are prominent lookouts that provide panoramic views to the Harbour, a number of sites are within established parks with high levels of visitation.[37]

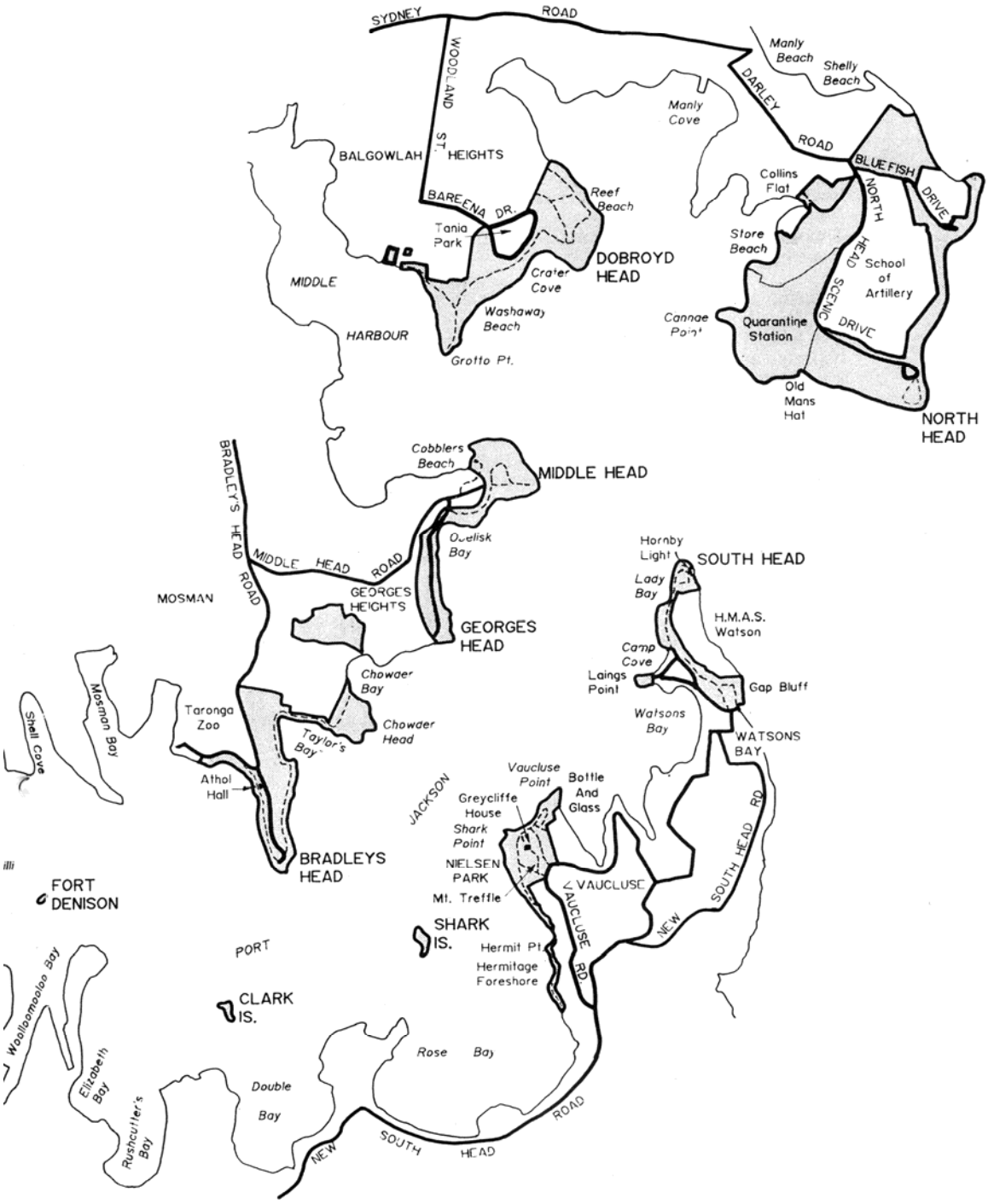


Figure i Overall plan of east end of Sydney Harbour showing extent of Sydney Harbour National Park and the location of the fortifications in NPWS management. NPWS Draft Plan of Management for Sydney Harbour National Park 1996.

PORT PHILLIP DEFENCE GROUP

The sites recommended for the Port Phillip Defence Group demonstrate a number of aspects of heritage significance value. Pre-eminent is the underlying concern about isolation, insecurity and vulnerability that led to a continually evolving demand for coastal fortification protection, especially in the nineteenth century.

Another is the application of changing military technology from the earliest colonial days until WWII. This aspect of coastal defences is captured in the sites recommended for National Heritage Listing in Port Phillip – from Fort Gellibrand in the 1850s and 1860s, HMVS *Cerberus* in the 1870s, the cluster of sites around the Heads especially from the 1880s and 1890s and then the addition of artillery sites at Point Lonsdale during WWII.

The principal fear was of a seaborn attack or invasion that would enter Port Phillip through the Heads and advance on Melbourne. To prevent such an attack, at the time of federation the Heads were protected by four main sites which were central to an integrated defence scheme. The high point of this development came with the emplacement of large calibre breech loading guns between 1887 and 1893.

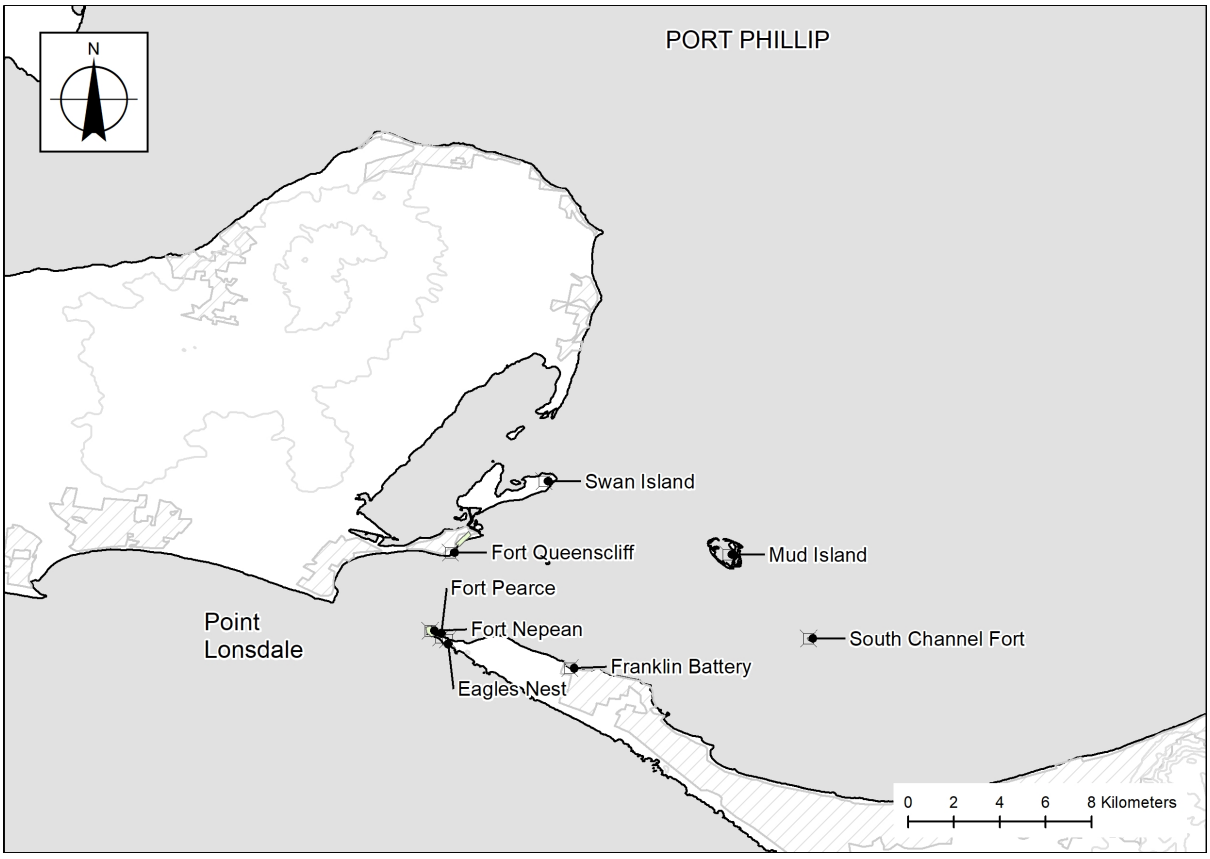
Queenscliff Fort was the oldest of the fortifications and from its commanding point on Shortland's Bluff it was able to cover most of the entrance after 1878. To support it at the other side of the entrance a temporary battery was constructed on Point Nepean whose firing range overlapped with the Queenscliff guns. Both sites were extensively expanded during the next decade.

If a vessel breached the Heads, there were two possible channels for it to take - West Channel and South Channel. The South Channel commences near the Pope's Eye Shoal and runs east parallel to the coast of Point Nepean where it was successively exposed to guns on Point Nepean, Eagle's Nest and Fort Franklin. A further obstacle to ships taking this course was South Channel Fort, which had been constructed on a shoal on the Great Sands - west of Capel Sound (Dromana), to protect a minefield that would block the entry of incoming enemy vessels.

After passing through the Heads vessels seeking to use the second channel, West Channel, pass close by Fort Queenscliff and then head north parallel to the shores of Swan Island. Vessels

attempting this course were met by a second minefield directly under the guns of Fort Swan Island.

The 1878 Jervois plan to defend Port Phillip Heads recognized that mines were essential to prevent ingress by enemy warships. The fortress guns of the defence scheme were located to provide an outer defence zone (guns) and an inner defence zone (guns, contact mines, electrically operated mines, torpedo boats). In times of conflict HMVS *Cerberus*, along with the gunboats of the Victorian Naval Squadron, were to provide support for the defence of both channels. To complement all this, a number of 1st class and 2nd class torpedo boats would transfer from Williamstown to a base at Swan Island. There were fixed sentry searchlights and fighting lights to detect vessels entering at night.



The cluster of fortification sites near Port Phillip Heads. Drawn by Iain Stuart.

[37] Paul Davies Pty Ltd, 'The NPWS Fortifications of Sydney Harbour and Botany Bay: A Strategic Plan', prepared for National Parks + Wildlife Service, Sydney 2007, pp. 15-16

FORT DENISON



Aerial of Fort Denison and its surrounds, with nearby landmarks annotated.
(Source: SIX Maps viewer, NSW Spatial Services, depicts c. 2012)

EXISTING SIGNIFICANCE STATEMENT

The NSW **Office of Environment & Heritage** describes the significance of Fort Denison as follows:

Statement of significance:

Fort Denison is of national and international significance as an exceptionally fine and intact example of a nineteenth century defence fortification that is unique within Australia. Located in Sydney Harbour, neighbouring the Sydney Opera House and the Sydney Harbour Bridge, Fort Denison is a landmark that represents colonial Australian settlement. Fort Denison is associated with several phases of Australian history. As an island it was used as a place by local Aboriginal people for food and pleasure, and was used by European settlers as a place for incarceration and exploitation of convict labour. The island was then modified for defensive use firstly as a Battery and then as a Fort. As a Fort it demonstrates the administration and politics of the British Empire and the need for defensive structures in the colonies. For most of the 20th century the island and Fort took on a maritime role. It continues to be reference point for tide measurement and changing navigation techniques. Fort Denison is the only island site entirely covered with a fortification within Sydney Harbour and retains the integrity of its completed 1862 form. In an international context, the combination of a Martello tower and associated barracks is unusual and rare. The Fort built entirely of local sandstone, demonstrates the evolution from an island to convict shaped rock battery, to a completed Fort. The Martello tower on Fort Denison is unique as a European styled coastal fort constructed in Australia. It is of international significance as one of only two towers in the southern hemisphere that survive intact. It forms part of a worldwide group of similarly styled and dated European coastal fort towers built during this period. The tower is also of international significance for the integrity of its original casemated ordnance and sidearms. Fort Denison is recognised by the people of Sydney as an historic fortification that remains an enduring feature in a changing harbour context. The very nature of its massive sandstone construction, combined with its isolation and comparative inaccessibility, adds to its mystique and its landmark status with Sydney Harbour. (Fort Denison Conservation Plan 1999 NPWS)

Description

Designer/Maker:	George Barney
Builder/Maker:	William Randle
Construction years:	1840-1862
Physical description:	Fort Denison on Sydney Harbour is within the visual catchment of the Sydney Opera House, the Harbour Bridge, the Royal Botanic Garden and the Sydney Harbour Naval Precinct (NPWS, 2016). Fort Denison is the only Sydney Harbour island which is no longer described as an island. Even Garden Island, now visually part of the mainland (and anything but a garden) is still known as an island. The island known as Mat-te-wan-ye (small rocky island) to Aborigines and Rock Island to the first settlers, is now popularly known as Fort Denison and viewed as a built artefact rather than an island. From a distance no evidence of its original island character is apparent, except perhaps scattered rocks at low tide. However, on close inspection the--sandstone bedrock visible below the south west battery reveals part of the rock of the island, particularly when combined with the pictorial evidence provided by drawings such as that by Barrington in 1802, The Fort The visual impact of the fort is a combination of the strong vertical mass of the Martello tower and the equally strong horizontal lines of the low barrack and battery buildings. The two distinct building forms reflects the history of the staged Fort construction; which progressed from the original horizontal form of the battery, and later construction of the barracks and Martello tower. The tower, which only lost its dominant role in marking the water entrance to the city with the construction of the Sydney Opera House, was built with an open gun platform (terreplein) which surmounted two internal levels. A section through the tower, shows the navigational light which replaced the upper cannon in 1913. The lower internal level contained rooms for the storage of

gun powder and provisions and the middle level still houses the three original cannons. Internal tower circulation is via a spiralling staircase that connects the three tower levels. External access to the tower is through a single external door from the upper terrace level battery and bastion.

Three major elements comprise the strong horizontal section of the fort; the battery and bastion, the barracks and terrace.

Gun Battery and Bastion:
The outward facing defensive side of the fort known as the gun battery and bastion confronted incoming ships. It is constructed out of the island's sandstone bedrock. The battery consists of an open working area which services a series of nine gun placements and corresponding slanted firing openings which are equally positioned along the raised parapet wall of the battery. An underground water tank has been cut into the bedrock of the battery. The bastion located at the southern end of the battery was constructed to house a single cannon set behind a raised stone parapet. The cannon was located on a raised circular revolving mount to maximise the cannon's aim of fire.

Wet Ditch and Breakwater:
A wet ditch and breakwater formed by sandstone blocks separates the fort from the open harbour channel. Beyond this is a breakwater which surrounds the whole island which moderates the wave action against the stone fabric of the fort.

Barrack:
The main single storey building is the barrack,. its eight chimneys indicate its original accommodation purpose. The barracks are built into cut back bedrock and contain a row of single rooms used for military bunk-style accommodation for the lower ranks as well as accommodation for two separate officers' quarters. A central breezeway and vault covered staircase allows access from the barracks and lower terraces to the upper terrace battery, bastion and Martello tower. The two end rooms adjoining the barracks, known as the Tide Gauge Room to the north and the West Room to the south, were constructed soon after the completion of the barracks. The loopholes, or angled openings were designed to enable the defensive fire whilst defending against enemy attack.

Terrace:
The lower north west facing terrace is constructed on the same level as the barracks. It was probably built on rubble fill

	which is contained by a low stone wall. The terrace is open and not defensive in nature, as it faces away from the open sea and potential attack. It currently has a bitumen surface and several small planted garden beds. Garden beds were constructed on this terrace during the 20th century as part of the domestication of the fort by the Sydney Harbour Trust and later Maritime Services Board caretakers. Two sewerage treatment units which service the toilets are concealed in the garden beds at either end of the barracks. (Fort Denison Conservation Plan 1999 NPWS). Plantings: A Canary Island date palm (Phoenix canariensis) planted in one raised garden bed on the terrace's western side and a fruiting fig tree (Ficus carica cv.) at the south-west base of the Martello Tower are the only trees on Fort Denison (Stuart Read, pers.comm., 8/8/2016). An external cannon is on the Eastern Terrace. A tall flag pole with side spars runs three permanently flown flags on this terrace (NPWS, 2016).
Physical condition and/or Archaeological potential:	Physical condition is excellent. Archaeological potential is high.

FORT DENISON
Pinchgut - Port Jackson

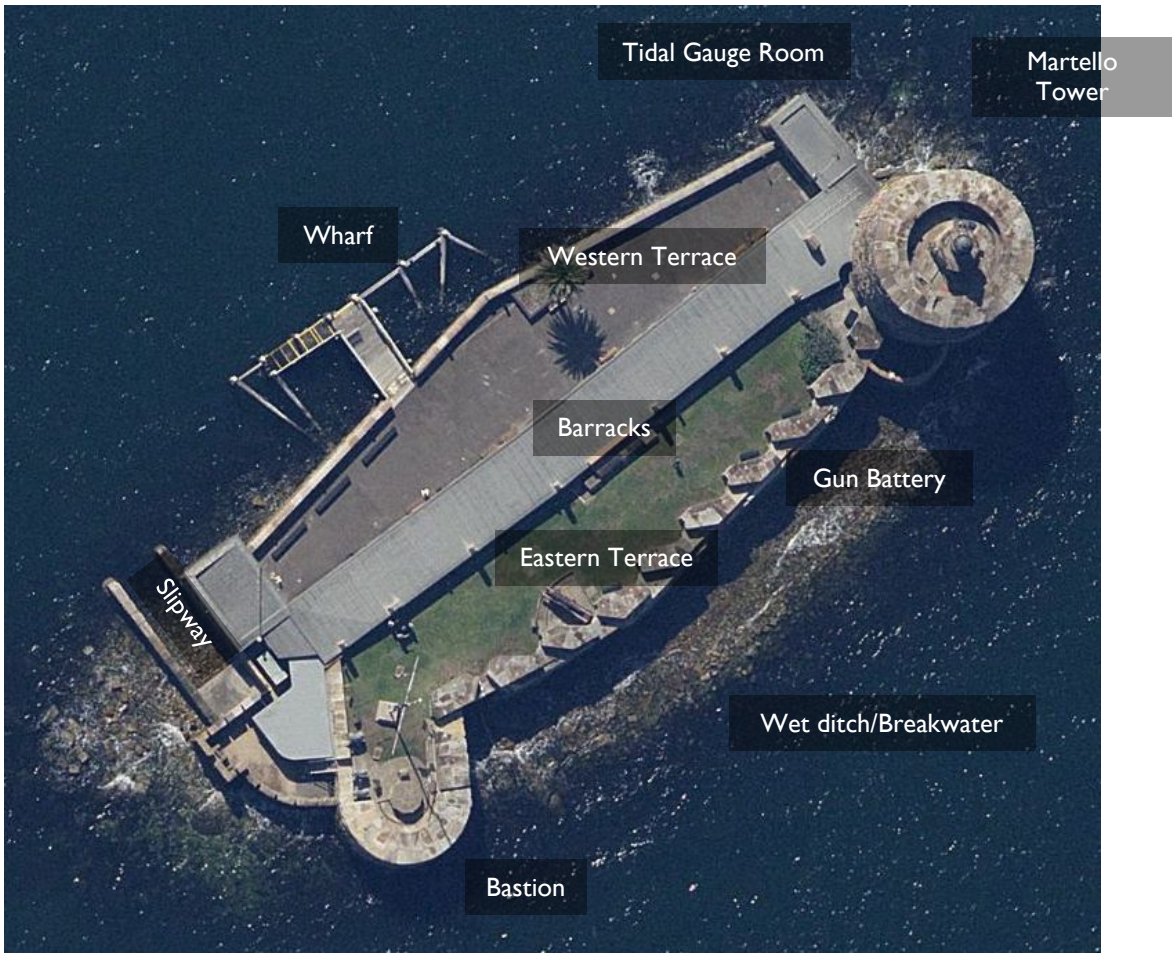
Patrick Wilson
Historian and Heritage Consultant

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Description

Fort Denison is on an island located approximately midway between Garden Island and Kirribilli Point, within the waters of Port Jackson, New South Wales.

The island is orientated approximately north-east to south-west and is largely given over to two distinct nineteenth-century phases of fortification; namely, the development of a terreplein (1840-42) that utilised the natural sandstone of the island, and the construction of Fort Denison (1855-62), with its integrated Martello Tower and battery/barracks. This second period of work is visually ascendant, although some sections of the earlier rock parapet and natural bedrock of the island remain visible.[1] In the main, the extant buildings and structures are of solid masonry construction utilising a quarried, quartz-rich sandstone (similar to that originally found on the island and throughout the Sydney region).[2] A complex site, the following aerial view depicts and identifies its key elements.



Site plan of Fort Denison with main features identified. (Source: SIX maps, NSW Spatial Services, depicts c. 2012)

The Martello tower is the most prominent feature, a robust vertical mass, some 16-metres in height and circular in form. At its base the walls are up to 4-metres thick, tapering to just over 2-metres at the top. The lower level of the tower is cut into the bedrock of the island and the external face is finished with ashlar and rock. An advanced feature of its construction is the use of granite 'butterfly' shaped joggles to connect large-scale sandstone blocks in the tower (as well as the parapet of the connected gun battery). A colonial variation on the standard British model, the Fort Denison Martello tower has three-levels, with an open terreplein which was modified in c.1913 with the installation of a circular cement- rendered turret capped with a steel and glass navigational light. The two internal levels are the bottom level, the former gunpowder magazine, and the middle, the gun room. Both feature vaulted ceilings and have been overpainted. Internal circulation is facilitated by a spiral staircase, with external access via a single heavy timber door from the eastern terrace.

The battery and its bastion define the east-facing side of the fort. The battery is composed of the eastern terrace, now grassed, and a high sandstone parapet, which is punctured by a series of nine-gun placements with corresponding slanted openings for firing. To the southern end, the bastion — originally designed for a canon to be mounted embrasure (firing *behind* the masonry bulwark) — was altered during the World War II through the addition of a raised concrete circular gun mount.

The single-storey barracks that dissects the island is cut partly into its foundations. It has a single row of rooms, differentiated in size, detail and comfort for the intended rank of the occupant. The interior of the barracks is distinguished by a series of masonry barrel vaults supported by iron beams, with a timber-framed sloping roof clad in an original bituminous membrane. Access between the barracks and the two terraces is provided by a central breezeway and covered, also vaulted, staircase. The interior of the barracks has been subject to amenity-themed modifications.[3]

The place also includes: the Tide Gauge Room (rebuilt in c. 1910) and West Room, both of which initially functioned as additional defensive positions (see angled loopholes); the western terrace, erected on the bedrock and crush sandstone rubble fill and sustained by a low masonry seawall; the 'wet ditch', part moat and breakwater (now only visible at low tide); an early 1900s wharf; and slipway and yard (constructed c. 1917).

Of the original (or later addition) ordinance, the three 32-pounder smoothbore guns (overpainted), cast in iron by Carron Works of Falkirk, Scotland, with original carriages survive *in situ* to the gun room.[4] Further, an 8-inch shell gun (also Carron made) with replica carriage, has been moved to the battery from the tower's terreplein.



Fort Denison, looking south. (Source: Wikimedia Commons, accessed online 5 March 2019, <https://commons.wikimedia.org/wiki/File:Fort_Denison_(30129306283).jpg>)

Statement of Significance

Subsuming a small island in the eastern reaches of Port Jackson, New South Wales, Fort Denison — encompassing a Martello tower, battery and bastion, barracks, and ancillary buildings and structures — is a rare type of nineteenth century coastal fortification that is of national historical and aesthetic significance.

Historically, the evolution of the island into a substantial fortification illustrates the sense of isolation that characterised the colony of New South Wales and how, fuelled by shifts in the relationship between the British Empire and its global rivals, this awareness was recast as the development of defensive works. Through its built form, Fort Denison demonstrates the enactment, in two separate stages (1840-42 and 1855-62), of the inner-harbour defensive strategy, which was one of two opposing approaches in a continuous debate in the nineteenth

century over how to best defend Sydney from maritime attack. At a broader level, the site also provides insight into the design, construction, and tactics of coastal and harbour fortifications in the colonial environment. (Criterion A)

As the only Martello tower ever constructed in any of the colonies, Fort Denison is a unique example of a well-established European style of coastal fort that was adopted and modified for the Australian context. At a global level, the Martello tower appears to be the last of its type ever erected, and comparatively, the most intact, largely retaining the integrity and interpretability of its 1862 form, including some of its surviving *in situ* smoothbore ordnance. (Criterion B)

Aesthetically, the compositional qualities of Fort Denison, such as its inaccessibility, the robustness of its stonework, and the integration of the vertical Martello tower and horizontal battery/barracks, as well as the intactness of its external and internal fabric, vividly illuminate its historic role as a site of nineteenth century maritime defensive warfare and island landmark in Port Jackson. (Criterion E)

It is noted that Fort Denison also embodies a myriad of cultural heritage values at the state level.

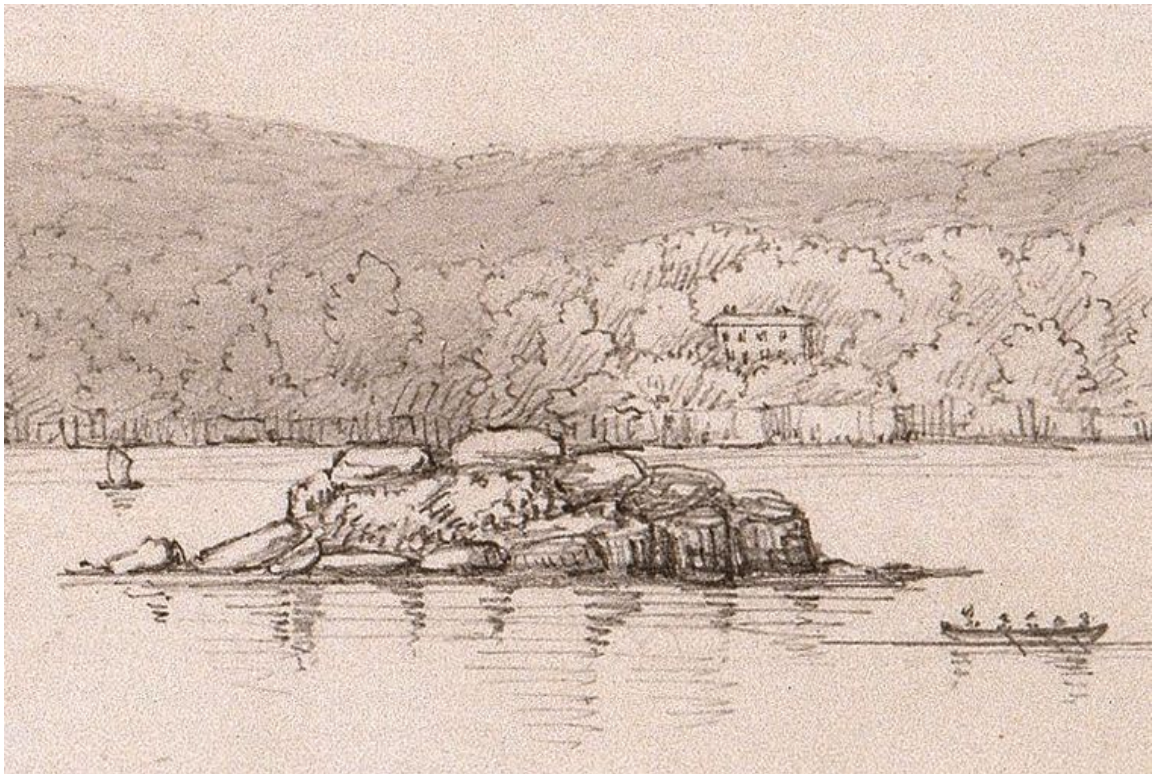
Site History

Mat-te-wan-ye

Long before Pinchgut Island was named by colonists, or Fort Denison appeared in the government gazette, the island near the middle of Port Jackson and was probably known to coastal Aboriginal people as 'Mat-te-wan-ye'.[5] Translated, this name appears to have meant 'Rocky Island', perhaps an allusion to its pre-fortified characteristics as a small sandstone outcrop, conical in shape, and cloaked in thick vegetation.[6]

We know little of how Aboriginal people saw or experienced the island. As a salient element within Port Jackson — one mid-nineteenth century British observer described it as the 'natural ornament of the harbour'[7] — it is likely to have been known intimately by Indigenous Australians interacting with the harbour.[8] David Collins, the deputy judge-advocate of the colony, was one of the few to articulate this connection, observing that it was frequented as a 'favourite place

of resort' by Aboriginal people.[9] He also provides insight into how this connection was severed; through the incorporation of the island into the British penal system.



Details of Mat-te-wan-ye/Pinchgut prior to any construction works. (Source: Louisa Anne Meredith, *Pencil drawing, framed panorama of Sydney Harbour*, 1840, Museum of Applied Arts & Sciences, accessed 10 March 2019, <https://collection.maas.museum/object/157941>)

Within the first year of the colony, Mat-te-wan-ye — sequestered yet visible — was utilised in the punishment of recalcitrant convicts.[10] Until Sydney Gaol was operational (1797), a small number of those charged with secondary offences in the settlement were stranded on the island with basic rations; the name 'Pinchgut' may derive from the hunger of these unwilling, white occupants.[11] Moreover, in 1796, the corpse of an executed convict was displayed on the island, affixed to a surmounting timber gibbet.[12] This practice continued, intermittently, up to Macquarie's governorship.[13] According to Collins, the grim spectacle of the initial body induced such 'great terror' amongst Aboriginal observers that their visitations to Mat-te-wan-ye were discontinued.[14]

First Fortification

Once Pinchgut's active role as a place of punishment was over, it appeared little used during the subsequent decade or so, except as a base for fishing or the collection of ballast.[15] For a range of political and military figures however, as well as some sections of the public and press, the island's potential defensive value gained significance in the 1830s, as part of a series of

'interminable disputes' over how to best defend Sydney town and its harbour from foreign foes.[16]

Encapsulated, such debates revolved around the siting of fortifications about the harbour and could be divided into two loose camps.[17] The first, styled as the 'let him in' strategy by historian Peter Oppenheim, centred around encouraging the entrance of hostile ships into Port Jackson, upon which a series of 'inner-ring' batteries and forts would engage in a sustained bombardment. In opposition, was the 'keep him out' defence, which aimed to deny entry to the harbour altogether, and concentrated armaments to and around the Heads.[18] Both approaches passed in and out of fashion over the nineteenth century and involved the costly development and supply of a series of forts with up-to-date weaponry, competent garrisons, and interlocking fields of fire.[19] Notwithstanding passionate claims to the contrary, both stratagems had inbuilt strengths and weaknesses.[20]

Pinchgut became a feature of this simmering debate in the context of a public outcry. In November 1839, two American sloops-of-war dropped anchor off Farm Cove in the dark of night, having navigated the Heads undetected by the authorities. Despite their peaceful intent, the surprise appearance of two well-armed vessels, so close to the town, panicked the community and fired a vocal critique of the existing state-of-defence. Such controversy was set in a social and political milieu acutely sensitive to the vulnerabilities of its geographic isolation, limited military clout, and the Empire's many rivals.[21] Incidents such as these, reinforced a genuine sense of colonial fear and anxiety, and often instigated 'knee-jerk' policy responses; in this case, the fortification of Pinchgut.

To quell public disquiet, the Governor of New South Wales, Sir George Gipps, instructed his Royal (and Colonial) Engineer, Lieutenant-Colonel George Barney, to fortify both Pinchgut and Bradleys Head. English-born, Barney had arrived in Sydney (1835) as a middle-aged military engineer after service in the Peninsular War and the West Indies.[22] Generally unimpressed with the colony's defences, he had, even prior to the American incursion, advocated for an expended fortification scheme in line with the 'let him in' approach, including the placement of a battery and tower on Pinchgut.[23]

With the go-ahead from Gipps — in itself contentious, as a parsimonious London had not sanctioned the expenditure — Barney launched into implementing his vision of defence in early 1840; in the process initiating a 'journey' for Pinchgut which involved multiple colonial administrations and Imperial agencies, and whose progress was:

> interrupted by personal changes and policy reversals, suspended by economic factors and disputes over who was to pay, stimulated by threats of war and marauding privateers, and punctuated by expedient and incomplete temporary measures…[24]

Allocated a work party of some 140 convicts, who were accommodated at Pinchgut in a crude stockade, Barney directed the labour-intensive task of levelling the island, using a combination of physical exertion and blasting. By May 1842, a gun platform and parapet — known as a 'terreplein' — had been formed through the removal and shaping of the natural rock, and it was reported that ten 24-pounder cannons had been deposited at Pinchgut.[25] Public reaction, at least during the work, appeared generally favourable. For example, the *Sydney Herald* proclaimed:

> Lest some chance French frigate… (visit) Sydney, our active and spirited officers have already made preparations for giving them a warm reception… Our two grand points of defence, Bradley's Head and Pinchgut Island, will be within a short time, very strongly fortified… (and) both (appear) warlike and business-like.[26]



Painting of Barney's terreplein, c. 1850, looking south. The appearance of only one unmounted gun is perplexing. Whether this was an artistic decision or that the 24-pounders had never arrived, been mounted or since removed, is unclear. (Source: James Glen Wilson, *Sydney Harbour from the old fort*, National Library of Australia, Bib ID 1842897)

After an energetic start, work at Pinchgut slowed and eventually languished, as London's unwillingness to shoulder the substantial cost became apparent. By the time bureaucratic friction had eased (with the Imperial authorities, tersely recognising and funding the works as something of a panic-stricken colonial *fait accompli*), the note of urgency in the clamour about Sydney's 'defenceless' state had quietened, an economic depression had set in, and the driving figure, Barney, had been replaced.[27] Public attitudes towards the uncompleted works hardened.

The previous celebratory stance of the *Sydney Herald* (renamed the *Sydney Morning Herald* in 1842) had changed markedly by the late 1840s and, in opinion, appears representative of the wider colonial press:

> she (as in, the government and Empire) dismantled Pinch-gut Island of the natural beauties which had made it a gem on the bosom of our magnificent harbour; and then, having laid out large sums of money in doing something towards converting these localities into military strongholds, she capriciously abandoned them both, leaving the one a bald promontory, and the other a hideous blot upon our waters.[28]

In truth, the efficacy of Pinchgut's fairly rudimentary fortifications during a hostile engagement is questionable; the parapet, for example, was too low and would have offered scant protection from the raking fire of an enemy ship.[29] Conceivably, such an issue may have been resolved if either the colonial government or London had funded the complete inner-defence package proposed by Barney, however, as the later design of Fort Denison showed, his plans, even when enacted in full, could still lack the refinements necessary for an effective defensive system.

Denison's pivot

The new Royal Engineer, Lieutenant-Colonel James Gordon, formalised a new version of the 'keep them out' strategy in his 1848 report; endorsed in due course by the Master-General of Ordnance and the Inspector General of Fortifications.[30] Gordon's repackaged blueprint — in reality, nothing but a 'wish list', as the existing economic climate had dampened any inclination for large-scale public expenditure in New South Wales — relegated the role of Pinchgut from that of a forward defensive element, to the last-line of defence. Nonetheless, he did propose that a Martello tower be considered for erection on the island.[31]

Ever in flux, the level of colonial-invasion anxiety intensified again over the early 1850s. As Sydney, now a recognisable metropolis, flush with pastoral and gold prosperity, processed ever troubling news of rising international tension. With the spectre of French frigates and American privateers increasingly supplanted by the Russian menace, dismay at the perceived inadequacy of Sydney's fortifications spiked again. Spurred to action by the delayed news of the outbreak of the Crimean War, an 1853 Select Committee of the Legislative Council approved a modified version of Gordon's outwards defence strategy and, by the following year, defensive works had begun at several 'outward' sites.[32]

The newly appointed governor, Sir William Thomas Denison, disembarked into this setting in January 1855, following his zealous if tumultuous administration of Van Diemen's Land.[33] Conscious of the conflict in Crimea, the self-assured, engineer-trained Denison, surveyed the existing and proposed defensive landscape and, within the month, declared it lacking.[34] Exercising the considerable powers of his office, he directed a reset:

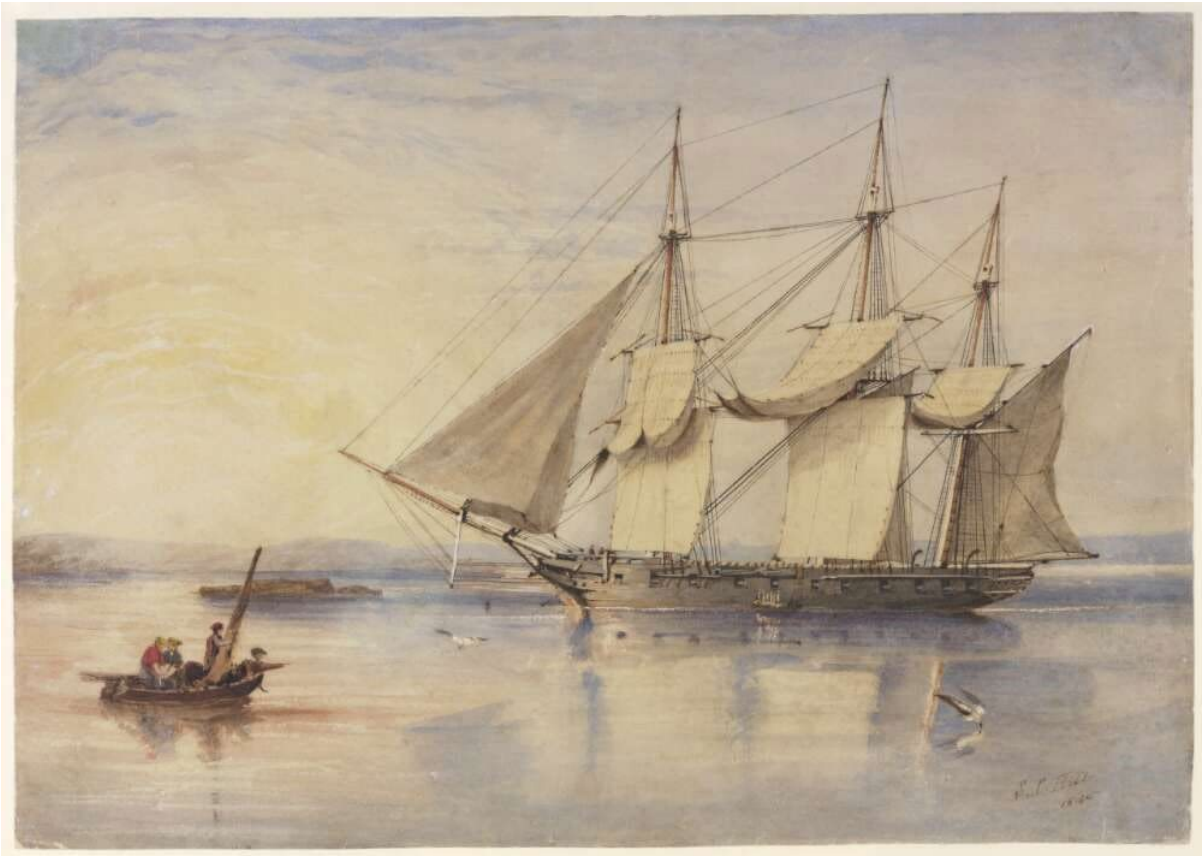
> I should be inclined to differ from the Council… (and) recommend the completion, in the first place, of all those (fortifications) which bear upon, or protect in any way, the anchorage in front of the town, leaving the more expensive works at the Heads, and near the entrance of Port Jackson, to be completed, if necessary, hereafter. [35]

The legislature acquiesced, and abruptly Pinchgut found itself recast (once again) as a fulcrum for fortress Sydney or as one newspaper contributor put it, assuming the island's voice:

> poor old, mutilated, and neglected Pinchgut will yet assume a place in the list of the most formidable bulwarks of the fair "Queen of the South" — for whose protection nature has so evidently intended me.[36]

While Denison's 'peremptory' action was greeted by some with scepticism, and even abhorrence, the barracking of one politician, George Barney, was particularly loud.[37] Having returned to England in 1846 and later overseen the ill-fated attempt to carve out a penal toehold at Port Curtis (present-day Gladstone, Queensland), Barney had ended back in Sydney, where he was nominated to the Legislative Council (1851). A member of the Select Committee, he had been tasked with shepherding the installation of batteries at 'keep them out' locations. At the same time, he was still lobbying for the erection of a 'tower' at Pinchgut, and not as a secondary aspiration as detailed by Gordon (who had left in 1849), but as a matter of necessity ('in my opinion [it is] urgently required').[38]

Following an about-face by Denison, Barney was put in charge of reorientated fortification works at Dawes Battery, Lady Macquarie's Chair, and Pinchgut; all sites fundamental to the inner-ring scheme he had pushed when Royal Engineer.[39] While dissecting Barney's personal motives lie beyond the scope of this history, it is tempting to consider whether some of the barbed comments concerning his previous endeavour at the island (its portrayal as 'Barney's folly'[40] or a 'misapplication of convict labour, at a spot where such waste can neither be concealed, palliated, or denied'[41]) irked, and possibly underscored his dogged commitment to the construction of a large-scale, substantial, and expensive tower at Pinchgut.



'Barney's folly'? Pinchgut appears left of frame, just above the water in this depiction. (Source: Samuel Prout Hill, *First Gunboat in Sydney Harbour off Pinchgut*, 1845, National Library of Australia, Bib ID 215745)

Fort Denison

The second, and effectively final, phase of the island's built development occurred between late 1855 and 1857, although some detail work was not finalised until 1862. The work was carried out under Barney's supervision by an ensemble of capable superintendents and officers as well as private craftsmen and labourers.[42] Despite the different thrusts in their defensive approach, Barney agreed to adopt Gordon's Martello tower design. This was not altogether unexpected, for while the reputation of this style of tower was beginning to fray in the mid-nineteenth century, it was still well-known — the favourite of those bloodied in the rolling conflicts with Napoleon (both Barney and Denison) — and, in the context of the colonies, an arena far from the vanguard of military advances, it appears to have been viewed as a sophisticated and powerful type of coastal defence.

The Martello tower had come of age for the British military establishment during the Napoleonic Wars (1803-15). Its popular origins and name derive from a corruption of 'Mortella', a headland in the Corsican bay of San Fiorenzo, which witnessed a lengthy and difficult encounter between two British warships and a lone coastal tower, occupied by the French, in 1793. The qualities

that forced an unexpectedly difficult capture, the tower's strategic siting, durable and casemated three-storey form, bombardment-proof magazine, and internally accommodated garrison, impressed the British. As a result, between 1796 and 1815 nearly two hundred towers were built along the south and east coast of England and Ireland as well as in South Africa, Nova Scotia, and North America.[43]

With a budget of £16,550 (although the final cost blew out to over £26,900) Barney's crew set about constructing a sixteen-metre high Martello tower in the north-east corner of Pinchgut.[44] The terreplein and remnant natural rock along the north-west alignment was converted into a ten-gun battery and barracks that could, at a pinch, house upwards of sixty troops and gunners. Also included in the scheme was a raised parapet, various ancillary buildings and a 'wet ditch', in effect a moat along the south-eastern side of the battery, to impede any ship-borne attackers. Much of the early 1840s parapet was included in this expansion. The additional inclusion of the southern bastion appears to have occurred during construction and took advantage of reclaimed land. As the massive amount of stone required was unavailable on site following the island's previous hollowing out, some 8000 tons of sandstone, most quarried from Thrupp's Quarry on nearby Kurraba Point, was transported to Pinchgut over the life of the project.[45] In April 1857, with works nearing competition, the *Sydney Morning Herald* offered a glowing overview:

> It consists of a Martello tower, 51 feet high, a battery, barracks, magazine, (and) stores… The basement story of the tower comprises gunners' stores and magazine, and consists of a continuous vaulted arch, springing from a centre pier… The magazine is covered by a casemate arch, each and every precaution has been taken to make it entirely bomb-proof. The next storey consist of a very fine vaulted room, with four embrasures, and it mounts three 32-pounders and one 12-pounder, commanding the harbour in all directions. The next storey brings us to the top of the tower… which is an open platform… there will be mounted two guns *en barbette*... In parts of the tower there are musket holes, which serve also for ventilators, and are so constructed as to give a wide range to those firing from the inside, and render it almost impossible for those outside to fire a shot in an them… The battery runs southward from the tower, and will mount as at present constructed ten guns, commanding the channel way, and indeed the whole breadth of the harbour… On this island, and sheltered by the battery, there is also erected a row of solid stone vaulted roof-rooms, for the accommodation of the men and officers… Kitchens, fitted with every possible necessary, are provided; and… a tank has been cut in the solid stone…[46]

A few years later, the same newspaper described the installation as:

> perhaps the most solid, substantial piece of masonry ever constructed in the colony, and may be regarded as the most serviceable fort in the harbour.[47]

In October 1857, the new fortress was formally retitled 'Fort Denison', for reasons obvious (Denison departed in 1861 to govern Madras and Barney died in 1862). It was also likely an official attempt to erase its earlier 'coarse and vulgar convict-smelling' connotations.[48] The fort — having 'consumed' the island — was bristling with guns by 1858; smoothbore and muzzle-loading cannons all, with varying range and the capability to fire round, grape, case, or hollow explosive shot.[49]

Fort Denison was initially manned by a score of Royal Artillerymen from 1856, at colonial expense. Accompanied by several families, they remained stationed at Fort Denison until 1870, when all Imperial forces departed. In their wake, came the part-time occupation by the Volunteer Naval Brigade, who used the island as a base for Saturday afternoon target practice.[50]

Fort Denison was the singular act of Martello tower construction in the Australian colonies. It was also likely the last example to be built internationally.[51] As suggested by comparative studies, it is one of only three surviving examples in the southern hemisphere and on a global scale is believed to have an exceptional level of 'integrity' — in heritage parlance, the extent to which a place reflects its original form (predominantly that of the tower's second phase of construction).[52] In form, Fort Denison — the Martello tower incorporated with battery and barracks — is also considered unusual.[53] Barney's incorporated tower, battery and barracks as well as it copious use of sandstone, differed from the standard British-model for this type, which traditionally placed all accommodation and firepower within the Martello tower and was customarily constructed of face and rendered brick.[54] This variation appears due to a desire to maximise the fort's fire-power through the conversion of the middle level (conventionally the living quarters) into another multi-gun platform, support a larger garrison, and in respect to its heavyweight constitution, both intimidate and withstand a full-throttle bombardment. Such an innovation, despite the intractable issues it caused, was a reflection of the tower's anticipated role; that of the foremost bulwark in an interwoven scheme of inner-ring defensive batteries protecting an apprehensive harbour city.



Photograph of Fort Denison look east, prior to the modifications of the terreplein in c. 1913, with the entrances to the barracks mid-ground. (Source: Star Photo Co, *Fort Denison, Sydney Harbour*, created 1890-1900, State Library of New South Wales, SPF/117)



Fort Denison's gun battery, photographed in 1879. Depicted centre frame are some of the 32-pounders on their dwarf traversing carriages. To the rear, appears the 10-inch shell gun *en-barbette* to the southern bastion (and faintly in the background, the Garden Palace). (Source: Messrs Richards and Company for the International Exhibition Commissioners, Sydney, 1879-80, Museum of Applied Arts & Sciences, accessed 10 March 2019, <https://ma.as/391688>)

Rapid Redundancy

The undoubtedly imposing presence of Fort Denison within the late-nineteenth century harbourscape belied its increasingly evident obsolescence as a functional military installation.[55] Somewhat unbelievably in retrospect, the proportions of the fort were such that, if all three guns were fired on the middle level at once the recoil would have instigated a collision. Further, as muzzle loaders, the tight spacing of the room meant that the cannons could not be loaded at the same time. It also emerged that the fort's thick casemate restricted the field of fire; all factors unconducive to naval combat.[56] In fairness, some of these flaws may have been thought as compensated for by its supporters through the operation of Fort Denison in accordance with the other 'let them in' defensive sites.

Once acknowledged, such flaws were problematic to rectify, as it would have entailed costly deconstruction and rebuilding operations, especially as the fort had been constructed around the guns to the middle level of the tower.[57] Such a decision had become a moot point by the early 1870s, after several military experts had placed on record their professional derision of the fort's capabilities, explaining candidly how the advent of iron-clad ships and the extended range and explosive power of contemporary armaments had rendered the Martello tower and its battery essentially impotent.[58]

Evidently, expert opinion reinforced an increasing common strain within lay opinion. Even in the early 1860s, the *Empire* had labelled the largely-completed Fort Denison, 'a mere toy, utterly useless as a fort'[59], and later, with direct reference to the Martello tower, the *Australian Town and Country Journal* mused how:

> Royal Engineers, and Governors with whom military engineering has been a hobby, have amused themselves at various times in building toy fortifications in Port Jackson, and the results of their labours are about as formidable to a fleet of iron-clads as would be so many dirt pies made by children on the edge of a gutter.[60]



Firing of the time gun. Relocated from Dawes Point to Fort Denison in 1906, the time gun was fired daily (1 p.m.) to coincide with the dropping of the ball at the Sydney Observatory. (Source: 'Martello Tower of Fort Denison on Pinchgut Island, Sydney', Fairfax archive, c. 1930s, State Library of New South Wales, PIC/15611/15217 LOC Cold store PIC/15611)

Serious contemplation was given to dismantling Fort Denison altogether in this period as Sydney's defensive focus shifted, for the final time in the nineteenth century, to fortifying the Heads.[61]

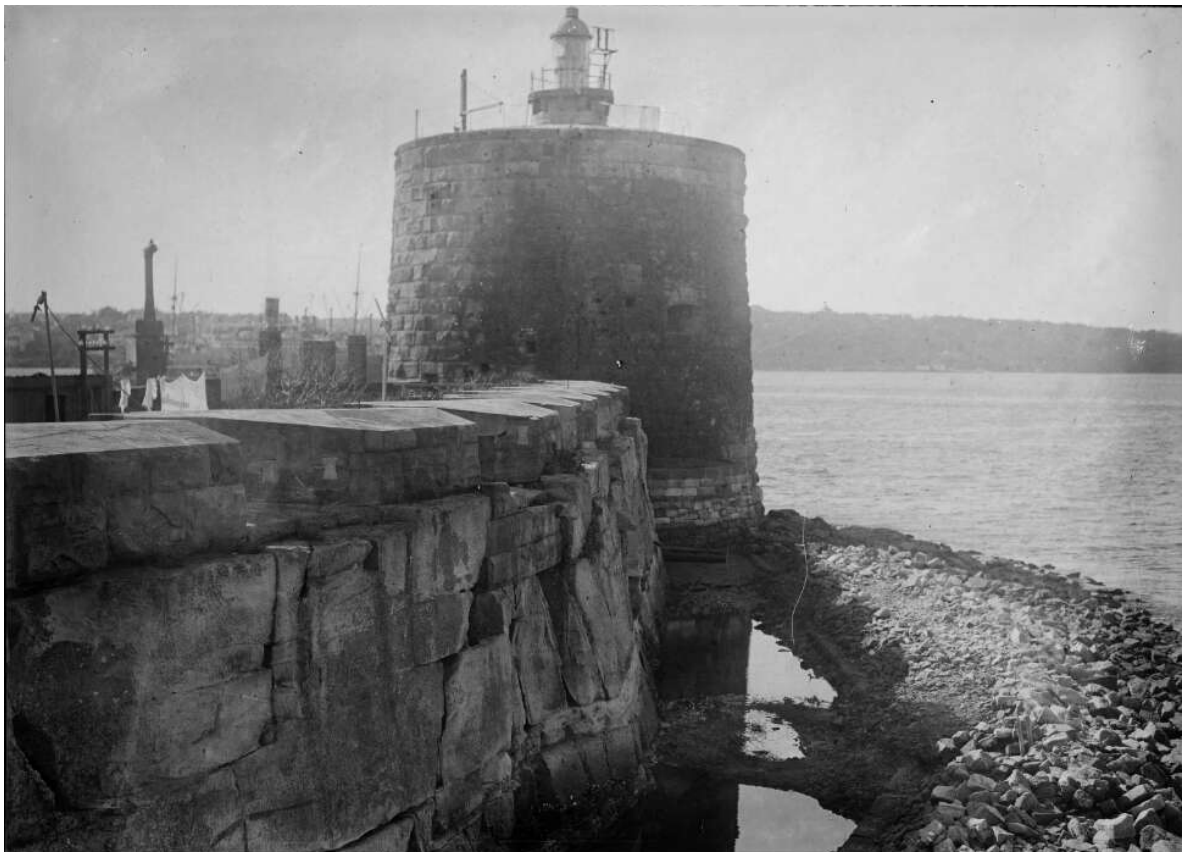
Post-note

Fort Denison survived official doubt and, with time, attained a great deal more public esteem as a 'picturesque relic' than it ever earned as a fortification.[62] Open to the public from 1936, the island became popular as a site for Australians to engage with the past and heritage tourism. It also functioned as a valuable collection point for meteorological and tidal data.

During World War II, thirty soldiers and an officer were stationed at Fort Denison, which was fitted out with a 3-inch anti-aircraft gun. On 31 May 1942, the fort was involved in its first hostile action, with a stray salvo from the *USS Chicago*, aimed at a retreating Japanese midget submarine, glancing off the tower. The wound — some slight cracking — is still visible today.[63]



Looking across the western terrace of Fort Denison, c. 1948. The gardens were cultivated by the Sydney Harbour Trust as part of a beautification scheme and, for the most part, have since been removed. (Source: Government Printing Office, accessed 10 March 2019, State Library of NSW, <http://archival.sl.nsw.gov.au/Details/archive/110115865>)



Hanging in desultory fashion to the left of the Martello tower, the caretaker's washing line. Emerging from the foreground is the eastern parapet and beneath it, the intact 'wet ditch', now only partially visible at low tide. (Source: 'Martello Tower of Fort Denison on Pinchgut Island, Sydney', Fairfax archive, c. 1930s, State Library of New South Wales, PIC/15611/15215 LOC Cold store PIC/15611)

[1] James Semple Kerr, *Fort Denison: An Investigation for the Maritime Services Board of New South Wales*, Sydney, The National Trust of Australia (NSW), 1986, p. 12.

[2] Office of Environment and Heritage, *Fort Denison: Conservation Management Plan*, New South Wales Government, 2019, accessed online 3 March 2019, <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Parks-reserves-and-protected-areas/Conservation-management-plans/fort-denison-conservation-management-plan-180234.pdf>, p. 44.

[3] Office of Environment and Heritage, *Fort Denison: Conservation Management Plan*, pp. 46-47.

[4] Kerr, *Fort Denison*, p. 33.

[5] Multiple Indigenous versions and/or spellings for the island exist: for instance, 'Mat-te-wan-ye' is recorded by David Collins; Aboriginal linguist, Jakelin Troy, provides 'Mal-le-wan-ye'; historian Lalia Ellmoos also identifies 'Muttewai' or 'Muttenwaya'; and the official dual name of Fort Denison is 'Muddawahnyuh' – David Collins, *An Account of the English Colony in New South Wales*, University of Sydney Library, vol. 2, 1802, accessed online 10 March 2019, <http://gutenberg.net.au/ebooks/e00011.html>, chap. 1; Jakelin Troy, *The Sydney Language,* Canberra, 1993, accessed online 10 March 2019, <https://www.williamdawes.org/docs/troy_sydney_language_publication.pdf>; Lalia Ellmoos, 'Fort Denison', *Dictionary of Sydney*, 2008, accessed online 10 March 2019, <https://dictionaryofsydney.org/entry/fort_denison>; and 'Language', *Barani: Sydney's Aboriginal History*, n.d., accessed online 10 March 2019, <http://www.sydneybarani.com.au/language/>.

[6] Prior to fortifications the island was approximately 100 metres in length, 50 metres wide, and some 23 metres above sea-level — Mary Shelley Clark and Jack Clark, *The Islands of Sydney Harbour*, East Roseville, New South Wales, Simon & Schuster, 2000, p. 72.

[7] John Dunmore Lang, *An Historical and Statistical Account of New South Wales*, London, Sampson Low, Marston, Low, & Searle, vol. 2, 4th ed., 1875, p. 166.

[8] Val Attenbrow, *Sydney's Aboriginal Past: Investigating the Historical Records*, Sydney, University of NSW Press, Sydney, 2010.

[9] Collins, *An account of the English colony in New South Wales*, chap. 1.

[10] Watkin Tench, *A Narrative of the Expedition to Botany Bay*, Sydney, University of Sydney Library, 1789/1998, accessed 29 February 2019, <http://adc.library.usyd.edu.au/data-2/p00039.pdf>, chap. 10; and Collins, *An Account of the English Colony in New South Wales*, chap. 1.

[11] 'Terra Incongita', *Australian*, 26 October 1827, p. 4; further, 'Pinchgut' may also have nautical undertones — see Ellmoos, 'Fort Denison', para. 2.

[12] Collins, *An account of the English colony in New South Wales*, Chap. 1; and Joseph Holt, *Memoirs of Joseph Holt, General of the Irish Rebels in 1798,* T Crofton Crock, ed., London, Stewart and Murray, vols 1-2, 1838, pp. 56-57.

[13] Kerr, *Fort Denison*, p. 4.

[14] Collins, *An account of the English colony in New South Wales*, chap. 1.

[15] 'Second Letter', *Monitor*, 23 August 1827, p. 7; and 'Pinchgut', *Sydney Gazette*, 13 September 1831, p. 2.

[16] Kerr, *Fort Denison*, p. 4.

[17] Of course multiple plans for defending Sydney were proposed over the nineteenth century; from calls to 'block up' the harbour mouth with sunken vessels or the erection of a boom to proponents of floating steam-powered battery. The construction of masonry fortifications however, was always perceived as the most serious and respectable of options — 'How Can Sydney be Best Defended?', *Australian Town and Country Journal*, 24 September 1870, p. 16.

[18] Peter Oppenheim, *The Fragile Forts: The fixed defences of Sydney Harbour 1788-1963*, Loftus, New South Wales, Australian Military History Publications, p. xiv.

[19] Dean Boyce, *Invasion: Colonial Sydney's Fear of Attack*, Waverly, NSW, 2008, p. 49.

[20] Kerr, *Fort Denison*, pp. 4-5.

[21] Jeffrey Grey, *A Military History of Australia*, Melbourne, Cambridge University Press, 1990, p. 20.

[22] Also appointed Colonial Engineer, Barney oversaw the design and construction of several military and civic buildings, including fortifications at Bradleys Head, Dawes Point, Kirribilli Point, South Head (incomplete), original semi-circular Quay (utilising sandstone quarried from Pinchgut in the early 1840s), new Government House, Victoria Barracks, and the first breakwater at Newcastle. See — 'Barney, George (1792-1862)', *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, 1966, accessed online 27 February 2019, <http://adb.anu.edu.au/biography/barney-george-1744>.

[23] 'We understand that measures are to be immediately taken for erecting a tower on the Pinchgut Island… (by the) Engineer Department' — 'News of the Day', *Sydney Monitor*, 8 August 1838, p. 2; and Kerr, *Fort Denison*, p. 8.

[24] Kerr, *Fort Denison*, p. 8.

[25] Barney's terreplein was around 8-metres wide with a 5-metre wide parapet of bedrock – Office of Environment and Heritage, *Fort Denison: Conservation Management Plan*, p. 10; Kerr, *Fort Denison*, p. 14; and 'The Defence of the Harbour', *Sydney Herald*, 9 February 1842, p. 2.

[26] 'Active Preparations for War in Port Jackson', *Sydney Herald*, 12 February 1841, p. 2.

[27] Oppenheim, *The Fragile Forts*, pp. 40-44.

[28] 'The Dry Dock', *Sydney Morning Herald*, 14 May 1847, p. 2.

[29] Kerr, *Fort Denison*, pp. 12-13.

[30] Oppenheim, *Fragile Forts*, p. 42.

[31] Kerr, *Fort Denison*, pp. 17-18.

[32] Office of Environment and Heritage, *Fort Denison: Conservation Management Plan*, p. 13.

[33] Denison had also been appointed the Governor-General of all the colonies around the same time — C H Currey, 'Denison, Sir William Thomas (1804-1871)', *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, 1972, accessed online 27 February 2019, <http://adb.anu.edu.au/biography/denison-sir-william-thomas-3394>.

[34] Boyce, *Invasion: Colonial Sydney's Fear of Attack*, p. 50.

[35] Governor General minutes, New South Wales Legislative Council, vol. 10, no. 2., 1855, pp. 1014-7, quoted in Kerr, *Fort Denison*, p. 20.

[36] 'A Voice', *Empire*, 7 March 1855, p. 9.

[37] 'Summary of News', *Sydney Morning Herald*, 7 April 1855, p. 5.

[38] George Barney, 'Council Papers: Deference of Port Jackson', *Empire*, 16 June 1854, p. 1.

[39] Kerr, *Fort Denison*, p. 22.

[40] Referenced in the context of a supportive Barney article — 'A Voice', *Empire*, 7 March 1855, p. 9.

[41] 'Summary of News', *Sydney Morning Herald*, 7 April 1855, p. 5.

[42] The Superintending Engineer was William Coles and the tender for most of the construction was awarded to William Randle, previously responsible for building the railway line between Melbourne and Sandridge, the first in the Australian colonies, and soon after Fort Denison, part of the railway line between Sydney and Parramatta — Kerr, *Fort Denison*, p. 22.

[43] Jonathan Millward, *An Assessment of the East Coast Martello Towers*, English Heritage, July 2007, pp. 4-7.

[44] A B Shaw, 'Fort Denison, Sydney Harbour', *Journal of the Royal Australian Historical Society*, vol. XXII, part V, 1937, p. 384.

[45] Shaw, 'Fort Denison, Sydney Harbour', p. 384.

[46] 'Public Works', *Sydney Morning Herald*, 9 April 1857, p. 6.

[47] 'The Harbour Defences', *Sydney Morning Herald*, 13 May 1859, p. 9.

[48] 'Fort Denison', *New South Wales Government Gazette*, no. 149, 16 October 1857, p. 1964; and 'Fort Denison', *Sydney Morning Herald*, 17 September 1857, p. 2.

[49] The following armaments were installed at Fort Denison in 1858: twelve 32-pounder shot guns (three to the gun room in the tower, mounted on standing carriages, with the remaining nine mounted on sliding carriages to dwarf [low] traversing platforms); one 8-inch shell gun (tower terreplein, mounted on a sliding carriage on a traversing platforms *en-barbette*); two 10-inch shell guns (at least one, possibly both, mounted sliding carriage on a traversing platforms *en-barbette* to the bastion); and one 12-pounder carronade (location and mounting type unclear) — Kerr, *Fort Denison*, p. 32; and 'The Harbour Defences', *Sydney Morning Herald*, 13 May 1859, p. 9.

[50] Office of Environment and Heritage, *Fort Denison: Conservation Management Plan*, p. 23.

[51] Office of Environment and Heritage, *Fort Denison: Conservation Management Plan*, p. 85.

[52] Five Martello towers are believed to have been constructed in the southern hemisphere; three in South Africa and five in Mauritius. One example survives to each place — Millward, *An Assessment of the East Coast Martello Towers*, pp. 2-4; and Office of Environment and Heritage, *Fort Denison: Conservation Management Plan*, p. 22/85.

[53] Kerr, Fort Denison, p. 26; and Denis Gojak, 'Statement of Significant', in *Fort Denison Draft Conservation Plan*, National Parks and Wildlife Service, July 1994, quoted in NPWS Cultural Heritage Services Division, *Fort Denison Conservation Plan*, NSW National Parks and Wildlife Service, February 1999, p. 12.

[54] Kerr, *Fort Denison*, p. 26.

[55] Boyce, *Invasion: Colonial Sydney's Fear of Attack*, p. 51.

[56] Kerr, *Fort Denison*, p. 28.

[57] Kerr, *Fort Denison*, p. 28.

[58] 'Parliamentary Paper', *Empire*, 10 September 1863, p. 2; and Karl Lautenschlager, 'Technology and the Evolution of Naval Warfare', *International Security*, vol. 8, no. 2, Fall 1983, p. 10.

[59] 'News', *Empire*, 22 May 1862, p. 5.

[60] 'How Can Sydney be Best Defended?', *Australian Town and Country Journal*, 24 September 1870, p. 16.

[61] Oppenheim, *Fragile Forts*, p. 81.

[62] Fort Denison had become an often-commented upon 'picturesque feature' by at least the early 1890s — 'Beautifying Sydney', *Telegraph*, 10 February 1891, p. 2.

[63] Office of Environment and Heritage, *Fort Denison: Conservation Management Plan*, p. 33.

MIDDLE HEAD AND GEORGES HEAD



Middle Head Fort, Mosman

EXISTING STATEMENTS OF SIGNIFICANCE

The New South Wales Heritage Register lists the sites as follows:

Statement of significance:

The Sydney Harbour National Park at Mosman contains a collection of military fortifications and facilities which date from first settlement through to the mid-twentieth century, making one of the most significant historic areas in Sydney. Taken with other sites in Sydney, the technology and philosophy of military defence is demonstrated and recorded. The Park also has important scenic, ecological and geological qualities and a symbolic value as part of the visual landscape making up the social icon of Sydney Harbour.

Physical Description

A large area of urban bushland covering the headlands of Middle Head, Georges Head, Taylors Head and Bradleys Head, the latter two areas being discrete from the larger Middle Head-Georges Head section. The areas survived as bushland due to their occupation as a military reserve, and all areas except Taylor Head contain scattered remnants of fortifications, military facilities and buildings. The largest concentration of these occurs from Middle Head to Inner Middle Head where the Middle Head Fort and Barracks were located. Concentrations of relics also occur at Obelisk Point, Georges Head, and in Ashton Park at Bradleys Head. The area also contains a pair of navigation obelisks near Obelisk Bay.

Historical Notes

Middle Head was first used by the European colonists in 1801 for the erection of a defensive battery at Georges Head (sic) but this was abandoned after a few years. In 1815, Governor Macquarie established an Aboriginal farm, led by Bungaree, but this was unsuccessful and abandoned by 1822. In the 1850s, defensive works were commenced at Middle Head and Bradleys Head, with the major period of military activity commencing in the 1870s following the resumption of large portions of the headlands for this purpose. A major artillery, harbour defence and barracks complex became established over the next decades, with fortifications added and upgraded progressively till the 1930s and through WW2. By the 1960s, though, the military had ceased to use much of the area and in 1970, unused portions were transferred to the Sydney Harbour National Park and the area is now largely used for recreation - purposes.



Middle Head Fort, Mosman



Georges Head Fort – view to the Heads

MIDDLE AND GEORGES HEADS

(MOSMAN, SYDNEY HARBOUR)

Denis Gojak, Archaeologist and Heritage specialist

(with supplementary work by Don Garden)

Denis Gojak has worked in many aspects of archaeology and heritage conservation in southeastern Australia in private consultancy and for government agencies for more than 30 years, with a considerable focus on defence heritage. Until recently he worked as a senior heritage specialist within Transport for NSW.

Summary statement of national significance

The Middle and Georges Head complex is nationally significant in representing how the separate Australasian colonies were treated as a de facto federation, by the development of an effectively national defence scheme. This area contains defence installations extending from the Napoleonic Wars to the Vietnam War, reflecting the colonial and later Commonwealth response to the need to defend Sydney a target and as part of a strategic network of ports and coaling stations that allowed the Royal Navy to remain the dominant maritime power into the 20th century. The changing fortifications reflect evolving technology and armaments, changing threats and strategic alliances.

The collection of structures is unparalleled within Australia and contains a number of unique designs, reflecting both the reliance upon British military expertise and integration within a strategic imperial defence framework and, briefly a period where the colonies were given independence to implement their own defence. Notable and nationally rare or unique structures include the Beehive Casemate and the Armoured Casemate at Georges Heads and the Tiger cages used in Vietnam War-era training at Middle Head.

Middle and Georges Heads were integral to the defence of Sydney, and were part of larger defensive schemes involving gun batteries, mine fields and other anti-ship and landing defences, both within Port Jackson and eventually as part of a strategically significant fortress command that dominated the southwestern Pacific during the Second World War.

While other sites may contain better-preserved examples of specific types of gun batteries or structures the over-lay of successive defences at Middle and Georges Head is readily legible and allows their evolving intention to be readily understood.

The Middle and Georges Head area was also the location of Bungaree's Farm, the first substantial attempts to accommodate and acculturate Aboriginal people into sedentary ways, established during Governor Macquarie's administration.

Middle Head houses installations used in training the Australian Army Training Team before its mission in Vietnam.

Official values

Criterion A – Events, processes

A1. The Middle and Georges Head complex is nationally significant as a key defence site to protect Sydney, which was used from 1801 to the end of coastal defence in the 1960s and reflects the changing nature of coastal defence over a period of more than 150 years.

Its location as a naturally secure high bluff facing the entrance through the Heads made it an essential location to site artillery. Middle and Georges Head form the core of a network of contiguous and dispersed defence sites that protected Sydney from potential attack as far back as 1801, when the fear of a French raid during the Napoleonic Wars prompted the construction of a gun battery to cover the heads and the entry into Sydney Harbour.

Following that it was briefly developed during the Crimean War and then became a focus of the defence of Sydney following the departure of the British garrison troops. From then on it was continually up-gunned to provide greater protection as ships became more mobile and heavily armoured from the later 19th century and through the major wars of the 20th century.

A2. The Middle and Georges Head complex is nationally significant as part of a chain of forts intended to create a secure base for British imperial operations in the southern Pacific Ocean, and specifically as part of a group to defend Port Jackson and Sydney.

The shift from Barnet's distinctive parochial defensive scheme of the early 1870s to the imperially strategic focus of Scratchley and Jervois is expressed in the spread of their fort building and creation of defensive schemes in the different colonial port cities. This was taking place as Britain was developing a global strategic vision that required a secure network of safe harbours and coaling stations. At the same time there was a developing race between ship protection and armament and coastal artillery, resulting in the employment of new materials, both fuelling significant over-investment to achieve some longevity of protection.

The rapidly changing technology is exemplified in the differences seen between the Beehive casemate and the Armoured Casemate, built little more than a decade apart beside each other.

A3. Middle Head is nationally significant as the site where the Australian Army Training Team received elements of its training prior to their departure for service in the Vietnam War.

After the closure of the gun batteries the installation at Middle Head was used for training, and particularly was used for training of members of the Australian Army training team who were to be sent to Vietnam. They had to endure training in withstanding torture should they be captured. A line of corrugated iron boxes, known as 'tiger cages' and a large water tank provide stark evidence

of the impending psychological pressure under which members of the AATT would be placed in their service.

Criterion C – Research

C1. The Middle and Georges Head complex contains evidence of innovative design that was forced on the colony after the British military garrison left in 1869. The fabric and archaeology of the defences provide the best evidence about their design, history and development.

The work of Colonial Architect James Barnet in developing expedient modular designs for gun batteries, although effectively obsolete when they were built from 1870 onwards, represents the first departure from British military doctrine in Australian history, and was only repeated late in the Second World War when Prime Minister Curtin saw Australia's defence needing to align much more closely to the United States in doctrine and materiel. Almost all documentation about the design of the 19th century fortifications has been lost, meaning that the fabric itself is the main likely source of new information about the place.

Criterion D – Principal characteristics of a class or place

D1. The Middle and Georges Head complex retains the principal characteristics of a coastal artillery fortress in the early and late 19th century and 20th century.

Middle and Georges Head contains the attributes of a major fortified and defended coastal battery of the late 19th century. The key defences – Inner and Outer Middle Head batteries to deny entry though Sydney Heads and a casemate for close engagement of any ships that had entered – reflect evolving strategic appreciation of likely modes of attack by a naval power raiding Sydney. The subsequent elaboration of this scheme by Sir W.F.D. Jervois and Colonel Scratchley to remedy weaknesses in Barnet's design and to accommodate emerging technology, such as heavier guns, mines and torpedoes, searchlights and improved communications are all present. Key buildings within *the barrack area* remain extant as does the measures taken to create a complete defence, such as the defensive ditch on the landward end of Middle Head.

Criterion G – Social value

G1. Middle Head is significant because of its association with the Australian Army Training Team, our first military commitment to the Vietnam War.

The link to this early aspect of the Vietnam War has been expressed in memoirs and is physically represented

Criterion H – Significant people

H1. Consistent with all other Scratchley-Jervois associated sites as discussed elsewhere in this Thematic Paper 2.

H2. The land has an association with the Aboriginal man Bungaree and the attempt to create an Aboriginal farming settlement by Governor Macquarie.

Bungaree was a significant Aboriginal person in the early colonial period, who had a strong mediating role between the Aboriginal owners and the new arrivals. The north shore of Sydney harbour remained part of his country, and was chosen by Governor Macquarie to establish Bungaree's Farm so that Aboriginal people could emulate European farming. Although it was naively optimistic and failed, it represents an early attempt at creating positive relationship from the European settlers.

There is valuable heritage advice on these sites in the following:

'The NPWS Fortifications of Sydney Harbour and Botany Bay: A Strategic Plan' prepared for National Parks + Wildlife Service by Paul Davies Pty Ltd Architects Heritage Consultants Final Report July 2007.

Sydney Harbour National Park, Middle and Georges Head, Conservation Management Plan, 1999

DETAILED HISTORICAL AND ARCHAEOLOGICAL DESCRIPTION OF MIDDLE AND GEORGES HEADS

Middle and Georges Heads are two adjoining headlands within Port Jackson which previously formed a defence reserve, but are now part of Sydney Harbour National Park and, since 1979, have been opened up for recreation, sightseeing and interpretation.

Due to the complex history of the Middle and Georges Head complex, and a considerable part of the information deriving from the structures themselves, the historical and descriptive sections have been combined, arranged around five phases of defence:

Phase 1 Napoleonic Wars – 1801-c.1806
Phase 2 Crimean War – 1853-54
Phase 3 Colonial defence and James Barnet – 1870-1877
Phase 4 Imperial defence and Scratchley and Jervois – 1877-c.1900
Phase 5 Commonwealth Defence – 1901-c.1965

1. Introduction

Middle and Georges Heads have been used for defensive purposes since early in the European history of Sydney. Their position facing the entrance into Port Jackson and their natural defence of steep surrounding cliffs made them ideal locations for the placement of guns, observation posts, searchlights and other defence structures. This has resulted in the most complex over-layering of different phases of defence infrastructure anywhere in Australia, documenting almost all significant phases of colonial and Commonwealth defence readiness. Even after the coastal defences were abandoned, the remaining infrastructure found new uses, some of which meet national heritage levels of significance.

The detailed description is based equally on surviving physical evidence as on historical documentation, and pictorial and graphic material. Much of the relevant historical information has been lost, and the structures examined in this report are in many cases the primary source of information about themselves. As the surviving record is sometimes confused or ambiguous, the interpretation of the evidence is often necessarily tentative or may be revised should more evidence emerge.

Curtilage

This assessment is restricted to those parts of Middle and Georges Heads that lie within Sydney Harbour National Park. It is recognised that these locations were at all times part of an integrated military landscape. The focus on these two locations and the intermediate Obelisk Beach is because they retain geographic characteristics that influenced how fortifications were designed and laid out. Middle Head is a dramatic elevated bluff with sheer cliffs directly facing the sea and the entry into the port. Its height allowed it to command shipping well out to sea, only partially interrupted by North and South Heads. However, by the late 19th century as counter-bombardment guns were emplaced along the eastern suburbs it was reoriented to localised defence and denial of entry. Georges Head in contrast is low and faces the barely submerged Sow and Pigs Reef, which made any ship negotiating the passage from the entry between the Heads into the inner part of Sydney Harbour proper extremely vulnerable.

Other defences extended outside this core area, into Georges Heights and into the water with minefields and the anti-submarine boom, but the section within NPWS land retains the most significant demonstration of key national themes.

2. Historical outline

2.1 Phase 1 - Napoleonic Wars – 1801-c.1806

The first fortification in the area was mounted in 1801 at 'Georges Head', actually an eastward facing section of cliff-line between Obelisk Bay and Middle Head. News of hostilities with France and the potential for a French attack on the colony prompted Governor King to erect a small battery that would face the entrance between North and South Head and be able to harry any ships that sought entry as they negotiated Sow and Pigs Reef. Convicts cut out a battery in a location where there was some protection from both heavy seas and easy landings. At this time there was no other settlement on the north side of the Harbour. The Dawes Point battery was the only other fortification that had been completed, apart from a small redoubt near the bridge across the Tank Stream.

The battery, which survives (MH1), was cut out of bedrock on the cliff edge, with a long, low curved parapet and a deep firing platform behind. A ramp, now blocked, led out of the battery on its

northern side. Apart from two later embrasures are cut into the parapet and iron gun pedestals the structure is intact and in essentially its original configuration. A two-roomed magazine (MH9) built for the battery has been tentatively identified.

No mention is made in any documents of accommodation for troops or convicts, so in the absence of any archaeological remains it may be assumed that they were billeted under canvas. Access would have been by boat, landing on Obelisk Beach and following the edge of the sandstone bluff around to the battery. The gun battery is recorded as deteriorating by 1806 and may already have been abandoned by then.

2.2 Indigenous Sites and Bungaree's Farm

There are numerous Indigenous cultural sites in the Middle Head and Georges Head region that point to the thousands of years of occupation by members of the Guringai speaking group. These include rock art (including a range of engraved and painted figures and hand stencils, as well as animals and ancestral beings) and shell middens.

Middle Head also has Indigenous cultural significance because of its association with Bungaree, a member of the Guringai group, who was adopted by the early British community in Port Jackson. He sailed on two voyages with Matthew Flinders, most notably when he circumnavigated Australia in 1801-02, and participated in other seaborne explorations. In 1815 Governor Macquarie allocated a substantial area in Middle Head where a farm was established for a group of Aboriginal families. The intention was to encourage the Aborigines to take up agriculture and to abandon their traditional lifestyle. Bungaree was appointed the supervisor but the experiment was not a success and the land was subsequently sold.[1]

2.3 Phase 2 - Crimean War – 1853-54

Britain, France and Turkey opposed Russia during the Crimean War. Concerns that Sydney, flush with gold from the recent discoveries in the Central West of the colony prompted the construction of fortifications. The existing defences from the 1838 scare were run down and incomplete and had been clustered close to Sydney, in the expectation that any vessel would need to approach close in order to threaten bombardment. A more preventative strategy was initially adopted, with the intention of establishing batteries at South Head and Middle Head as well as the Martello tower on Fort Denison. Work to prepare these defences was underway when the new Governor, Sir William Denison, arrived. A Royal Engineer himself, he saw no issue with the earlier scheme, and ceased

work on the most forward batteries, once again strengthening those closest to the city. Fort Denison bears his name.

At Middle Head, in consequence of Denison's decisions the remains consist of an incomplete parapet, set up to face the entrance to the Harbour. The battery (MH2) survives as an arc cut from bedrock, with a shallow sloping pecked glacis partly visible beneath later land fill. At the southern end is a series of straight and curved cuts, possibly indicating return of the alignment for a bastion or strong point. The depth and extent of the cut behind the line of parapet is unknown.

No evidence has been found of the temporary battery erected while the works were underway or the iron houses the officers and men of the battery were accommodated in, later removed to Fort Phillip.[2]

The remaining evidence of the parapet demonstrates both how vulnerable colonial Australia saw itself to attack as a British outpost, especially since the discovery of gold had made it a strategically more attractive target and the extent to which it could be responsible for its own defence. The shift of fortifications to the outer harbour, east of Bradleys Head to Sydney Heads was a reasonable tactical move, given the nature of the threat and armaments. Governor Denison's arrival and subsequent countermanding of the order suggests that as well as his own Royal Engineer experience, although not particularly in fortifications, he was as conscious of colonial politics and perceptions as actual threats.

Crimean era fortifications in Sydney are best preserved at Fort Denison, with only remnants represented at any of the outer harbour locations, those at Middle Head being the most evident and legible given later works.

Subsequent to the works being abandoned the only significant activity that took place before the next phase of military occupation was the construction of two tall sandstone obelisks being erected in 1858. These gave Obelisk Bay its present name. These were part of a network of navigational leading marks for ship movements through the Heads and within the port.



Construction of fortifications at Middle Head or Georges Head, c early 1870s. Mitchell Library SPF/141

2.4 Phase 3 - Colonial defence and James Barnet – 1870-1877

James Barnet's design

The Cardwell reforms in the late 1860s included the provision to remove the British military garrison which had been located in Sydney. The last troops left Sydney at the end of the decade. The impact of this decision on the Colonial Government cannot be underestimated, but it needs to be placed in the context of an increasing push for self-rule in the colony, and British desire for colonies with capital, as NSW had become, to resource more of their own defence. There was a negotiated understanding between the Home Government and the Colonial Government that from now on the land defence of the colony was the colonials' responsibility.[3]

Although there had been consideration of how Sydney should be protected in earlier reviews, the one begun in 1870 was implemented. This essentially provided for the construction of batteries around the outer Harbour, to prevent armed raiding and threatened bombardment of the city. Because of Sydney's location and the effective range of artillery, this required an enemy gaining entry into the port. The landing of a hostile land force was not seen as likely, as it would not be able to be supplied. The progress report[4] recommended the construction of a variety of batteries including at Outer Middle Head, which would carry seven 68 Pounder guns. Other features included a torpedo (mine) field and a boom that could be extended across the Outer Harbour's navigable passages, defended by casemated batteries. Other projected works included mortars and Harbour

defence vessels. Not all elements of the proposals were constructed and, as previously, initial urgency and funding soon tapered off as external threats became more remote.

The fortification of the outer harbour essentially followed the logic that had been applied to the abandoned Crimean War era scheme (see Phase 2 above), although there had been considerable knowledge gained in the way coastal defence worked through the experience of the American Civil War where numerous ship-shore gun battles had taken place. The capacity of ships had increased considerably in the previous decade, with steam power and armouring of hulls and decks. Thirdly the guns themselves had become more powerful in response, and the first steps in more effectively identifying targets, ranging and coordinating artillery defences were being made. Although these issues were of crucial importance to defence design they had not been codified and how a defender could have sought to accommodate them was still unclear. As a result, the Colonial Architect James Barnet, charged with the design and construction of the defences did not reflect these well in his eventual designs in the absence of current military input.

Barnet was met with the challenge of having to design a large number of gun emplacements in fairly inaccessible locations around the Harbour. Perhaps reflecting practice from the Colonial Architect's Office, which relied for a lot of its civil construction works on standardised designs, he developed a modular gun emplacement that made use of Sydney sandstone and which could be combined with connecting passages and magazines into gun batteries of the required size and orientation.

Most of the batteries built around the harbour in 1871 used the same modular design, their arrangement varying according to the number of guns that they carried. They had been designed by James Barnet, the Colonial Architect, or at least within in his office. The original gun emplacements for 68 Pounder guns (and their upgraded 80 Pounder RML variants) appear to have been identical to those still extant at Bradleys Head, ie. circular pits 6.1 metres in diameter and about 1 metre deep, cut into sandstone bedrock or built up with cut sandstone masonry. The *Illustrated Sydney News* showed the construction of circular gun emplacements connected by trenches, all cut into bedrock, with similar work being carried out at Bradleys Head, Georges Head and South Head.[5]

The magazine for the batteries was a buried two-roomed building surrounded by a lamp passage and featuring a curved roof. Passages were narrow and zig-zagged to minimise blast impacts. Near the gun emplacements they had recesses for long-arms (rammers and other equipment for muzzle-loading guns).

Gun batteries using this design were also erected at Outer and Inner Middle Heads, Bradleys Head, Georges Heights, South Head and Steel Point.

Middle Head was intended to become a fortified strongpoint within the overall network of batteries, and the key defence on the northern side of the Harbour. It was to be fortified so that it could be defended against landward attack and act as the main barrack area for troops. Barnet's design reflected this in the construction of a new road cut in late 1870 using unemployed labour,[6] after finished by the Public Works Department.[7] The original type of road is unknown, but sections of Telford road remain leading from the Middle Head Barracks to the Inner Middle Head Battery. The road still remains as Military Road, the main artery through Neutral Bay and Mosman. It travelled from St Leonards to where it descended from the plateau, then one branch led to Georges Head and the other entered the defended area of Middle Head.

Although no plans exist for the works, Barnet's design intention for Middle Head itself is clear and emerged in works between 1870 and 1877. The road crossed into Middle Head and forked, with the left arm heading to the Inner Middle Head Battery and the right to Outer Middle Head. Around the junction of the two arms was the barracks area, and beyond that a defensive ditch separated the barracks from the two batteries. Subsequently a more substantial outer defensive ditch, also V-profile was cut to separate the fort from the remainder of the headland. This would incorporate the Officers Quarters as a bastion strong-point within the trace of the ditch.

Georges Head in initial planning consisted of a single buried casemate battery close to water level accessed by a branch of the road. It had no associated barracks or infrastructure.

The proposed initial and later dispositions of guns are shown below.

Location	Proposed	1871	1872	1873	1874	1875	1876	1877
Outer Middle Head	7 68 pdr	7 68 pdr			8 68 pdr 2 10" 18 ton			1 10" RML 1 80 pdr 6 68 pdr
Inner Middle Head		nil	nil	4 80 pdr	4 80 pdr	4 80 pdr	4 80 pdr	4 80 pdr
Georges Head casemate	3 68 pdr					3 10" SB	3 10" SB	3 10" SB

Guns emplaced at Middle and Georges Heads – taken from various sources (Wilson 1985, Harvey 1985, Oppenheim 2005).



Middle Head Fortifications, c 1875, looking towards North Head. Mitchell Library FL1243472

Outer Middle Head Battery - 68 Pounders

The contracts for the work at Middle Head were signed in January 1871.[8] It was originally designed with seven circular gun emplacements connected by narrow passages at their rear, with magazines and shell stores at intervals.[9] By 1881 however, there were eight circular gun emplacements.[10] The 68 Pounder gun was considered a heavy gun at the time of its introduction in the 1840s.[11] Made of cast iron, the most common version weighed 95 hundredweight (c.4800 kg). The gun was 10 feet long (3.0 m) and could fire either ball, canister or grapeshot ammunition, of 7.925 inch (201 mm) diameter to a maximum theoretical range of 2900 metres.[12]

The battery was arranged in an arc set slightly back from the edge of the headland, providing clear views of any vessel from the Harbour entrance. The battery was able to fire on any enemy ships entering the Harbour or attempting to negotiate the channels past Sow and Pigs Reef. The first gun was mounted on 17 March 1871,[13] which indicates both how urgently the work was carried out, and

also how simple the designs were to execute. The *Statistical Registers of NSW* record that the cost of the Middle Head fortifications in their first year was £5,157.13.6.[14]

Later constructions have destroyed much of the detail of the original battery, but its form has influenced the layout of the surviving gun emplacements. The original battery was strengthened by the addition of a shell gun emplacement in 1877, positioned slightly forward of the earlier guns. This gun emplacement was designed for a larger gun, the 10" 18 ton RML. The emplacement had a shallow step built into the edge of the pit, and different diameter traversing races to their 68 Pounder emplacements.

Passageways from the emplacements initially sloped down away from the gun emplacements, then levelled off with drainage gutters on one or both sides. Along the sides of the passages near each emplacement would have been recesses for side-arms (rammers, sponges and so on) and other equipment. The passages were open to the air, but were crossed at selected points by small footways, possibly made of iron. The original form and series of alterations to the passageways is unknown. The form would have been identical to the extant passages at Bradleys Head.

Magazines and shell stores were located at three separate points to reduce the risk of explosion. The magazine (MH62) survives substantially intact and is an original part of the construction of the Battery. It is a two-roomed brick building constructed inside a chamber with a curved roof, the outer wall of the chamber creating a lamp passage around the magazine. Lamp recesses are let into the walls of the magazine. Baffle doors of iron or steel, now removed, were installed to reduce the spread of any explosion. There has been a sequence of alterations which are not completely understood. It initially was connected to the gun emplacement trenches by a single passage. Probably at that time it was two roomed, but with the doors placed centrally. After a time a second passage was constructed to provide a different pathway for the cartridges and the shells. The shell stores in MH60 and MH61 are likely to be a slightly later addition based on Jervois's criticisms.

Early images of the battery show an abundance of pecked sandstone, and a clear view of all the guns, but this was singled out as a poor design feature and soil mounds were added in the traverses between the guns to isolate any blasts. Changes such as the addition of soil and shell stores appear to have been carried out either on the direct intervention or strong encouragement of Jervois or Scratchley. In a lecture to the officers of the Permanent and Volunteer Forces of NSW in 1879, which

was later published, Scratchley quoted Jervois's trenchant critique of the design of the defences at Middle Head:

> The works are all cut out of the sandstone, and each gun is placed in a circular pit, whatever may be the lateral range to which the piece is capable of being trained. In batteries of several pieces the guns are placed from 50 to 100 feet apart, and are so arranged that if the wide lateral range provided for them were utilized, they would fire into one another. In these batteries, the guns and gunners manning them are seen from seaward on the skyline and are very prominent marks for an enemy's fire. No traverses are provided; consequently shells fired from the front and bursting over one gun would probably silence not only that piece, but also the gun on either side of it. Some guns, moreover, are arranged in a line, the prolongation of which can be taken up by an enemy's ship at distant range, and a few well-directed shells from a vessel in such a situation would prevent the gunners standing to their guns, and would probably silence the whole battery. The only communication within the works are by means of narrow zigzag passages, which have been cut between the circular pits, and lead to the magazines and the shell-room, which have been provided in rear of each battery. These passages are so planned as to render the service of the guns very difficult, and no means are provided for the ready supply of ammunition, - a point of especial importance with the large rifled ordnance of the present day, and essentially necessary to enable artillerymen to work the guns with facility and effect.[15]

Overall, the design of the battery was very simple, consisting of gun emplacements, magazines / shell stores and passages. There were no structures identifiable as battery command posts or range-finding stations. This reflected contemporary practice, including the reliance on firing by line of sight, as all potential targets would have been less than three kilometres away and practically much closer.

Inner Middle Head Battery - Four 80 Pounder RML guns

The battery of four gun emplacements connected by passages leading to magazines and shell stores (MH4) was begun in 1871 as part of the initial 1871 works, and was intended to operate in conjunction with the Outer Middle Head battery. None of the gun emplacements survives above ground, but some sections remain buried as a result of later modifications. It is likely that they were originally built as circular gun emplacements as at Outer Middle Head and Bradleys Head emplacements. They were modified to semi-circular form as were the ones at Outer Middle Head.

The guns used were 80 Pdr RMLs, converted from 68 Pdr smooth-bore guns and arranged in roughly a straight line aligned northwest - southeast. It is unclear to what extent the layout of passages has changed, or whether they were all originally covered, as at present.

The magazine (MH68) was similar in form to that found at Outer Middle Head and other 1871 period batteries around Sydney. It was of brick construction, with two rooms surrounded by a lamp passage. Two shell stores also survive.

Later works on the site of the battery saw partial destruction of the emplacements, and burial of the remainder. Many of the passages and magazines were incorporated into the later expanded below-ground passages.

Beehive Casemate

The first fortification on Georges Head was the Rock (or Beehive) Casemate (GH1), a series of three beehive shaped chambers built of brick set up in cavities in the rock just above sea level. The embrasures for the guns are cut through solid rock. The casemate was built from 1872 onwards. A passage at the rear leads to the surface. One noticeable absence in the battery is the lack of a magazine and only very small shell storage areas. It was built without military supervision and these failings show up clearly. The guns mounted were 10" muzzle loading smoothbore guns. The only evidence in these remaining is narrow channels cut into the floors to take a series of traversing rails. Like the other designs adopted in 1871 it revealed a limited understanding of the requirements of weaponry and coastal defences.

Middle Head Barracks

The third main part of Middle Head area behind the defensive ditch was the Barracks area. An inner defensive ditch separated it from the two batteries.

Five of the major buildings erected at Middle Head remain extant and allow the barracks complex to be understood in its original function and layout. The area was filled with numerous other temporary buildings whose configurations and designations changed over time. Colonial Architect, James Barnet notes that the designs (it is unclear whether he meant individual buildings or the entire complex) were adopted for Fort Queenscliff in Victoria.[16]

The first buildings, erected in 1876, included the two barracks (MH26 - extant, MH27) and the Officers' Quarters (MH29) – also remaining The other troop accommodation included a Sergeant-Major's Quarters (MH30- extant) and a lower barracks (MH28). All were timber-framed weatherboard on large sandstone block footings. The other major structures were a Guardhouse (MH32) and the Soldiers' Institute (MH31). The Guardhouse still stands but with major alterations

both inside and outside. The Soldiers Institute was built in c. 1908 for the recreation of troops. It survives largely intact.

Significance of this phase

The Barnet period is significant for its association with the work with the final Colonial Architect, who was also a major contributor to the built heritage of NSW. In the context of the defences Barnet's design is important not for its military effectiveness. It is essentially the opposite to this, showing how NSW responded after the withdrawal of British garrison troops and direct military input as a result of the Cardwell reforms. All of the major colonies responded in different ways to this new challenge, which only fuelled their sense of vulnerability and remoteness.

Barnet brought modular design into his plans for the new batteries at Middle and Georges Heads. These were applied at both Outer and Inner Middle Heads, and to an extent at the Beehive Casemate. While akin to military design they were not fit for the reality of coastal defence in the 1870s, and were obsolete. Their value lies in how they reflect colonial capacities and perception, and what was and was not possible in an affluent colonial setting with good intentions but no specialist knowledge. They are no longer extant, having been destroyed by later works, but the passages and magazines remain the basis for later use and are largely retained. Bradleys Head remains the exemplar of Barnet's design.

The Beehive Casemate is a significant structure in its own right, an application of colonial design and construction to a different purpose resulting in a unique underground construction.



Defending the entrance to Port Jackson, Georges Head 1881-82. Mitchell Library FL1226201

2.5 Phase 4 - Imperial defence and Scratchley and Jervois – 1877-c.1900

Barnet's design, prepared with little current military input was largely obsolete when it was built. With the arrival of Scratchley and Jervois in New South Wales to ensure that the colonies were thinking of imperial defence needs rather than responding to their own scares his works were about to be attacked consistently for the next decade. Middle and Georges Heads reflect significant changes as a result of the critique of Barnet's design, including rectifying or improving where possible, or abandoning them and constructing significant new works. This work was also undertaken in large part by Barnet's Colonial Architect Office, which was to remain a considerable source of frustration for the military. The tempo of change in military technology had also increased dramatically, with ship armour increasing and artillery consequently becoming more powerful, and another decade's reflection on how coastal artillery could maximise its advantages in fixed armament by improved targeting, range-finding and communication.

Major new installations were constructed at Middle and Georges Heads, including Submarine Mining Stations, disappearing guns at Inner Middle Head and significantly larger RML guns at Outer

Middle Head. The Beehive casemate was replaced with a new Armoured Casemate. This was accompanied by changes to communications, searchlights, barracks facilities and close-protection defences. Importantly the professionalisation of the defence forces continued and Middle Head operated as the School of Artillery before its relocation to South Head.

Submarine Mine installations

An additional form of defence that was implemented was the formation of a Submarine Mining Corps, to operate electronically controlled minefields that would work in conjunction with the defences. A number of installations were built to support this role.

A Submarine Firing Station was built at Georges Head, probably in 1878.[17] 'The necessary observing and firing stations on both sides of the harbour have been constructed'. It was very similar to the one at Green Point, also built around 1878. These two stations controlled the electronic minefield across the Harbour. A narrow long passage leads to a main room whose observation window was oriented to Green Point.

A Submarine Miners Observation Post (MH25) was built at Obelisk, to the east of the beach. It provided a clear view of all vessels that had entered the heads and proceeded as far as the start of Sow and Pigs Reef, and its window was oriented directly towards Green Point. MH 25 is well above sea level with one window aimed directly towards Green Point. It is reached by a sandstone rubble path (MH102). The observation post probably did not control mines on its own, but relayed the position of vessels to the main firing station at Georges Head (GH 13). This was also oriented towards Green Point, where the most substantial of the stations was located.

Georges Head Armoured Casemate

There is no certainty about Scratchley's views on the Beehive Casemate, but it is likely that he was referring to it when he wrote:

> Testimony has been borne in the report on the defences to the ingenuity which has been displayed in the design and good work which has been displayed and the good work which has been performed in the construction of the several works. But the broad fact remains that the principle of dispersion in placing the guns has been pushed to a most serious extent, and that consequently guns have been mounted where they are not required for an efficient defence. Many of the details of design are so faulty that I find it impossible to remedy them.[18]

A new casemate was needed. Jervois and Scratchley had identified that the defences on Georges Head were inadequate for the purpose and needed to be upgraded, along with those on South Head and Middle Head.[19] Designed by Scratchley,[20] the new casemate was built in three chambers with magazines, shell stores and lamp passages between them. The construction consisted of mass concrete set with heavy armour plate, with the guns firing through small apertures, being directed by observers placed in two flanking direction-finding stations. The front of the Casemate was like its present form, but the rear was initially open to the sky. This situation remained until 1888, a year



RML 10 inch gun, Middle Head, c 1890

after the guns - three 10" 18 ton guns - were installed. In 1888 the open area was covered over and a telephone chamber (GH4) was installed behind the centre gun. Earthworks around the Casemate were completed at around the same time.

Probably at the same time as the telephone room was installed, two battery control stations (GH22, GH25) were constructed on either side of the Casemate. The southern one survives in good condition but the other has been demolished.

Outer Middle Head Battery - 10" 25 ton guns

As part of the upgrading of Outer Middle Head two powerful 10" 25 ton RML guns were purchased and installed in 1882. These guns required a complete alteration of about half the existing battery, resulting in the destruction of four of the original 68 Pdr gun emplacements. The new work consisted of two roughly symmetrical gun emplacements (MH55 and MH56), around a complex of rooms and passages. The bulk of the work was carried out in mass concrete, rather than sandstone masonry as earlier. This was an early use of the material, contemporary with the Georges Head Armoured Casemate and Bare Island Fort, and carried out by the same contractor. The rooms, partly modified from the existing passages and rooms, comprised gun fitting, shell and miscellaneous stores and a surgery (spaces 9, 11, 10, 7 respectively). Extra passages were installed and the magazine for MH59 was connected to the complex, requiring alterations in the rest of MH61.

The plans of the battery had been prepared by Peter Morrell of the Colonial Architect's Office, to Scratchley's design.[21] This hand-written memo, which appears to post-date the damage to No. 2 gun, i.e. March 1886, also notes that 'it was found necessary to make several deviations from the original drawings, notably so as to allow the guns to be depressed... This and all other alterations were approved by Sir Peter [Scratchley]. The pivot and races were fixed by the Colonial Architect but other pieces were mounted by the Permanent Artillery...'.

The guns were mounted on Armstrong Protected Barbette Carriages built by the Elswick Ordnance Company. This was a technological innovation designed to deal with the problem of protecting the crews of muzzle-loaded guns, who could be exposed to considerable danger during the reloading of guns. Scratchley was an advocate for this system and wrote about the system in 1882.[22] The version of the mechanical loading system installed in 1882 at Outer Middle Head (Sydney) was also installed at Fort Lytton (QLD), Bluff Battery (TAS), Batteries Naam and El Baroud, Tangier

(Morocco) and Puckpool Battery (UK), and was based on an earlier version installed at Fort Glanville in South Australia in October 1880.[23] The loading gallery for one gun survives intact.

During a training exercise in 1886 recoil from one firing managed to damage one of the 25 ton guns. The holdfast rods which anchored the central pivot to the concrete were buckled or sheared, and this caused damage to other parts of the recoil system.[24] The gun was declared out of action and steps were taken to assess the damage and undertake repairs. The damage resulted in a report being given to the NSW Legislative Council, listing all correspondence regarding the damage and repairs to be undertaken. One item tabled was a report from Lieut. Col. de Wolski to the Major General Commanding NSW Forces. In this he stated that 'The Colonial Architect is entirely responsible for the method of mounting, which is altogether unscientific'. This was reprinted the next day in the *Sydney Morning Herald.*[25] This incensed Barnet, and became an opening shot in the long struggle between the two men, which ended with Barnet's premature retirement.

Bridges describes the relationship as 'De Wolski's military arrogance was matched by Barnet's practised obstructiveness'.[26] Barnet was stung by de Wolski's demands to remove defence works from the Colonial Architect's office, while De Wolski was able to increasingly use evidence of inefficiencies in the supervision of works, such as those at Bare Island and Georges Head to generate support for a Royal Commission. De Wolski could also cite the continuing need to redesign and upgrade defences over a period of two decades after their initial installation by Barnet, with the knowledge that the two leading authorities on the subject, Jervois and Scratchley, had been very critical of their original design.

The construction of the 25 ton gun battery left only four 68 Pdrs and the 10" 18 RML gun remaining. The 10" 18 ton gun was dismounted from its exposed position in 1883. In 1889 the 68 Pdrs were replaced by 80 Pdr RML guns. The inadequacy of using gun emplacements designed for smooth-bore guns was finally resolved in c. 1892 when the 80 Pdr RML emplacements (MH51-54) were redesigned, cut deeper, with adjacent shell-stores, and the connecting passages were widened.

The new 10" 25 ton guns required more command and support facilities, in line with the increasing power of the guns, and used two small Depression Range Finding (DRF) stations on either side of the battery. The information from each DRF was fed back to MH10, the battery command post, which appears to have been an open pit on the glacis between the two guns. The pit has now been filled with concrete, but its outline is clearly visible.

Inner Middle Head Disappearing gun battery

In 1889 the 80 Pounder RMSs were removed from Inner Middle Head, being obsolete. The New South Wales Government had bought a new type of gun, on a disappearing mount, to replace the 80 Pdrs, in 1885.[27] The existing four gun emplacements were partly destroyed and partly filled in, while the passages and magazine were adapted with a deep concrete pit accommodating a disappearing gun being placed at opposite ends of the old battery. Needing a deep pit in which to 'disappear' a large amount of fill was deposited over the existing battery.

As the gun crews were safely out of the line of fire, they relied on newly developed communications and ranging equipment to track targets and coordinate fire, substantial remnants of which remain on the site, notably Depression Range Finder MH14.

School of Artillery at Middle Head

The annual camps at Middle Head, commenced in 1879, continued into this period. These were formalised in 1885 with the establishment of a School of Artillery. The purpose of the School was not only to ensure that permanent and volunteer gunners received regular training and maintained their knowledge and skill. It reflected changes in British military thought regarding training. The School of Artillery was to be established at Middle Head. The first commanding officer of the School of Artillery was Lt Col. W. St. Pierre Bunbury. He spoke quite highly of the artillery corps volunteers who he trained. However he 'found everything in a ludicrously deplorable condition' due to a lack of regular maintenance and supervision over the previous fifteen years. The School aimed to train the volunteers in a variety of drills for the various guns emplaced around Sydney, plus the dismounting and remounting of the guns. Many of the photographs from this period show the 'Short' and 'Long' courses where guns were dismounted using a variety of shearlegs and tripods, transported and remounted.

The School of Artillery was symbolically important because for a long time it was the only such formal corps school among the colonies. Although the 1881 Royal Commission into the Defence Forces recommended that training needed far greater attention, by 1889 Major General Richardson, Commander of the NSW Military Forces still noted the lack of progress.[28]

Significance of this phase

The significance of this phase lies in the work of Scratchley and Jervois at a political level to rectify the effects of earlier British policy to remove the colonies from an integrated imperial defence. In doing so they strengthened the perception of shared interest leading to political federation. Within each colony they critiqued earlier defence works, which tarnished Barnet's reputation as Colonial Architect. The later military engineer Nathan De Wolski continued the attack on Barnet, seeking and ultimately achieving separation of military design and construction from civilian control.

Scratchley's designs for the Armoured Casemate and the 10 inch 25 ton guns at Middle Head are important examples of these forms in an imperial context. They reflect both the application of his considerable fortification expertise and support for Armstrong as a private military manufacturer, rather than seeking to enforce a single source of design and supply emanating from the military establishment. The Armoured Casemate represents a significant construction.

While every component of Middle and Georges Heads changed in this period through their influence, much was intended to accommodate the rapidly evolving military environment. This captures often decadal changes in technology, armaments and the science of ballistics, range-finding and electronics. Middle and Georges Heads capture these changes well, and because they contrast with the works designed by Barnet and earlier in 1801 and 1853 highlight and make these changes legible.

2.6 Phase 5 1901 – c1965[29]

Just before World War 1 two new 6 inch guns were installed at Outer Middle Head, but the war generally left Sydney as a quiet port in the Empire, and many of the older installations were progressively decommissioned. This was in contrast to the activity which greeted both the declaration of war in 1939 and the entry of the Japanese to the war in 1941. On both occasions a period of great activity and hurried construction ensued, often without adequate planning or material being available. As the war progressed the temporary constructions were replaced and crews of differing compositions brought in to operate the guns. Middle and Georges Head were not in the front line of coastal defence during this period, as the strategy was to engage attackers well out to sea if possible. New rapid-firing twin 6 Pounder guns were installed to prevent fast attack craft operating, and to silence any submarines caught in the anti-sub boom running across the Harbour.

As it turned out, the Harbour defences were insufficient at the time of the Japanese mini submarine raid in 1942. The defences stayed silent, while surface vessels did the job of tracking down the submarines. As the war against Japan progressed through late 1943 with more victories to the Allies, the threat of attack on Sydney diminished and active service crews were relocated away, leaving the operation of the defences to militia and Australian Women's Army Service crews. By the end of the war many of the defences were ready to be shut down or dismantled.

At Middle and Georges Heads some buildings were being squatted in, and others were being examined for a variety of necessary reconstruction tasks. The Army presence gradually reduced until, at the time of the Vietnam War, much of the area was abandoned and only training was being carried out in the passages and gun emplacements.

The acquisition of the area by NPWS in 1979, and gazettal as part of Sydney Harbour National Park in the following year, followed the demolition of many of the residential and administrative buildings at Middle Head and the neglect of emplacements by the Army. While the Service recognised the historical significance of these additions to its estate it has not always had the resources and the specialist ability to conserve them in the most appropriate manner.

[1] *Aboriginal Heritage of Mosman*, 2010 State of NSW and Department of Environment, Climate Change and Water NSW; 'Bungaree', Australian Dictionary of Biography, http://adb.anu.edu.au/biography/bungaree-1848

[2] AONSW 2/598 Audit Office to Colonial Architect 15.12.1855

[3] Trainor, Luke, *British imperialism and Australian nationalism : manipulation, conflict, and compromise in the late nineteenth century*, CUP, New York, 1984

[4] AONSW 2/8095.3 Defence Commission Progress Report 11 November 1870

[5] *Illustrated Sydney News* 18 Feb 1871, page 5.

[6] AONSW 2/615

[7] AONSW 2/609 Letter from James Barnet 'Report on memorandum of Lieut. Colonel de Wolski, p .1.

[8] Wilson, G.C., 1985, Sydney Harbour Fortifications Archival Study, NSW NP & WS, Sydney: D55 NSWLC 1890, p. 1089.

[9] *Illustrated Sydney News* 18 February 1871, p. 4.

[10] Wilson 1985: M1.

[11] McConnell, David, British smooth-bore artillery: a technological study to support identification, acquisition, restoration, reproduction, and interpretation of artillery at national historic parks in Canada, Parks Canada, 1988, pp. 55-56.

[12] McConnell 1988, Harvey, Roy H.E., Sydney Harbour Fortifications Archival Study, NSW NP & WS. 1985.

[13] De Wolski in *NSWLC* 1890, p. 1089

[14] *Statistical Registers of NSW* 1871, p. 218.

[15] Sir W.F.D. Jervois quoted in Scratchley, 1879, p. 21

[16] AONSW 2/609 James Barnet letter 'Report on memorandum of Lieut. Colonel de Wolski' p. 6

[17] Based on a reference in Scratchley, P.H., 'Lectures on the Defence of New South Wales: delivered in the

presence of the Commandant and officers of the permanent and volunteer forces of New South Wales, Sydney, 1879, p. 18.

18 Scratchley, 1879, p. 11.

19 Scratchley 1879, p. 8.

20 AONSW 2/609 Letter from Barnet 'Report on memorandum of Lieut. Colonel De Wolski'

21 AONSW 2/609 Memo - 'Outer Middle Head' no date

22 Cooke, C. Kinloch, *Australian Defences and New Guinea: compiled from the papers of the late Major-General Sir Peter Scratchley*, Macmillan 1887, p. 77.

23 Garie, Frank, 'Armstrong's protected barbette mechanical loading system for South Australia', in *Sabretache*, Vol. 44, No.2 (1 June 2003) https://www.thefreelibrary.com/Armstrong%27s+protected+barbette+mechanical+loading+system+for+South...-a0105370861

24 AONSW 2/609, *NSWLC* exact ref.

25 *Sydney Morning Herald* 17.3.1886: p. 9, col. 3.

26 Ricketts, H.G., *History of Middle Head and Biography of William Throsby Bridges*, 1988, p. 112.

27 AWM 54 881/8/3 typescript of letter from Bunbury to Major Whitelaw 22.5.1934

28 Richardson, J.S. 'Inaugural address', *J&PUSINSW* NSW, 1, 1889, pp. 3-4.

29 The following is drawn from Sydney Harbour National Park, Middle and Georges Head, Draft Conservation Management Plan, 1999.

SOUTH HEAD



Aerial view of South Head, in the foreground, with HMAS Watson in the mid-ground, facing south. (Source: 'South Head', *The Dictionary of Sydney*, courtesy of Airview, 0903-1223-94)

EXISTING STATEMENT OF SIGNIFICANCE

The Conservation Management Plan for South Head identifies the cultural heritage significance of the wider place, including artillery installations, as follows:

> South Head is considered to be of National heritage significance as one of the suite of strategic harbour lands within SHNP [Sydney Harbour National Park], important in the pattern of Australia's maritime and defence history including National Park land at Middle Head, Georges Head, Georges Height and North Head. The remains of the Submariner's Firing Station, Searchlight Emplacements, Observation Post and associated infrastructure throughout South Head are important at a National level as part of the first Submarine Mining installation in Australia (1878-1903). Other evidence of this installation remains at Chowder Bay, Georges Heights, Middle Head and Inner South Head (Lady Bay Precinct).
>
> The NPWS land at Green Point has cultural significance to both Aboriginal and non-Aboriginal Australians for its symbolic connection with the first landfall of Government Arthur Phillip in 1788. The Aboriginal sites at South Head are significant at a State level because they provide a tangible link to the Aboriginal occupation of the land including evidence of pre-contact subsistence and religious activities. South Head is of State significance historically as a place of strategic importance for navigation as demonstrated within SHNP at South Head by the second Water Police station site at Camp Cove from 1840, the Green Point Navigation Obelisk from 1858, and the Hornby Lightstation from 1858.
>
> The wrecking of the Dunbar in 1857 with the loss of 122 lives was a key historical event associated with these later navigational improvements. The Hornby Lightstation built in response to this tragedy and comprising the Hornby Light (1858), Head Lightkeeper's Cottage (1860 & 1878), Assistant Lightkeepers' Cottages (1858 & 1878) and surrounding cultural and archaeological landscape, is considered to be of outstanding significance to the State of NSW. Hornby is the only NSW Lightstation to retain the whole navigational site collection of light and adjacent cottages intact to the late nineteenth century arrangement. The Lightstation has associations with its principal designers, the NSW Government Architects Alexander Dawson (GA 1856-1862) and James Barnet (GA 1862-1890); Barnet was also responsible for many of the fortifications structures at South Head in the late nineteenth century.
>
> The Camp Cove Water Police archaeological remnants and Green Point Navigation Obelisk also have technical heritage significance as part of developments in NSW maritime safety.
> The former defence installations throughout South Head are of State heritage significance for their historical, associational, aesthetic, technical significance and research potential. The nineteenth century emplacements demonstrate Australia's reaction to events in Europe. The South Head Defence installations are associated with Barnet, along with Sir William Jervois (1821-1897) and Sir P.H. Scratchley (1835-1885). The remains of the Submariner's Firing Station, Searchlight Emplacements, Observation Post and associated infrastructure throughout South Head – part of the first Submarine Mining installation in Australia (1878-1903) which also includes evidence at Chowder Bay, Georges Height, Middle Head – is likely to be rare in NSW and possibly Australia. The WWII and post WWII phases of Defence use of South Head also have great potential for further historical, technical and archaeological research.
>
> The 1870s Hornby Battery (partly within the HMAS Watson land) and other gun emplacements within NPWS [National Parks Wildlife Service] land are good representative examples of nineteenth century fortifications quarried into the natural sandstone. The Hornby Battery contains evidence of four different phases of artillery technology in one fortification site. It is a good example of a

quarried battery with extensive connecting passageways and underground magazines and stores. The addition of the underground Engine Room in the 1890s and remnants of the associated electrical and communication installations make the battery of particular technological importance. Evidence of the changes to the battery to take larger ordinance in the 1890s is also of technological importance.

South Head also has significance at a local level for its ability to demonstrate the geomorphology of Sydney Harbour and to support native flora and fauna, including some endangered species. It also has significance at a local level for its historical, associational, aesthetic and representative values. Visitors and residents value the local recreational cultural landscape of South Head including the important views and vistas. A formal social values assessment was not possible within the scope of this Conservation Management Plan however Section 5.2.4 considers the likely special communities who would value South Head including the Sydney Aboriginal community, professional and amateur natural and cultural historians, nude bathers, defence personnel and their families and descendants.[1]

SOUTH HEAD COASTAL FORTIFICATIONS

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Description

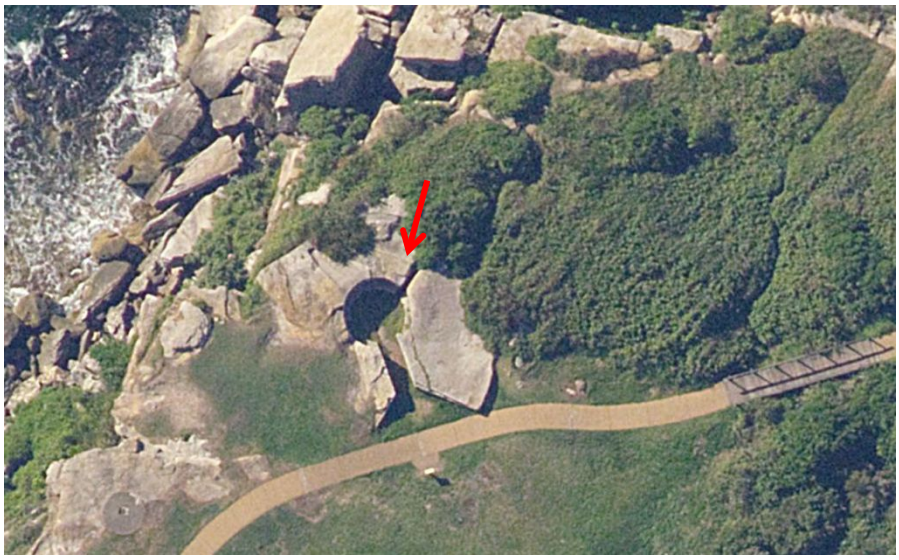
South Head is a sandstone peninsula that delineates the southern edge of the entrance to Port Jackson. On the ocean side, the headland is characterised by precipitous cliffs and, in general, is distinguished by rocky platforms, native vegetation and an undulating topography. The name South Head is used, as is common, to demarcate Inner South Head, the tip of the elongated promontory, as distinct from Outer South Head, to its south, as well as HMAS Watson and Gap Bluff.



Aerial view of South Head, annotated. (Nearmaps, depicting January 2019)

South Head encompasses the remnants of former fortification and military infrastructure installed between the 1850s and 1870s, and modified over the twentieth century.

Above the Hornby Lighthouse Keepers cottage, towards the cliff edge, survives an example of the earliest gun emplacements at South Head, constructed by 1854. Never finished or apparently armed, it formed one of originally three relatively deep pits and is defined by a banquette, apron of natural rock, a short entry passage and in some section, smooth stone finish.[2] It was orientated to protect the Heads as well as the inner harbour.



Aerial view of the extant 1854 gun pit, indicated by the red arrow. (Source: SIX Maps viewer, NSW Spatial Services, depicting c. 2012)

To the south of the Hornby Lighthouse, are three spaced circular gun pits, installed in 1876 and known as the 'Hornby Battery'. They are the most intact and substantial vestiges of the once considerable extent of military infrastructure present at South Head. Excavated from the bedrock, they display level sandstone floors, combination of unfished and dressed stone walls, banquettes, parapets with rounded corners, chamfered edges to the passages, and in parts have been subject to twentieth century concrete alterations. The pits are also linked by a cranked subterranean passageway that leads to associated magazines and shell stores. The southernmost gun pit lies within the boundaries of HMAS Watson and is not accessible to the public. All original armaments, namely 9-inch rifled muzzle loaders (RML), have been removed.[3]



Aerial of the Hornby Battery, with the three emplacements indicated by the red arrow. (Source: Google Maps, depicting June 2014)



View to the middle gun pit of the Hornby Battery, facing east (Source: Google Street view, depicting June 2014)



View to the northern pit, Hornby Battery. (Source: *Conservation Management Plan, South, Sydney National Park*, 2008, p. 115)

National Statement of Significant

Situated to South Head, the remains of a 1854 gun emplacement and 1876 gun pits, known as the Hornby Battery, are of national historical significance.

Collectively, these gun pits are of historical significance for the ability of their siting and built form, albeit with varying levels of intactness, to illustrate a key nineteenth century approach to coastal fortification in Sydney; namely, the outer-harbour defensive strategy, which revolved around engaging hostile ships beyond the Heads prior to their penetration of the harbour. As an integral component of Port Jackson's coastal fortification system over the late nineteenth century, with a continuing if far less central role in conflicts up to the Second World War, the development and use of the South Head batteries provides insight into the often acute anxieties concerning Sydney's military vulnerability and, on a broader scale, the design, construction, and tactics of coastal and harbour fortifications over the late nineteenth century and their subsequent modifications and relevancy.

(Criterion A)

Site History

The historical summary that follows is concerned with South Head's long association with coastal defence. It must be recognised that this only details a singular facet of the peninsula's multilayered story and cultural heritage value, which ranges from its importance to the Birrabirragal people, who knew South Head as 'Burra-wa-ra' or 'Barraory'[4], to its consequence as a signalling station and navigational aid to the nascent colony, as well as a later military training facility and locale for the evolving practices of leisure.[5] Other nearby and related defence sites, such as Green Point, Camp Cove and Outer South Head, are also not included but should feature in a fine-grain exploration of South Head.



Early depiction of South Head, to the midground, swathed in scrub, from a vantage point in what is now Vaucluse. (Source: Joseph Lycett, 'View of the Heads at the entrance of Port Jackson', 1824, National Library of Australia, nla.pic-an7690873)

Nearly armed

Within a decade of the colony's establishment, many of its members, anxious at what they perceived as their critical vulnerability to foreign foes, envisioned the Heads bristling with a fearsome array of guns.[6] Yet a shifting debate concerning the most effective means of actually defending Sydney town and its harbour led to little palpable action towards arming South Head until the late 1870s.

The most concrete of the early schemes involving South Head was prepared in 1848 by the Royal Engineer, Lieutenant-Colonel Gordon. This proposal was firmly within the mould of outer-harbour defence strategy or 'keep him out' approach, which focused on denying entry to the harbour to hostile forces altogether.[7] Its rival, the 'let him in' approach, revolved around luring unfriendly ships into Port Jackson, upon which a series of 'inner-ring' batteries and forts would engage in a unrelenting and interlinked bombardment.[8] The Gordon plan proposed, amongst other installations, a 30-gun battery at South Head and Middle Head, with a tower fort perched on the Sow and Pigs reef. Despite its endorsement by London, the lack of any immediate foreign threat at the time of its publication, combined with a public purse still recovering from the economic turmoil of earlier in the decade, saw its recommendations initially mired in budgetary concerns and general indifference.[9]

During the early 1850s however, public disquiet about the inadequacies of the defensive situation were stirred by the local press with talk of French frigates or Russian raiders bearing down on the gold-streaked, emergent metropolis of Sydney. A Select Committee on defence, formed in mid-1853, responded to this genuine sense of alarm by sanctioning Gordon's plan (he had since returned to England). Further news that Emperor Napoleon III had declared New Caledonia a French possession, which arrived later that year, and in mid-1854 the arrival of intelligence that the British Empire had been engaged with Russian forces in the Crimea for several months, jolted colonial society and ensured that the recommendations of the committee were promptly enacted.

By October 1854, a military work party was clearing the tip of South Head in preparation for the construction of batteries to guard the entry through the Heads as well as the inner harbour.[10] Compared to previous fortifications around Port Jackson, which had utilised, in the main, more rudimentary terreplein and parapet style installations, South Head was earmarked for more sophisticated bastions. These were set into the ground, with protective masonry ramparts and, in combination, with their elevated siting, to successfully absorb any degree of return fire.[11]

Abruptly though, this flurry of activity was halted in March 1855, seemingly before any guns had been installed at the partially completed gun pits. Governor William Denison, a trained military engineer and veteran of the Peninsula War, recently disembarked from a long and autocratic governorship in Van Diemen's Land, had promptly decreed the that the actioned defence plan was misdirected (for surely newfangled steamships would simply 'run' the Heads before any meaningful

damage could be inflicted and then strike at an unguarded Sydney) and perhaps more importantly, were far too costly. Establishing and bolstering a 'let them in' defence system was to be the priority under his watch. The now-abandoned pits at South Head were subsumed into the footprint of the Hornby Lighthouse, erected in 1858, although a single example survived.[12]

The Hornby Battery

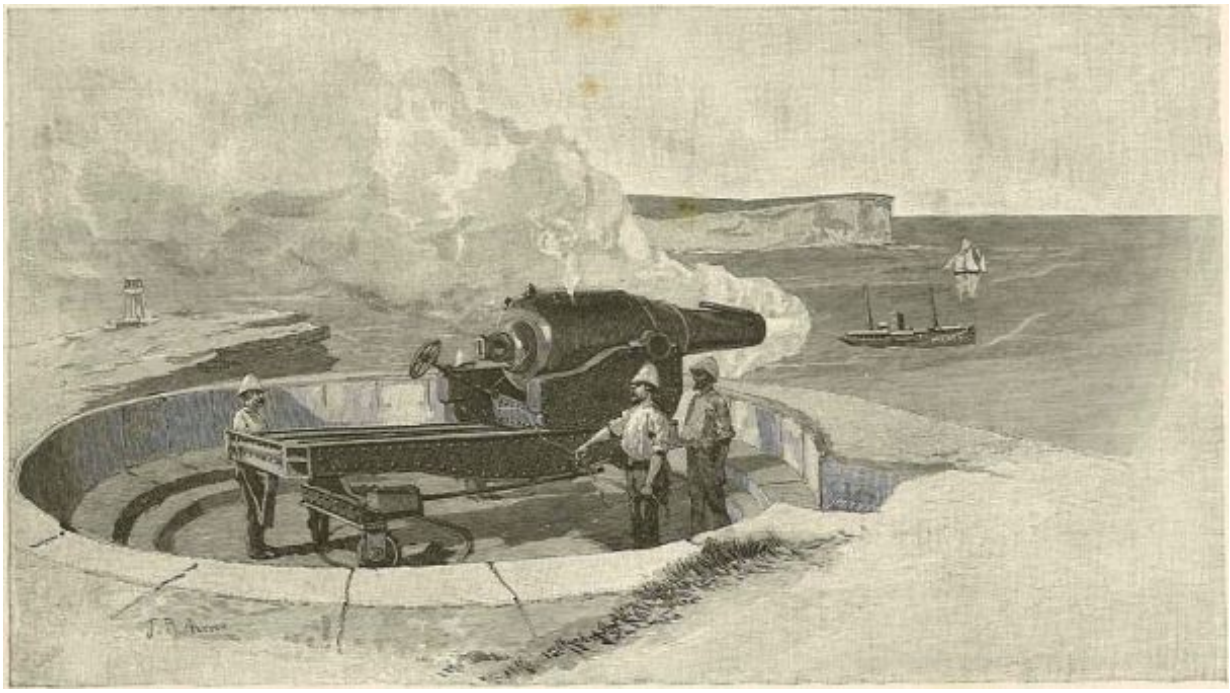
The potential of South Head to operate as a vital location for the defence of Sydney was re-established at the conclusion of a 1870 Defence Committee, formed in the wake of Britain's withdrawal of its forces from Australia. Confronted by the strengthened military capabilities of the Empire's traditional international foes, with the Crimean War having ushered in the era of ironclad warships and ever more powerful and longer ranged explosives, the aim of denying the entry of such vessels into the harbour once again became the overriding aim.

Consequently, plans for the establishment of well-protected and heavily armed coastal fortifications at South Head and Outer South Head, Middle Head, Georges Head, Bradleys Head and Steel Point were devised.[13] Again, logistics and a hefty price tag appeared to threaten as major points of contention until a wildfire rumour of encroaching American privateers provided the necessary impetus to fund the full spectrum of advised works.[14] The defence of Sydney over the late nineteenth century was to be based around a system of powerful, seaward facing guns.

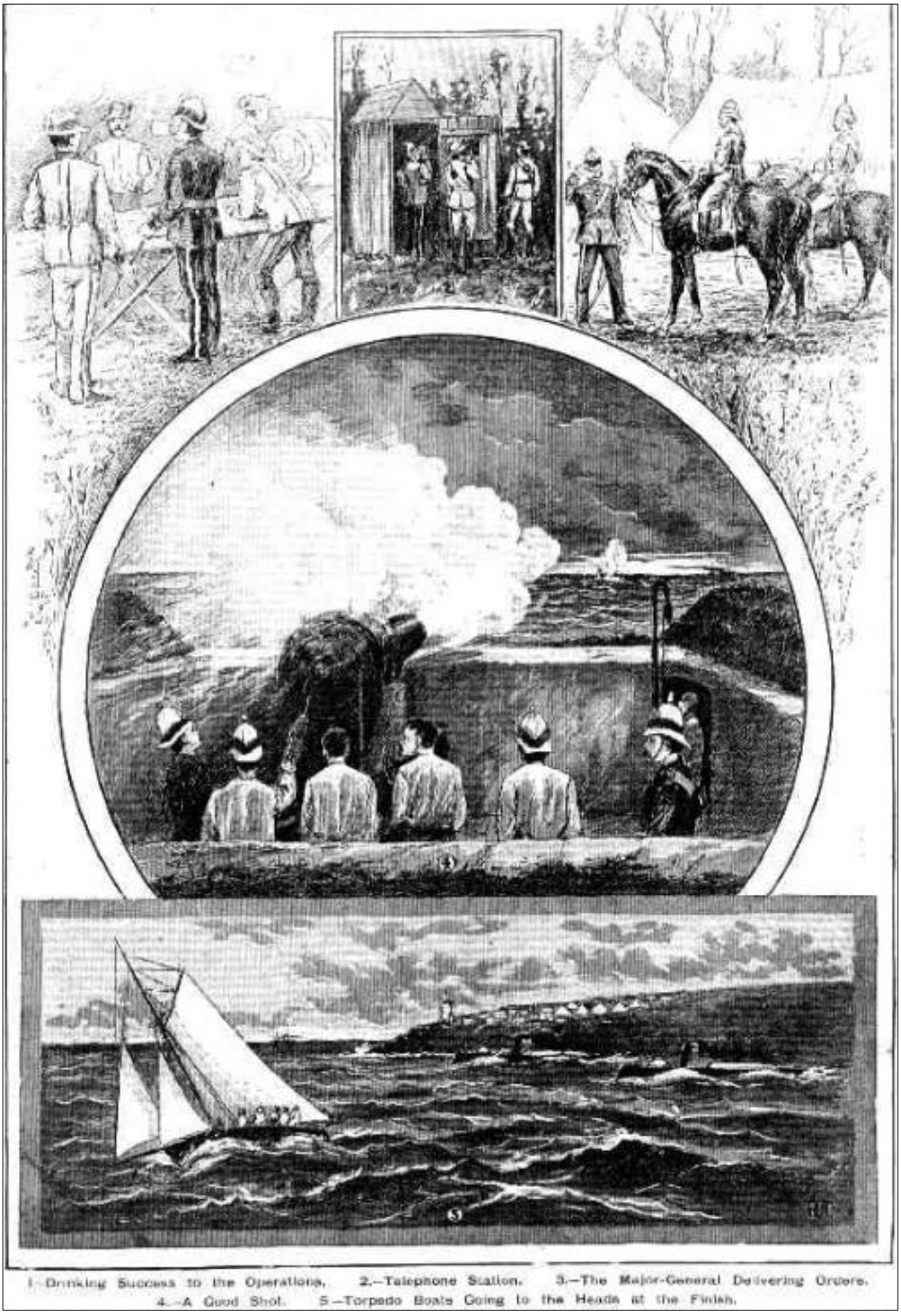
In 1876, three gun pits situated along the commanding sea cliffs just south of Hornby Lighthouse were erected, each armed with 9-inch rifled muzzles loaders (RML). It appears likely that their construction was overseen by the prominent Colonial Architect, James Barnet. This bulwark of heavy guns – known as the 'Hornby Battery' – was considered capable of successfully engaging any modern military vessels well before they could reach the Heads.[15] Further gun pits were installed south of the Hornby Battery over the 1880s (now situated within HMAS Watson and Outer South Head), it was these emplacements that were later upgraded with more sophisticated twentieth century weaponry.



View across the Hornby Battery, likely from inside the Hornby Lighthouse, facing south. Note the trench or moat to the rear of the gun pits. Smoke cloaks one of the guns. (Source: 'View – South Heads, showing forts', c.1900-10, State Library of NSW, PXE 711/23)



Detail of a gun pit with its 9-inch RML, Hornby Battery. (Source: Andrew Garran, ed., *Picturesque atlas of Australasia*, Picturesque Atlas Publishing co., vol.11, 1886, p. 71)



Annual training, from left to right: '1. Drinking Success to the Operations. 2.-Telephone Station. 3-The Major-General Delivering Orders. 4.-A Good Shot. 5–Torpedo Boats Going to the Heads at the Final' (Source: 'Military Operations At South Head', *Australian Town and Country Journal*, 1 December 1894, p. 19)

Obsoleteness

A mainstay of Sydney's 'keep them out' defensive scheme for over two decades, South Head's importance faded from the early 1900s as more up-to-date weaponry, including breach loading 'disappearing' guns on hydro-pneumatic mountings were installed in Outer South Head and other eastern suburb coastal sites.[16]

During the First World War, in common with most of Sydney's fixed defences, only a skeleton staff manned the South Head battery.[17] Its strategic importance lessened, and between the wars the peninsula become more associated with the military training than a principal coastal fortification. As international tensions heightened and doubts emerged about the supremacy of the Royal Navy in the Pacific Ocean, South Head remained operational, although modernisation efforts were exerted at North Head. Nearby Green Point, which featured artillery installations and anti-submarine/torpedo nets become more crucial to Sydney's defences than South Head, although its batteries were subject to some alterations and additions.[18]

In the wake of the Second World War, the new focus on defending against aerial assault or rocket attack rendered fixed artillery impractical. Along with other costal batteries, South Head was decommissioned over the 1950s.[19]

[1] Mary Knaggs, *Stage 1 Conservation Management Plan: South Head Sydney Harbour National Park*, February 2008, Department of Commerce, Report no. 07046, pp. 11-12.

[2] Knaggs, *Stage 1 Conservation Management Plan: South Head Sydney Harbour National Park*, pp. 112-113.

[3] Knaggs, *Stage 1 Conservation Management Plan: South Head Sydney Harbour National Park*, p. 114.

[4] Robin Derricourt, 'South Head', *Dictionary of Sydney*, 2008, <https://dictionaryofsydney.org/entry/south_head>, accessed online 1 April 2019.

[5] Knaggs, *Stage 1 Conservation Management Plan: South Head Sydney Harbour National Park*, p. 28.

[6] James Jervis, *The history of Woollahra: a record of events from 1788 to 1960 and a centenary of local government*, Sydney, Municipal Council of Woollahra, 1960, p. 15.

[7] Peter Oppenheim, *The Fragile Forts: The fixed defences of Sydney Harbour 1788-1963*, Loftus, New South Wales, Australian Military History Publications, p. xiv; and Dean Boyce, *Invasion: Colonial Sydney's Fear of Attack*, Waverly, NSW, 2008, p. 49.

[8] Oppenheim, *The Fragile Forts*, p. xiv.

[9] Oppenheim *The Fragile Forts*, pp. 41-3

[10] G C Wilson, *Sydney Harbour fortifications archival study*, Sydney, National Parks and Wildlife Service, 1985, p. 1.4; and Oppenheim, *The Fragile Forts*, pp. 47-49.

[11] Wilson, *Sydney Harbour Fortifications*, p. 1.8.

[12] Wilson, *Sydney Harbour Fortifications*, 1985, pp. 1.4, 1.6; Oppenheim, Peter. The Fragile Forts, 2004, pp. 47-9.

[13] Oppenheim, *The Fragile Forts*, pp. 77-8, 80, 90-5, 99.

[14] Oppenheim, *The Fragile Forts*, p. 95.

[15] Wilson, *Sydney Harbour Fortifications*, pp. 1.6-1.9; and Oppenheim, *The Fragile Forts,* pp. 90-5.

[16] Wilson, *Sydney Harbour Fortifications*, pp. 1.5, 1.10; and Oppenheim, *The Fragile Forts*, pp. 193 and 198.

[17] Oppenheim, *The Fragile Forts*, pp. 193, 198-200.

[18] Oppenheim, *The Fragile Forts*, pp. 267-71.

[19] Knaggs, *Stage 1 Conservation Management Plan: South Head Sydney Harbour National Park*, p. 74.

BRADLEYS HEAD



EXISTING STATEMENT OF SIGNIFICANCE

The NSW Heritage Register lists Bradleys Head as follows:

The nineteenth century forts are of exceptional significance as one of a series of military fortifications located around Sydney Harbour which demonstrate the evolution of government policies towards defending Sydney and its harbour.

The 1840 fort was cut into the sandstone bedrock outcrop on the tip of the headland and included a barbette gun pit at the eastern end. Approximately half the parapet is constructed from cut bedrock and the remainder built up from sandstone blocks. The surviving remains consist of the parapet wall, a firing step along the base of the parapet, a terreplein (level inner area of the battery) and a rear wall. The parapet and firing step are visible.

The parapet is a semi-circular arc, with the total length on the inner side of the parapet being 38.83 metres. Across the chord of the arc the distance is 23.4 metres. The top of the parapet has been cut to form a sloped surface (glacis), and the outer side has been left rough, except for some dressing to the stop anyone climbing up the outer face. At the western end the line of parapet has been continued for two metres at a later period, using poor quality stonework and cement. (Gojak, 1993:8-9)

1854 Fort
There is a small circular bastion at the eastern end of the fort. The floor contains a 1.250mm diameter depression which was central for a central pivot for the gun carriage. In addition to the floor the parapet wall and firing step are still extant. The mortar used in the parapet is soft and contains shell and rounded quartz grains. That used in the bastion is of a similar colour, but is harder and contains no visible shell or quartz grains. the stonework is different in execution in the bastion and appears to be of poorer quality than that used in the parapet. (Gojak, 1993:9)

68 Pounder Fort 1871-c1900
The battery consists of five circular gun emplacements connected by open trenches that are either cut cur from bedrock or are built up with stone masonry. There is a series of underground rooms which served as magazines and shell-stores. The gun emplacements have 68 pounder guns mounted on traversing platforms. One platform appears to be original but it is unclear if it was originally located at Bradleys Head. Two platforms are replicas. Each of the gun emplacements consists of a circular pit 6.18 metres in diameter. Inside these are two concentric traversing races, 5.48 and 2.20 metres in diameter. The wall of the pits each contain five pulley rings in recesses. All pits have a cut legend 'V R 1871' on the wall. The iron fittings are generally complete and standard pattern arms and equipment recesses for all guns are present. A loop holed wall guards the entry to the battery along the road from the north. The wall is built of well cut sandstone blocks in an L shape with 15 embrasures (loop holes) for rifles. (Gojak, 1993:10-11)

The entrance to the underground section has been roofed over. Later landscaping of the area includes a slight lowering of the ground level to below parapet height, making an unusual appearance. Paths are located around the emplacements. Gojak, 1993:10-11)

Defensive Ditch
The defensive ditch cuts the 1871 battery off from the remainder of the headland and was

probably constructed as part of the 1871 works. It has been cut through both bedrock and soil. The width of the ditch varies but averages approximately six metres across at the top and four metres deep. To the north east of the 68 pounder battery is a cut sandstone blockhouse (a small, isolated fort in the form of a single building) within the ditch, commanding two stretches of the ditch. (Gojak, 1993:12)

Potential Underground tank.
A cement patch with an iron cover exposed near the battery is likely to be and early tank.

Wharf
A sandstone rubble construction with concrete deck. On site of original wharf used to transport materials from city to Bradleys Head.

Mast and Memorials
The memorial mast is located on the southernmost tip of Bradleys Head astride the 1840 fortification. It is situated in a curved, landscaped area bounded in the south by the harbour shoreline and Bradleys Head Road in the north. Beyond the road is the asphalt car park and then bushland and remnant fortifications.

Primarily a grassy location, there are three memorial brush box trees close to the pedestrian path, each with a small sandstone plinth and with plaque commemorating one of three lost ships - HMAS Sydney II, HMAS Perth and HMAS Canberra. The original tree planted for the HMAS Canberra died in 2004 and has been replaced. There is also a memorial honouring the memory of those who served on the four HMAS Sydney ships. This monument consists of four circular bronze plaques set within a square consisting of pink and white granite divided by a cruciform axially aligned with the memorial mast. The cruciform is created by four raised long pink granite name plates, one each for the four Sydney ships. Nearby is a stone column from the old Sydney Post Office which is a distance of precisely one nautical mile from the tower of Fort Denison. To the north is the 1905 offshore electric beacon and foghorn originally powered by a submarine cable from the Fort Macquarie electric light station.

The mast consists of riveted mild steel tripod structure approximately 17m high supporting a sheltered gun direction platform and raised observation post, with a 1993 topmast above, including a yardarm from which block halyards are rigged. Steps and a viewing platform have been built at the mast base. The viewing platform is constructed from a bulb bar fastened with riveted brackets recycled from scrap (as evidenced by holes and irrelevant fastenings on the material). The deck of the viewing platform is constructed of welded mild steel plate. It is accessed by two steel ladders, which are of a Naval pattern but are truncated showing evidence of once being capable of being stowed. The mast's incorporation within the superstructure of the ship is evidenced by the remains of deep brackets riveted to the lower part of the tripod legs. The uneven surface where the brackets were riveted is now prone to corrosion.

Condition
Generally the HMAS Sydney 1 Memorial Mast is in good condition due to regular maintenance works. The mast's incorporation within the superstructure of the ship is evidenced by the remains of deep brackets riveted to the lower part of the tripod legs. The uneven surface where the brackets used to rivet the mast to the ship are now prone to corrosion.

Generally the fort is in good condition and has undergone conservation works to ensure

preservation of much of the fabric. Poor drainage around the historic 1840 fortification, on which the mast rests, has resulted in corrosion in one of the support legs of the mast. This will be subject to further investigation to determine possible solutions.

BRADLEYS HEAD[1]

Don Garden



The modern Sydney skyline from the 1840s jetty at Bradleys Head

Associate Professor Don Garden, OAM FFAHS, FRHSV, is the President of the Federation of Australian Historical Societies, Immediate Past President of the Royal Historical Society of Victoria, and until June 2019 a member of the Australian Heritage Council. For many years he taught History and Environmental History at the University of Melbourne, where he is now an Honorary Fellow. He has written seventeen books, a mixture of local and regional histories, biography, company history, an environmental history of Australia and the Pacific and a history of El Nino events in Australia, New Zealand and the Pacific.

Recommendation

The Bradleys Head fortifications site is of less individual significance than a number of the others in this Port Jackson study. However, it represents a transitional geographical, chronological and strategic point in the development of Sydney's defences in the nineteenth century, and it is therefore recommended to be included in the group listing of the Port Jackson defence sites.

Introduction

Bradleys Head is arguably, in its own right, the least significant of the Port Jackson sites recommended for group listing in this Thematic Paper. Its active life was relatively short-lived and it was not heavily armed. However, it represents a transitional point in the history of the Port Jackson fortifications as technology and other influences saw the migration of Sydney's main defences from close around the young town to further down the harbour to the entrance at the Heads. By the end of the nineteenth century Bradleys Head was essentially superseded and all the modern defences had been clustered at or relatively close to the harbour entrance.

Bradleys Head is a relatively long and narrow promontory that juts prominently from the north shore of Port Jackson (near present day Taronga Park Zoo), about mid-way between the Heads and the Sydney city centre. It was ideally situated in the nineteenth century to be a defensive point against any vessel that found its way into Port Jackson and was threatening Sydney. The first fortification commenced in an incomplete and primitive form in 1840 in conjunction with Pinchgut (Fort Denison). From the late 1850s to 1870 it lay essentially abandoned, but then a major expansion of the Port Jackson defences included the construction of a second generation of emplacements at Bradleys Head at the start of the 1870s. By the 1890s these also were essentially outdated and decommissioned.

Historical Outline

Due to the limitations of armaments and sailing vessels of the period, in the three decades after colonisation the Sydney defence fortifications consisted of a number of small emplacements in the immediate vicinity of the town. However, as military and sailing technology became more sophisticated, the desirability of forward defences further down the harbour became apparent. The first move in this direction came in August 1839 when Governor Gipps ordered the commencement

of a new generation of defensive works slightly further away from the town. Pinchgut (later Fort Denison), a rocky outcrop or small island in middle of the harbour guarding the approach to Sydney Cove, would be armed. Bradleys Head was also to be fortified because of its strategic position further down the harbour. Gipps was expecting British government to support and finance the projects, but at first the government demurred although it later gave approval. Coincidental with this, a demonstration of the town's vulnerability occurred in late 1839 with the unexpected overnight arrival of two American naval ships that were discovered in the morning anchored in Sydney Cove. Despite this scare, the work on the two sites proceeded only slowly for about two years before, in the absence of an immediate threat, and given British reluctance to spend, further work on the two sites was suspended. It has been argued that 'these constructions were unplanned and never finished, being sited more to provide reassurance for the citizens than to intimidate attackers'.[2]

Nevertheless, a stone jetty and a circular sandstone gunpit were constructed at Bradleys Head, both of which are extant, and six muzzle loading guns were mounted. The extent to which they were operational in the next few years is unclear. Nevertheless, Bradleys Head was a component of Sydney's defences until the mid-1850s.



S.T. Gill, Bradleys Head & Battery, c1856-69, Mitchell Library.

Further defence works at Bradleys Head were also stalled by the ongoing debate about whether Sydney could be best defended by guns placed close to the town, or by fortifications at strategic vantage points closer to and at the Heads. As an intermediate point between Sydney and the Heads, the strengthening of Bradleys Head was periodically mentioned. In the mid-1850s, especially during the Crimean War scare of 1854-56, a new defence plan was adopted for major new fortifications and these were to be, surprisingly in hindsight, clustered close around the town of Sydney. However, a small circular bastion at the eastern end of Bradleys Head has been identified as having been constructed in 1854, perhaps as a temporary measure. Once the works in the new scheme were completed in about 1858, Bradleys Head was superfluous and was phased out in 1859.



Large gun emplacement constructed 1840-42

The removal of British troops from the Australian colonies in 1870 resulted in the NSW government appointing a Commission into the Defence of Sydney Harbour, to devise a new defence system. It recommended that a complex system of fortifications, minefields and torpedoes should be constructed and installed, principally in the region of the Heads. However, the Commission's recommendations included a small new fort at Bradleys Head because 'its commanding site has always commended itself as a point of defence – and a fort, afterwards dismantled was erected there some years ago'.[3] The new emplacements at Bradleys Head were to include the installation of one 68 pounder and two ten inch guns, and the construction of a military access road. The fortification was to be supplemented by adjacent minefields.

Much of this work went ahead in 1870-71. The new fortifications consisted of five circular gun emplacements with interconnecting tunnels, trenches and galleries, either cut into the rock or built of stone. They were situated on higher ground above the earlier emplacements, closer to where

Taronga Park Zoo is situated. Barracks were constructed for the artillerymen manning the fort, and the military road was cleared to provide easier access to the site.



SBML 68 pounder gun and emplacement constructed 1871

In the last two decades of the nineteenth century, superior armaments, new defence weapons and faster and better armed ships determined that the strategy to 'keep them out' of Port Jackson was superior to that of trying to defend the city from a ring of close emplacements. New fortifications and defences were focussed around the Heads region, as outlined elsewhere in these Thematic Papers. Bradleys Head was not included in the new generation of harbour defences and it saw little if any further development. A small number of guns was kept there through to the 1930s, but they appear not to have been serviceable and the site was of little military importance after the turn of the century.

Instead, the area was increasingly taken over as recreational parkland, notably with the establishment of the 57.5 hectare Ashton Park in 1908. The area now forms part of the Sydney Harbour National Park which was established in 1975.



Extant section of the 1871-72 fortification

Another element in the heritage significance of Bradleys Head is that it was chosen as the site for the erection in 1934 of the foremast of the first HMAS *Sydney.* The mast serves as a mark of respect for, and a reminder of, Australian officers, sailors and ships lost at sea and in combat, and the naval tradition to which all Australian and international naval personnel belong. Consequently the area has become an important memorial site for the Royal Australian Navy as a premier naval monument and the only naval monument in Australia to which ceremonial honours must be rendered by all passing naval ships.

HMAS *Sydney* 1 is recognised as one of the most distinguished Royal Australian Navy warships of WWI, especially for the defeat of the German raider *Emden* on the Cocos Keeling Islands in November 1914. After a range of other global services, *Sydney* was present at the surrender of the German High Seas Fleet on 21 November 1918. She returned to Australia on 19 July 1919. and carried out routine fleet duties until she was paid off in 1928 and broken up. The mast was removed and in 1934 was erected astride the 1840 defence fortifications at Bradleys Head.

The steel tripod mast which is the primary element of the Bradleys Point memorial was the foremast of the *Sydney* that was installed in 1917, replacing the original timber foremast.



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Gojak, Denis, Bradleys Head Defences Sydney Harbour National Park, 1993
Gojak, Denis, Archaeological Survey of Bradleys Head, Green Point, Middle Head, and Steel Point, 1985
Other sources are:
Oppenheim, Peter, *The Fragile Forts,: the fixed defences of Sydney Harbour 1788-1963*, Army History Unit, 2004

Paul Davies Pty Ltd, 'The NPWS Fortifications of Sydney Harbour and Botany Bay: A Strategic Plan prepared for National Parks + Wildlife Service', Final Report July 2007 (further references in the Bibliography but access to them is unknown)

[2] Gojak, Denis, 'The Battle for Sydney Harbour', p. 31, http://www.georgewright.org/164gojak.pdf
[3] Cited in Oppenheim, p. 93

BARE ISLAND FORT

(BOTANY BAY)



A moving aerial image of Bare Island Fort is available online by clicking here

EXISTING STATEMENT OF SIGNIFICANCE

The **New South Wales State Heritage Register** lists Bare Island as follows:

Bare Island is nationally significant as an almost completely intact example of late nineteenth century coastal defence technology. Designed by Sir Peter Scratchley to a specification by William Jervois, it represents one of the more substantial and impressive of the many fortifications built around Australasia. The Fort reflects the evolution of the relationship between New South Wales as an increasingly independent colony and Britain. It shows the way that strategic defence policy was operating in Australia on the eve of Federation. The Fort is also nationally significant as the site of the first War Veterans Home founded in Australia. This reflects the social and moral obligations felt by Australians early this century to the veterans of wars fought across the British Empire. It is an early major construction from mass concrete, at a time when the use of this material was still uncommon and not well understood. The Fort is of State significance for its pivotal role in the closure of the career of James Barnet, NSW Colonial Architect. It has significant impacts on the way publicly funded construction was carried out in New South Wales after that time. The Fort is regionally significant as the only island in Botany Bay. The form of the island has been changed by the construction of the Fort, to present a functional structure which nonetheless is of high aesthetic value. It is an important example of fortification design which demonstrates the evolution of the theory of coastal defence, the technology of defence and coastal fortification design. The Fort is regionally significant to the general community as part of the recreational and historic landscape of Botany Bay. Bare Island has particular local significance to the La Perouse community as an item of local heritage value.

There is also valuable heritage advice in the following:

'The NPWS Fortifications of Sydney Harbour and Botany Bay: A Strategic Plan' prepared for National Parks + Wildlife Service by Paul Davies Pty Ltd Architects Heritage Consultants Final Report July 2007.

BARE ISLAND FORT

(BOTANY BAY)

Denis Gojak, Archaeologist and Heritage specialist

Denis Gojak has worked in many aspects of archaeology and heritage conservation in southeastern Australia in private consultancy and for government agencies for more than 30 years, with a considerable focus on defence heritage. He presently works as a senior heritage specialist within Transport for NSW.

Summary statement of national significance

Bare Island Fort is nationally significant in representing how the separate Australasian colonies were treated as a de facto federation, by the development of an effectively national defence scheme. It is a particularly well-preserved example of late 19th century fortification design, reflecting developments in strategic and tactical thought, and responding to advances in armament and warship design. It also complements other defences of the same period in demonstrating how similar designs were constructed in each of the colonies to ensure the creation of a series of secure ports in Australia and New Zealand that would allow the Royal Navy to operate unimpeded in the southwestern Pacific.

Bare Island Fort was an integral part of the nationally significant group of defence sites that was developed to defend Port Jackson and the city of Sydney.

Bare Island Fort is also significant as the location for the first War Veterans Home established in Australia. This marks the point at which Australian governments first took responsibility for the care of men who had served in British imperial wars. It predates the care arrangements that would be developed in consequence of casualties of the Great War.

Official values

Criterion A – Events, processes

A1. Bare Island Fort is nationally significant as one of the major fortifications developed by British military advisers Scratchely and Jervois between 1877 and 1885 within the Australian colonies, reflective of their relationship with colonial authorities and imperial primacy.

Although there are numerous other examples of their work across Australasia, Bare Island is one where the design process can be followed in considerable detail from strategic appreciation to an evolving set of detailed choices being made as the structure was being completed to take advantage of changed technology and knowledge. Scratchley's and later de Wolski's interactions with James Barnet is important in demonstrating how imperial defensive needs were able to take priority over colonial concerns. The concerns of colonial authorities to remain protected within the Imperial fold are reflected in the nature of the investment made, monetarily and in political capital in the fort.

A2. Bare Island Fort is nationally significant as part of a chain of forts intended to create a secure base for British imperial operations in the southern Pacific Ocean, and specifically as part of a group to defend Port Jackson and Sydney.

The shift from Barnet's distinctive parochial defensive scheme of the early 1870s to the imperially strategic focus of Scratchley and Jervois is expressed in the spread of their fort building and creation of defensive schemes in the different colonial port cities. This was taking place as Britain was developing a global strategic vision that required a secure network of safe harbours and coaling stations. At the same time there was a developing race between ship protection and armament and coastal artillery, resulting in the employment of new materials, both fuelling significant over-investment to achieve some longevity of protection.

A3. Bare Island Fort is nationally significant as the site of the first War Veterans Home established in Australia.

The establishment of the War Veterans Home in the disused fort represents the first Australian recognition of the national responsibility for dealing with the consequences of war upon its participants. The composition of the veterans as representatives of many different imperial wars echoes Australia's belief that this was the price for being part of the British Empire.

Criterion C – Research

C1. Bare Island Fort was one of the first major structures built in Australia of mass concrete. It has the ability to demonstrate developing knowledge of this material, particularly when paired with the royal commission into its construction.

As almost all construction plans and specifications for the original structure have been lost it represents the best document about its own building. That in itself is not significant, but it represents a nationally major early use of mass concrete as new and important material. This coupled with the data that can be extracted from the Royal Commission provides an important insight into how knowledge about building practice developed with this material.

Criterion D – Principal characteristics of a class or place

D1. Bare Island Fort retains the principal characteristics of a coastal artillery fortification in the late 19th century.

The design of Bare Island Fort can be attributed to a strategic appreciation by Sir W.F.D. Jervois regarding the likely threats that a port like Sydney would face from different naval powers and, from that a detailed design incorporating evolving and changing details prepared by Scratchley. Jervois is responsible for major fortification programs in Britain and elsewhere, and the Australian forts reflect the evolution of his approach. The requirement that the fort be restricted to the island and be self-contained means that it has all of the key elements that would be expected to be present in major sites of this class of defence work.

These remain legible and generally intact in the fabric of the fort. Later changes, particularly the installation of the HP gun reflect continuing development of armaments and the need to upgrade defences to maintain their effectiveness.

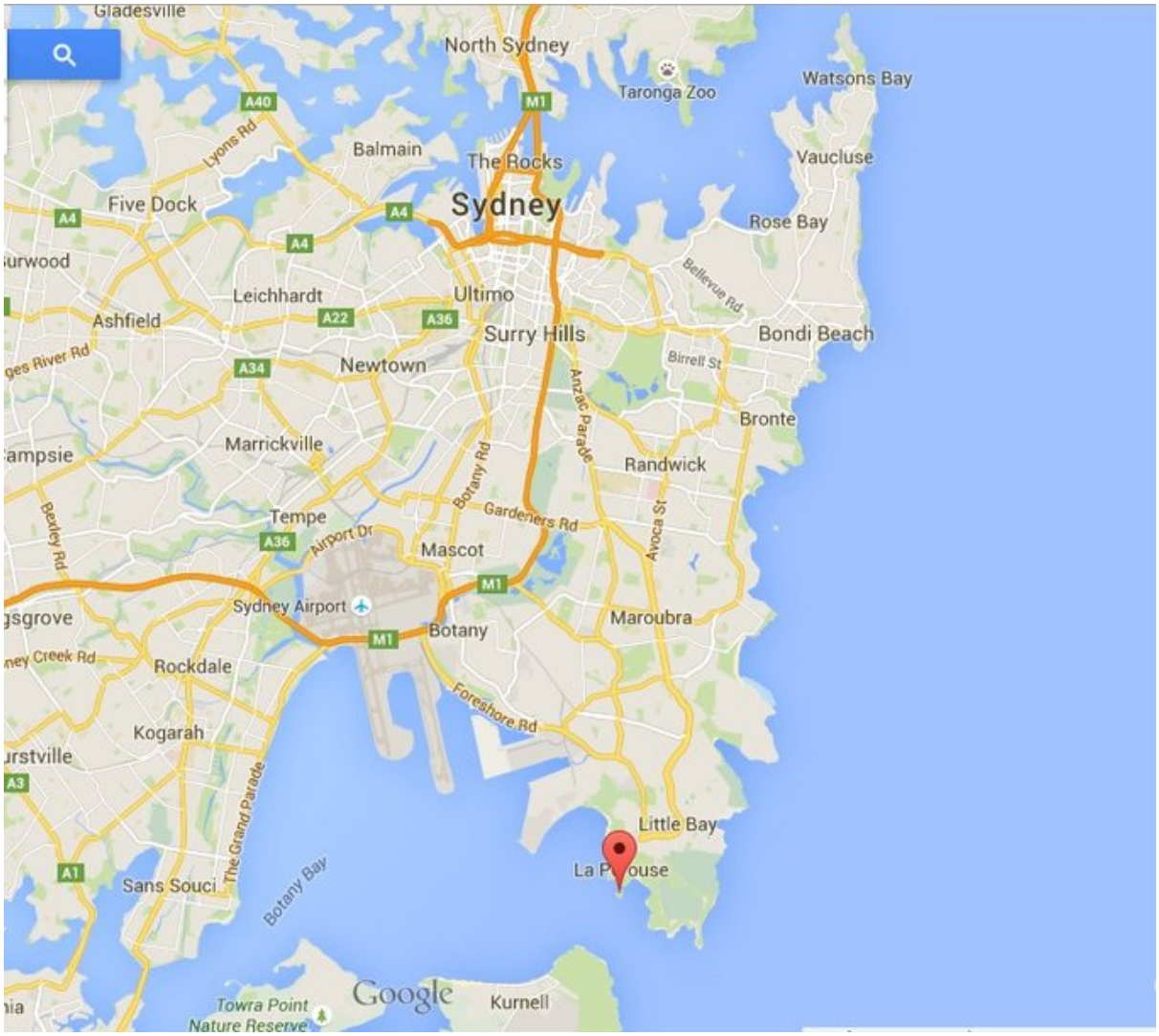
Criterion G – Social value

G1. Bare Island Fort is of social significance because of its association with the war veteran community in Australia.

Although the link is not current, the identification of war veterans as a community with particular needs, which government was obliged to provide for was first exemplified in Australia at Bare Island. Sufficient fabric relating to how the fort was 'softened' to make it more suitable as a place for war veterans to spend their retirement remains, despite being largely removed, to allow the connection of the current place to that past use to be understood.

Criterion H – Significant people

Consistent with all other Scratchley-Jervois associated sites as discussed elsewhere in this Thematic Paper 2.



Description

Bare Island is a low sandstone island lying about 30 metres from the shore of the southern end of La Perouse Headland, near the northern entrance to Botany Bay. In its original form the island was about 140 metres long from north to south and 100 metres across at its widest point. Its maximum height was about 20 metres above sea level.

It's location on the inner north arm of Botany Bay allowed it to command the entrance into that Bay and to provide a rear protection for Sydney and to supplement the Port Jackson fortifications. Although settlement was sparse along the shore, Sydney's water supply pumping station was by the shore, and in contrast to the inaccessible cliffs surrounding the entrance to Sydney Harbour, there were many potential landing locations and little to impede an attacking force from approaching

Sydney from the south. Bare Island fortifications were developed as an integral part of the late nineteenth century Port Jackson/Bare Island defence system.

Bare Island had four recognised historical phases of military activity:

Phase I 1880 - 1890 **Original fortification works and modifications**

Includes all major concrete work and earthworks, the bridge, original space functions and finishes. Excludes the Barracks.

Characteristic materials are mass concrete with sandstone aggregate, cement render, cream fired brick, checker pattern salt-glazed tiles under asphalt, some reinforcing, armour plate, use of vaulting to span tunnels and much of the timber detailing.

Phase II 1890 - 1912 **Second phase fortification works, primarily before 1895**

Includes mainly the Barracks and the installation of a hydro-pneumatic gun and stores.

Characteristic materials include concrete with finer bluestone aggregate, reinforcing beams to span voids, some conduit, red tuckpoint brickwork with dressed sandstone quoins and lintels, some paint finishes.

Phase III 1912 - 1963 **War Veterans Home, primarily around 1912, then a second phase of activity in 1939**

Includes minor modifications in all areas of the Fort.

Characteristic materials include paint finishes, timber flooring inside store rooms, some conduits and cabling, alterations to original use of spaces and installation or removal of internal walls. Changes also made to Barracks with opening up of new access passages, and circulation routes.

Phase IV 1941 - 1945 **World War II military usage**

No definite evidence of this period beyond possible painted signage.

Following the closure of the Veterans Home it became a Museum, operated by the Randwick Historical Society. It was taken into the care of the NSW National Parks and Wildlife Service, and it remains part of Botany Bay National Park.

Overall the island is completely modified. While at a distance its profile appears unchanged it was reshaped to create sheer cliff faces at least 4.5 metres high rising from the intertidal rock shelves, and is more concrete than grass. While it was designed and intended to operate in isolation it was normally accessed by a timber bridge, built in 1883. On the adjoining headland were officer quarters and related military installations were located at Henry Head.

The Battery

The fortress battery is composed of five guns distributed in an arc, with their emplacements placed forward of a 1.8 metre wide passage. Each gun emplacement was provided with a shell store and magazine and other storage space. The arrangement of guns was symmetrical, with the centre 10" 18 ton gun in a heavily armoured casemate originally flanked by two identical 9" 12 ton guns, and these in turn being flanked by two 80 pounder guns. The arrangement of gun emplacements was part of the original (Phase 1) design of the fort, and guns were emplaced around the end of 1882.

Original numbering of the gun emplacements was from 1 to 5, running anti-clockwise.

Gun No. 1

Gun No. 1 was an 80 Pounder RML in an open gun emplacement, with a combined shell store and magazine. It is substantially intact with minor additions made at undetermined dates. The gun emplacement is parallel sided with a curved front, projecting forward of the gun passage. The gun sat upon a large pedestal with a flanged cast iron gun pivot on which the gun rotated and fired *en barbette*.

A shell store / magazine was built into a single recess formed in the leading (outer) side of the passage, brick walls divide it into three inner spaces bounded by a cavity wall on three sides.

There have been few changes made to either the gun emplacement or the shell store and magazine and they are substantially intact as to original form, apart from removal of doors, conduit and fittings.

Gun No. 2

Gun No. 2 was the hydro-pneumatic (HP) mounted 6" breech-loading gun which replaced an original 9" 12 ton gun and necessitated the complete rebuilding of the emplacement to provide the depth of coverage that permitted the HP mount and gun to be concealed. The original form of this gun emplacement has been obliterated by the installation of the HP gun, but would have been identical to Gun No. 4. Two rooms were constructed behind the emplacement and an original set of magazine and shell stores was built between No. 2 and No. 3 guns, which survives intact.

The Magazine and shell store for Gun No. 2 gun was located on the outer side of the gun passage, between Gun No. 2 and Gun 3. Across the gun passage from the shell store and magazine is a space identified as a either a storage room or crew shelter. This is a rectangular room entered through doorway and provided with a window which also opens onto the passage. It also has a vaulted ceiling and has a cavity running behind the rendered brick wall. Paint shadows of storage racks, are visible on the northern, western and southern walls.

Considerable change had to take place to accommodate the installation of the HP gun. The circular emplacement was edged in concrete, forming an apron and retaining wall for earth fill. The fill was used to create an artificial earth embankment raised about a metre for concealment and protection against bombardment. The circular iron shield and mount itself do not survive. The mechanism required a central depression for the lowest part of the mechanism to sit in, surrounded by holdfast bolts A ring of sandstone blocks surrounds the holdfasts, but the remainder of the floor is concrete.

Opposite the entrance to the emplacement are two bomb-proof rooms built of English bond brickwork, with a flat cast concrete roof with iron reinforcing beams. The rooms are set into a cavity formed in the mass concrete and sandstone bedrock.

There are recesses for long arms (rammers and other equipment) in the passage between Gun emplacement 1 and Gun emplacement 2. There are also two other recesses, one which would have had doors that could completely fold back, and a single room.

The gun emplacement has not been modified substantially since removal of the HP gun and its hydro pneumatic mechanism. A photograph from the 1930s shows the central depression being used as a flower bed. The Gun emplacement is in good condition.

Gun No. 3

This casemate emplacement lies on the central axis of the fort's layout, and was designed to be heavily armoured and capable of operation even under direct bombardment. It was therefore heavily protected with armour plate to its front and thick roof protection. It housed a 10" 12 ton gun which still remains in the casemate. It was the last of the emplacements built due to delays in getting the massive iron plate from Britain.

As the most powerful gun it was located to command the entrance to the Bay. Other guns were placed symmetrically around it. The casemate is formed from poured mass concrete and cut sandstone backed with earth and rubble fill. It is roofed with a vaulted iron ceiling, covered with mass concrete and a further covering of earth. The front face of the casemate is protected by a vertical armour plate. Beyond that a clear field of fire has been formed by levelling sandstone and constructing retaining walls. The walls of the casemate would have been rendered with cement which has now all been removed. Original fittings and fixtures have nearly all been lost.

In about 1939 this emplacement was converted into a Billiard Room by the War Veterans Home administration, who buried the gun and erected a raised timber floor. The original communication passage with the Barracks was closed up but re-opened during NPWS ownership who removed as many of the War Veterans Home additions as possible. The gun was located beneath the Billiard Room floor and excavated. Initially chocked up, it was later provided with a strong timber frame support.

Gun No. 4

This gun emplacement and shell store / magazine was constructed in Phase I. It has not been significantly modified since being built. The original 9" gun from Emplacement 2 was installed on a replica gun carriage by NPWS.

The gun emplacement is largely unchanged from its original construction.

Gun No. 5

Gun No. 5 housed an 80 Pounder RML Gun in an identical arrangement to Gun No. 1. Subsequently the Magazine / Shell store has been altered by the removal of the internal dividing wall and lamp

passage, creating a single rectangular space. Two of the doorways were sealed up and filled with windows, leaving only a single access door. Timber flooring was installed, identical to that elsewhere related to the War Veterans Home period. It is also reported that it was used as a children's bedroom during the Randwick Historical Society caretaker occupancy.[1]

Barracks building

The Barracks was built in Phase II, and subsequently altered. While the building commenced construction to Scratchley's design, it was altered by Lieutenant. Col. de Wolski. Although de Wolski wished to erect barracks accommodation off the island, roughly equidistant between Henry Head and Bare Island, Barnet proceeded with Scratchley's original plan to have it within the fort. The design therefore had to accommodate the existing construction work that had been completed, including the large passage which had to be kept clear at the rear of the Casemate. It was designed to be bomb-proof, i.e. it was made primarily of concrete with iron reinforcing beams running through it to withstand shrapnel shells.

The Barracks is a two-storey sandstone fronted building with western aspect. The roof is flat behind a low parapet, roughly level with the surrounding earthworks. It has a verandah supported on 10 ornate cast iron columns on the upper level and sandstone columns in corresponding locations on the lower level. The facade is symmetrical with three doors on each level. There was an identical arrangement of doors and windows on both floors.

Parade and courtyard

In front of the Barracks is the Upper Parade, which provided a level area for troops to muster and for activities to be carried out. It also covers two large water cisterns which are part of the Fort's water storage system, and a number of small rooms in the Lower courtyard. It provided access to the gun passage and to two tourelles, or small emplacements that could have served as sentry point.

The Lower Courtyard extends from the lightwells in the Upper Parade under the Barracks verandah to an archway. This provided direct access from the Guardhouse and western parade.

Additional spaces were integrated into the construction of the Fort away from the guns, including a coachhouse, laboratory, guardhouse and cells, as well as ablutions.

The drainage system was complex and was designed to allow for constant replenishing of five large cisterns embedded in the parade ground walls, plus a number of other large water tanks.

Surviving ordnance

The two surviving guns are:

a. 9 inch 12 ton Rifled Muzzle Loader, Mark V

Constructed at the Royal Gun Foundry, Woolwich in 1872. Barrel number 591.

Originally emplaced in Gun No. 2, now erected on a new carriage in Gun No. 4 emplacement

b. 10 inch 18 ton Rifled Muzzle Loader, Mark II

Constructed at the Royal Gun Foundry, Woolwich in 1871. Barrel number 135.

The original casemate gun, buried for a period and now erected on a new mount in the same location.

History

The original name of the island to the Gweagal and Kameygal Aboriginal people associated with Bare Island and La Perouse is not known. The arrival of *Endeavour* in April 6, 1770 saw it enter European knowledge. On 30 April 1770 Banks took a party to the island to collect shell specimens and a week later Cook wrote that 'a small bare Island' lying close to the northern shore of the bay provided a convenient navigational marker for entering Botany Bay. The name stuck from this first usage As such the name is one of the first European names for a part of the east coast. On the 18th of January 1788 the *Supply* landed in Botany Bay, and was moored in the lee of Bare Island. While Phillip was in Port Jackson, the Comte de Laperouse and his two ships the *Astrolabe* and *Boussole* appeared in Botany Bay. Laperouse's expedition was scientific and relations with Phillip were cordial. Bare Island lay near where the French built a stockade and garden and buried their dead. No recorded evidence relates to any European explorations or particular attention paid to the island during this period of European occupation.

Attention to Botany Bay's defence dates from the mid-19th century. Sydney's water supply came from the Waterworks at the Botany swamps, which replaced Busby's Bore in 1859.[2] This was a major

strategic target and the one that first focussed attention on the possibility of attack from, and the need for defence of, Botany Bay. A Select Committee of the New South Wales Legislative Council met in 1863 to consider Sydney's defence needs, but declined to recommend any defences for Botany Bay. They did recommend that a road be constructed to Botany Bay to allow quick access by troops if needed.[3] This was constructed in 1869-70 by the Colonial Architects Office.[4] It terminated at the Macquarie Watch Tower on La Perouse Headland with a small battery of 40 Pounder Armstrong guns placed near the Tower.

The extensive works implemented following the removal of British garrison troops did not address Botany Bay at all. It was only when Scratchley and Jervois began to reconsider Sydney's defence needs with a better understanding of military developments that its vulnerability was acknowledged. Jervois's preliminary report on the defences of Sydney in June 1877 examined the works carried out to that date, largely by Barnet, and strategic and tactical assumptions to inform the design of new fortifications. His report recommended a small work in Botany Bay as protection from enemy ships. He considered:

> Bear Island [sic] is very well adapted as the site for a battery to fulfil these conditions. The work should be designed for five guns, three of which should be 9-inch M.L.R. pieces; the remaining two should be 110-pr. breech loaders, which are already in store in Sydney. A small barrack should be provided, which, in conjunction with the accommodation in bomb-proofs, will accommodate the garrison, - to consist of 80 men, 30 of whom will be permanent artillerymen, and 50 from the Militia Artillery. The defence of Botany Bay will be further secured by a line of electro-contact torpedoes, placed across the harbour, under fire of the guns...[5]

This description of the battery would remain the basis for the remainder of the century. There was little discussion of Jervois' proposals in surviving government papers. While the strategic vision was the responsibility of Jervois, Scratchley was given the task of turning the proposed defence schemes into detailed design and specification of the works. He was supported by a civil engineer, Gustavus Morell, who had an interest in defence works, and who prepared construction drawings from Scratchley's designs.[6]

Once detailed plans were prepared it was the role of the Colonial Architect's Office to prepare specifications and to supervise its construction.[7] The Colonial Architect, James Barnet helped develop the specifications in conjunction with Morell and Scratchley. It appears from evidence that there was a quite free-flowing interchange of ideas between the three, which sought to develop the best compromise between design intention, construction methods and trade practices.

As a Royal Engineer Captain, Jervois designed all the forts of Alderney. There were twelve forts in 5 miles of coast line, including four off-shore. Alderney was designed as a major naval base off the

French coast but, despite the effort placed in the design and construction, the Island was passed by technological change.[8] He was also responsible for designing the series of defences around Portsmouth in the early 1860s. The design and construction of this series of forts was one of the largest single military projects ever carried out in Britain.[9] Jervois developed an approach to the design of fortifications which was quite different to those being developed by the French and Germans, and also the Americans. It made his reputation among military design theorists. The forts themselves were a direct ancestor in design and concept to Bare Island.[10]

Jervois was influenced by the Paris siege in the Franco-Prussian War, which demonstrated that the increased accuracy of guns would be an important factor in designing future British land defences. His proposal for each of the land forts at Alderney was to have a Moncrieff disappearing gun mounted in the front, or a casemated gun, flanked by shielded guns, and open embrasures to the sides. As noted by Smith, this was typical of Jervois's land fortification designs for at least a decade before.[11][12] Scratchley also had considerable experience in the design of fortifications before his arrival in New South Wales in 1877, having been involved in the design of many forts or protected gun batteries in other parts of Australia. These included forts in New Zealand, Tasmania and Victoria.

While all comments relating to the Fort indicate that five guns were planned, the size of these quickly escalated in response to the gradual increase in the armour plating of foreign vessels. In 1877 'three ...9-inch M.L.R. pieces; the remaining two should be 110-pr. breech loaders', but by 1880, in his testimony to the Royal Commission Scratchley was proposing three 9" RML and two 80 Pdr RML guns.[13] It was only between 1880 and 1882 that the central gun was modified to becoming a 10" gun.

The protection of the central gun was seen as important by Scratchley and Jervois. They were influenced by the experience gained from ship to shore actions in the American Civil War and the bombardment of Alexandria in 1882. Jervois wrote 'that in order render coast batteries thoroughly reliable, a portion of the guns must be protected so that they cannot be silenced'. In their opinion at least one major gun in each installation needed to be protected against concentrated fire from a number of hostile warships.[14]



Bare Island viewed from mainland – December 1927 nla-obj-157952365

Building the fort

During the first half of 1880 there was a Royal Commission on Defences in New South Wales, which focussed on the development of appropriate permanent and militia bodies. Scratchley gave evidence about the Sydney defences, which he had found inferior and poorly designed by James Barnet. Urgent corrective works were carried out over several years to fix issues like exposure of gun crews to shrapnel, and to provide better emplacement, but it was apparent that the momentum of construction begun following his arrival with Jervois in 1877 had started to wane. Bare Island was had been designed but construction had not yet started.[15]

In June 1880, anxious to get work under way, Scratchley wrote to the Under Secretary for Public Works urging that tenders be called. Probably due to cost concerns, it was decided to defer the Barracks, worth an estimated £11,000. Ironwork for the casemate was ordered from England. The tender for £25,020 was accepted from John McLeod, a Sydney builder who had undertaken a number of other public works commissions and commenced work early in June. He was also working on the Armoured Casemate at Georges Head.

Both during the tendering period and after it was awarded, Scratchley continued to amend the design. For example in a letter sent from Victoria he countermanded granite facings and some iron girders in the original specifications, just before the tendering was called.[16] Due to the haphazard nature of his communications, some verbally, others by letter, adequate records of all the changes were never kept. Scratchley died at sea in 1885 and it was never possible for the Royal Commission investigating the construction of Bare Island to corroborate design changes ordered by him and those which arose as a result of poor supervision of the contract. This was to emerge as a key concern when the military chose to challenge aspect of the design and civilian expertise.

Our knowledge of the construction process of Bare Island is limited due to the lack of original plans or project files. These appear to have been lost after their transfer from the Colonial Architects Office to the Military Works Office. The testimony before the Royal Commission is the main source of information on what elements of the design were built as originally designed or were modified.

Bare Island Fort was largely constructed of mass concrete, made by mixing cement with large 'plums of sandstone rubble, and deriving its strength through its bulk and weight'. McBean and Crisp identify Bare Island as one of the first major structures built of mass concrete in Australia. Reinforcing was only carried out to support spans. There were no systems of reinforced concrete that conform to 20th century notions of prestressed concrete reinforcing.[17] One particular characteristic of mass concrete was that it was porous and needed additional waterproofing. This was provided by Seyssel asphalt poured over spaced tiles that provided a key. Seyssel asphalt is a bitumen compound that provided damp proofing and floor cushioning, and examples survive in various locations around the Fort. It contains no additional aggregate, and is therefore not hard wearing and is prone to long term 'creep' and flow. The depth of the asphalt layers was a particular concern of the Royal Commission as the ingress of water that was observed was initially assumed to have been a fault of the asphalt on the top of the structure.

The work proceeded rapidly during the latter half of 1880 and until mid-1881. However in June 1881 Barnet heard that 'exclusive of excavations for gun-room, passage at rear, and magazines, all work on the casemate at Bare Island Fort has been stopped for about five months, pending the decision as to whether granite, iron or concrete should form external faces of the embrasures, &c.'.[18] The four guns in open emplacements were emplaced by the end of 1882. This was a delicate operation as there was a need for strict control over the laying of the circular gun racers to ensure they were dead level. Even a small variation would make traversing the guns difficult. The work must

have been considered to be satisfactory as there were never any complaints. The 9" guns were mounted in September and the 80 Pounders in November.

By June nearly all of the Battery section had been completed with the exception of the central casemate, which was waiting for the arrival of armour plate from Britain. The concrete had been poured to either its full height over the passages, including the curved ceiling or to a predetermined level (53 feet or 16 metres above the site works datum).

Scratchley continued to make small changes, or 'suggestions' as he termed them, in the design. He wished to omit the wing walls that formed the space in which the Barracks building would sit. Suggested twice, they were eventually built. He urged the construction of a Guardroom at the entrance to the rear, which was also built. He also had a say in approving the final versions of various fittings and fixtures such as door locks and door frames.

By the end of August 1883 the Battery area was almost completed, with the full height of concrete nearly poured over the entire passage length. The Barracks site had been prepared and foundations dug. In November 1883 the armour that had been ordered in June 1880 arrived from England aboard two ships, the *Gulf of Venice* and the *Marsala*. The armour plate shields for Bare Island and the Georges Head Casemate Battery each weighed 25 tons 17 cwt (26.264 tonnes), and measured 17' 5 3/4" by 9'10" and were 9" thick (5.3 x 3.0 x 0.23 m). Once the ships arrived at Sydney the armour plate was lowered directly into punts using the Australasian Steam Navigation Company's shear legs. The punts were then towed to Botany Bay and Balmoral Beach respectively for Bare Island and Georges Head.[19]

Once the armour shields were in place the final stages of the Fort's construction could be carried out. In May 1884 the final major concrete pour was carried out on Bare Island, covering the iron roof plates of the casemate to the full height of the structure. Sandstone rubble fill was then finally able to be used to shape the outline of the fort in such a way that it minimised silhouetting of guns.

Death of Scratchley

Scratchley went to England, returning in January 1885. He was appointed as the Administrator of the New Guinea settlement, an important posting aimed at diffusing some of the politically sensitive interactions with Germany which had already taken possession of Papua. This diverted his attention

from the construction, and it is likely that he did not pay much attention at all to the works as of this time.

Scratchley died while returning from New Guinea on 3 December 1885. His death represented a significant blow to the fortification program across a number of colonies. In the case of Bare Island he had continued to be involved in significant detailed decision-making, and there was no ready alternate source of advice available once he was gone.

Planning had begun on the construction of a complementary fortification to Bare Island on Henry Head, about a kilometre to the east north east. This would take two of the hydro-pneumatic guns that had been ordered, and would provide an outer defence for Botany Bay, with Bare Island supporting it in barring the entrance and dealing with any vessels that made it into the open waters of the Bay or which sought cover in sheltered water.

General Schaw, visiting Sydney, inspected the defences in 1887 and found that there were some necessary changes to the scheme that Scratchley and Jervois had established:

> The division of the guns into two groups, one on Bare Island, and the other on Henry Head, will render it desirable that the new barracks about to be built here should not be in the Fort, which is always to be avoided if possible, as the Barracks in such confined positions are always unhealthy and inconvenient, and also expensive. An excellent site is to be found in a central position between Henry Head and Bare Island concealed from seaward, and I would strongly urge that the barracks be constructed in this position.[20]

With pressure mounting from the military to begin construction of a barracks, as troops were still living in tents on La Perouse headland, Barnet reactivated Scratchley's original barracks design, which had been specified by Morrell.[2122]

In the three months following this workers who should have been constructing the Barracks spent time making repairs to major wall cracks and 'the magazine had to be repaired and the drainage to be altered; retaining walls to be supported; shellrooms, pipes, and ventilators to be uncovered - in fact, a large quantity of work to prevent the Fort, which had only just been constructed, from falling to pieces'.[23] Despite rectification works, building failures, including cracking and leaking water continued to plague the new fort.

Lieutenant Colonel de Wolski arrived at the start of March 1889 to begin his duties as an instructor of the Submarine Mining Corps and as Director of Military Works. Before the end of the month he found out about the range of military and defence-related works being carried on through the Colonial Architects Office. One of his chief concerns was the unsuitability of the barracks at Bare Island.[24] His initial concerns were that Schaw's recommendation concerning the Barracks site

relocation to behind Congwong Beach, to serve both Bare Island and Henry Head had been ignored. As he explored the matter more deeply, he became aware of the construction defects.[25] As he sought background information on the approval process for the building of the Barracks, he became increasingly alarmed at the lack of a formal contract between the Government and the builder, which enabled the builder to effectively charge for the construction as he pleased.

Following a number of complaints by the military garrison at the Fort of shoddy workmanship, and lobbying from de Wolski, the Minister for Public Works set up a Board of Inquiry into the construction of Bare Island. The main concern was the extension of the contract to include the Barracks and the costs involved. The two engineers appointed to the task, William Wardell and Cecil Darley, found when they went to Bare Island that de Wolski's complaints about poor workmanship were justified and that McLeod was continuing his work on the Barracks. Work on the barracks ceased while the design was modified to strengthen the building.

Shortly after this in July, the Military Works Branch of Public Works was established. De Wolski was placed in charge, reporting directly to the Permanent Head of the Department.[26] De Wolski achieved a rare victory by having all military works concentrated into one agency. Henry Parkes, who approved the changes, had been historically antagonistic to any notion of a military ministry or other centralising of control of the armed forces in the Colony. He had hoped to keep the military presence very much under the control of the domestic political structures, but the problems that had arisen through the lack of a coordinating body forced him to act against his own strong convictions.

The second event that took place at the same time, which has overshadowed this, was the establishment of a Royal Commission inquiry into the entire manner of the contracting and construction at Bare Island.



Ships passing, Bare Island – from *Botany Bay Today* series, 1980 – Micky Allan NGV

Royal Commission 1890

Following adverse findings by the Board of Enquiry, Parliament established a Royal Commission into the construction of Bare Island and other defence works to investigate the matter.[27] The Royal Commission and the controversy surrounding it precipitated Barnet's premature retirement from public life, which officially terminated on 30 June 1890. It was an ignominious end to a distinguished career, marked by many of Sydney's best known and most magnificent late 19th Century buildings.

One of the main causes of concern over the construction of the Fort was the quality of the concrete. The Royal Commission and associated inspections provide considerable detail on the inadequacy of the concrete, both from its structural ability and the fact that the builder charged for fine concrete when the work clearly indicated differently. Investigations including cuttings made into the concrete to test its adequacy, the management of the tendering process and supervision by the Clerk of Works were all examined and found wanting. Builder McLeod was fined in a Supreme Court action for his failure to abide by the Bare Island contract after the completion of the Royal Commission.[28] However, no criticism was directed at Scratchley for his continued involvement in the design and

late changes, although these directly contributed to some of the problems that were noted by the Commission.

Later colonial military occupation

By 1894 the hydro-pneumatic (HP) mounts and guns had arrived in the colony. Henry Head Battery, with two HP guns had been constructed and a single gun was to be mounted in Bare Island, in place of the No. 2 9 inch 12 ton gun. The installation of the HP gun required deepening and widening of the original emplacement, the construction of a new gun crew shelter behind the gun and other minor modifications to the battery. A new Battery Command Post was built behind the No. 4 Gun, to oversee the entire area to be fired upon.

Once this installation of the armament was completed it remained stable for about ten years.[29] The details of the final armament are:

Gun No.	No.	Model	Made by	Date	Weight	Serial no.	Qty	Comments
2	72	BL 6" Mk V	EOC	1886	5 tons	4972	1	HP EOC cylinder Mk II
3	73	RML 10" Mk II	RGF	1872	18 tons	135	1	Gun still present within casemate. Iron sliding dwarf, Casemate
ex 2	74	RML 9" Mk V	RGF	1872	12 tons	596	1	Iron sliding dwarf en barbette on slide D pivot
1, 5	75	RML 80 Pdr Mk 1	RGF	1872	5 tons	78, 92	2	Iron 80/68 Pdr Parapet Mk 1 Barbette
4	76	RML 9" Mk V	RGF	1872	12 tons	591	1	Gun No. 2 identical now in this emplacement. Iron sliding dwarf on slide D pivot
	77	Mg Nordenfelt 45" Mk 1	120 lb	1886	H.B. Co. Enfield	1252, 1260	2	5 barrel. Field carriages

Table 1. Details of guns emplaced at Bare Island. Date unknown, but late 19th century [NPWS file P2982].

A comprehensive review of properties to be transferred to the Commonwealth took place upon Federation. The 1903 report was a comprehensive description of the military assets of New South Wales which were to be transferred.[30] The Island was transferred from State to Commonwealth ownership with a value of £33,600.[31] In 1902 the Fort was inspected by Major General Hutton, who decided to reduce the garrison, concentrating permanent artillery units closer to Sydney.

The role of Bare Island was gradually reduced to being a training depot with limited personnel. It was felt that the island could not continue to operate as a front line fortification.

Phase III - War Veterans Home

The Veterans Home at Bare Island was the first war veterans home established in Australia. This was despite the problem of military veterans being a perennial issue in Australian colonies during the period when British garrisons were stationed in Australia.[32] Those who desired to stay when their regiments moved would be given a range of incentives from recognition of service to land or may have left military service entirely. However there was never any real consideration for those who had experienced war horrors and needed the support that was removed when comrades and units left for other places.



War veterans working within a garden within the fortifications on Bare Island, 27 Dec 1927. nla-obj-157953084

The proposal to turn Bare Island into a Veterans Home came from an informal committee established as an off-shoot of the British Empire League. There was a need to house and care for military veterans who may have been suffering from a range of apparent or undiagnosed traumas and psychological problems, as well as being effectively destitute and uncared for after a life time of soldiery. During the Great War years care was largely handled by local committees who sought work for disabled or injured veterans, and it was only in the final year of the war that the Commonwealth stepped in to provide a coordinated structure for care of veterans. This care

included determining that the Commonwealth was responsible for maintaining the pension support of veterans from other dominions and wars.[33] The Red Cross was active in founding and operating homes for veterans, but the prevailing opinion was that as many veterans as possible should be returned to community care, as much for their mental well-being as their physical healing.[34]

The Bare Island War Veterans Home remained separate from the veterans homes and facilities established after the Great War. The veterans were each given a navy blue uniform with a peaked cap, and paid 7 shilling sixpence of their pension each week as a contribution to their keep. The veterans also received a certain number of free tram tickets and cinema tickets. 'The men slept in dormitories with curtains between the cubicles and there was a large hall for concerts, and a mess and the cook was usually a younger ex-serviceman'.[35]

The Commonwealth retained ownership during this period, even though it had been vacated by the military. A Commonwealth officer thought that 'Bare Island should also eventually be reserved because of its historical associations. The officers of the Department of Defence intimate that it is useless as a fortification'.[36] This is the first mention of Bare Island as having potential as a historic reserve.

Some accounts from the mid 1930s survive. They give an indication of the administrative structure of the War Veterans Home and some flavour of the life of the men. The committee vetted applications from ex-servicemen, favouring length of service and honourable discharge. Information was collected on any other social support, dependents and sources of support that the veterans may have had. There were up to a dozen veterans, who served in a number of wars. Their average age was 69 years, seven months.[37] A Mrs E. Williams, who was a resident of a shack in the Happy Valley camp at La Perouse, was listed in 1940 as being employed in the War Veterans Home as a cook.[38] Fundraising dinner dances were held for the Home in the homes of wealthy supporters or on board ships.

During the period of occupation by the Veterans Home, the Fort was also used as a film set for *40,000 Horsemen*. The film depicts the Fort as a Moorish citadel.[39]

In 1939 the administration of the War Veterans Home was passed over to the Returned Services League. This organisation had worked closely with Sydney Legacy during the 1930s depression to lobby for a War Veterans home for First World War soldiers. By the end of the decade they had begun to operate a new veterans home near Narrabeen Lakes and felt able to continue the responsibilities that the Bare Island War Veterans Home had first established. Bare Island became

a ‘Section’, and joined ‘Linton’ in Yass, established in 1942, as one of three homes for ex-servicemen.[40]

It appears that the transfer of responsibility to the of RSL Veterans Retirement Village resulted in some changes to the arrangement of the veterans’ use of space on the island. The main change noted is that around 1939 the Casemate was converted into a billiard room.[41] This involved enclosure of the opening at the rear of the Casemate, lining the recesses with brick and other modifications.

After the Second World War the veterans returned. Eventually the Army decided the island was surplus to requirements and the process of selling it off began. It was recognised that the island could not be developed due to its open space zoning, and that the cost of adequately repairing the bridge would both be disincentives for any would-be purchasers. It was finally agreed that the island should be offered to the War Veterans Home for a nominal fee of £1. This offer was made in February 1962. The Board of the War Veterans Home decided to vacate the remaining residents of the Veterans Home to the Veterans Home at Narrabeen. They left the island on 10 - 11 August 1963, leaving a caretaker until the 24th, by which time all of the furnishings and equipment were to be removed.[42]



Bare Island NSW National Parks

Phase IV – Second World War

The main military presence in the area at the outbreak of war was at the 9.2 inch gun battery at Cape Banks, which was to be protected by a detachment of 2 Garrison Battalion. Cape Banks was one of the counter-bombardment batteries of the Sydney Fortress, designed to engage powerful enemy warships while they were still far enough out at sea to be unable to bombard Sydney or its defences.[43]

During the Second World War the defences of Botany Bay were strengthened. The Cape Banks Battery was supplemented in December 1941 by the installation of two 18 pounder field guns on temporary mountings. These were placed at Henry Head in order to provide protection against the entry of smaller fast vessels such as torpedo boats into Botany Bay.[44]

At the start of March 1942 the veterans in the Home on the island were required to leave so that it could be reactivated for defence purposes. The island provided barracks accommodation for troops to crew two small 3 Pounder guns on the island. Towards the end of 1942 Bare Section, as it was named, consisted of one lieutenant, two sergeants, one corporal and 21 privates. They were responsible for the operation of the two guns, in shifts around the clock. It is likely they were removed from the island before the end of the war.

Phase V - After the War Veterans Home

After the War Veterans Board declined to purchase the island from the Army, the NSW Government, agreed to take over the island, their offer of £100 being willingly accepted. Bare Island was notified as Reserve 85259 for Public Recreation on 12 March 1965.[45] It was managed as a museum attraction by the Randwick Historical Society.

Bare Island Historic Site was gazetted on 1 October 1967, making it one of the original suite of historic sites proclaimed under the new National Parks and Wildlife Act. It subsequently became part of Botany Bay National Park.

Condition and integrity

Overall the fort is in excellent condition considering the concerns raised with its construction in the 1880s NSW National Parks and Wildlife Service has expended considerable capital and maintenance funding to ensure the stability for the site.

The integrity of the site is generally good for the different military phases. The layout has not been changed and all the gun emplacements remain in something of their original form apart from one which had a larger gun installed later. Evidence of the War Veterans Home occupation is subtle but still present and does not adversely affect appreciation of other fabric or significance.

Post-military use of the site for public interpretation has generally been sensitive and has not resulted in adverse impacts to heritage values.

Location

Within Botany Bay, south of Sydney, projecting from the La Perouse headland. It is within Kamay Botany Bay National Park.

1 Paterson 1983: 84.
2 Aird 1961, Coward 1988.
3 *Select Committee 1863,* 9.9.1863.
4 *Committee* 1871 - *8.*
5 Preliminary Report 1877 4.6.1877 - p. 16.
6 SC 1865; 1881 RC - app D. p. 24.
7 Royal Commission 1881 - app D. p. 24.
8 K. Tough, 'Review of C. Partridge and T. Davenport, *The fortifications of Alderney'*, *Casemate: Fortress Study Group Newsletter*, 42, 1995, p. 8.
9 T. Crick, 'Fortifications from Vauban to Jervois', *Fort*, 24, 1996, pp. 7-71.
10 Crick 1996.
11 V.T.C. Smith, 'Chatham and London: the changing face of English land fortification 1870 - 1918', *Post-Medieval Archaeology*, 19, 1985, p. 105 - 149.
12 Smith p. 112 notes that Jervois even in 1875 was still employing designs that were 15 years old.
13 In 1877 'three ...9-inch M.L.R. pieces; the remaining two should be 110-pr. breech loaders', but by 1880, in his testimony to the Royal Commission Scratchley was proposing three 9" RML and two 80 Pdr RML guns.
14 W.F.D. Jervois in C. Cooke (compiler), *Australian Defences and New Guinea: Compiled from the Papers of the Late Major-General Sir Peter Scratchley RE KCMG*, London, MacMillan and Co., 1882, p. 82.
15 *NSW Royal Commission on Defence Works* 1891, *NSWPP* 1991-92 vol. 7, pp. 115-295: Scratchley Appendix D. 30.3.1880.
16 *NSW Royal Commission on Defence Works* 1891: p. 26 11.2.1881.
17 McBean and Crisp Report on materials and structural investigation for the Bare Island, La Perouse, Job No. 2766, unpublished report to Public Works Department and National Parks and Wildlife Service of NSW, 1991; W.B. Coney *Preservation of historic concrete: problems and general approaches*, U.S. Dep Interior Preservation Briefs 15, no date.
18 *NSW Royal Commission on Defence Works* 1891: p. 27, 10.6.1881.

[19] 'Our fortifications: some interesting details', *Sydney Morning Herald* February 1885, p. 7.
[20] *NSW Royal Commission on Defence Works* 1891: Transfer Appendix B - no. 4, Quoted by de Wolski 19.8.1887.
[21] *NSW Royal Commission on Defence Works* 1891: Transfer Appendix Doc. 55.
[22] *NSW Royal Commission on Defence Works* 1891: Transfer App. B - no. 3.
[23] *NSW Royal Commission on Defence Works* 1891: p. 33.
[24] *NSW Royal Commission on Defence Works* 1891: de Wolski to GOC. 30.3.1889
[25] *NSW Royal Commission on Defence Works* 1891: Transfer Appendix B - document 4.
[26] *NSW Govt Gazette*, Issue 363, 16.7.1889, p. 4854.
[27] Barnet's initial reply, in *NSW Royal Commission on Defence Works* 1891: p. 33.
[28] D. McDonald and P. Bridges, *James Barnet Colonial Architect*, Public Works Department, NSW History Project, Hale and Ironmonger, Sydney, 1988.
[29] NSW National Parks and Wildlife Service, Draft Bare Island Conservation Mgt Plan, May 1997, p. 30.
[30] NSW NPWS 1997, p. 31.
[31] The Royal Commission inconsistently also cites it as £24,269.
[32] A.P. Skerman, *Repatriation in Australia: a history of development to 1958*, Commonwealth Repatriation Department Central Office, Melbourne, 1961.
[33] Skerman p. 22.
[34] Commonwealth Repatriation Department *Annual Reports* 1918 - 1925.
[35] NSW NPWS 1997, p. 33.
[36] NSW NPWS 1997, p. 34.
[37] NSW NPWS 1997, p. 34.
[38] NSW NPWS 1997, p. 34.
[39] Undated article, *Weekly Southern Courier* 1993, pp. 1, 8.
[40] G. Newland, *The Golden Years A Story of Comradeship: The History of the R.S.L. Veteran' Retirement Village 1939 - 1989*, RSL Veterans Retirement Village, Narrabeen, 1989.
[41] NSW National Parks and Wildlife Service, Bare Island Historic Site – Plan of Management 1975, p. 9.
[42] NSW NPWS 1997, p. 36.
[43] K. Fullford, *We Stood and Waited: Sydney's Anti-Ship Defences 1939 - 1945*, Royal Australian Artillery Historical Society, Manly, 1994.
[44] Fullford 1994.
[45] NSW NPWS 1997, p. 41.

NORTH HEAD



North Head is already on the National Heritage List, although for its quarantine significance. It was not fortified in the nineteenth century and was only developed as a military defence site leading up to and during WWII.

Nevertheless, it is recommended for inclusion in the Port Jackson Defence Group as an integral part of the WWII development of fixed defence sites.

EXISTING SIGNIFICANCE STATEMENTS

The following are the relevant sections from existing significance listing statements

The North Head **National Heritage List** is essentially concerned with the quarantine role of the site, and has little to say about its military significance in WWII. It describes the military role as follows:

Military Uses

Traditionally the first threats of invasion were seen as coming from the sea, with inner and outer lines of defence established at Sydney Cove and at Middle Head by 1801. Various schemes for the defence of Sydney and Port Jackson were proposed throughout the nineteenth century, with an outer line of fortifications completed at Bradley's Head, South Head and Middle Head; at Middle Head fortifications were begun as early as 1873 under Colonial Architect James Barnet. However, it was not until the Second World War that North Head became part of Sydney's coastal defences.

In 1934 the Commonwealth withdrew permissive occupancy by Manly Council in anticipation of the fortification of the headland for coastal defence. Two 9.2 inch guns had been purchased for installation at North Head in March 1934. Construction of North Head Fort (concrete gun emplacements, magazines, engine room, pump chambers, tunnels and plotting room) was completed in 1936, by the civilian firm of McConnell, as were the Command Post and battery Observation Posts. The guns were capable of targeting shipping in Botany Bay and Port Hacking. These guns were to be supported by the six-inch batteries at South Head. North Head was to play a role in the defence of Sydney Harbour under Australian troops. An artillery barracks complex, completed between 1933 and 1938, was used as the Headquarters of the Australian Coast Brigade with barracks for personnel manning the coastal fortifications at North Fort and Bluefish Point erected between 1935 and 1936. The main barracks complex, the North Head Fort barracks Group (the Artillery Barracks) was completed between 1936 and 1937, below the highest point of North Head. The new quarters were the largest barracks erected in Australia in the Inter-war years. Cottages were also completed for the Battery Commanders as well as four cottages for the NCOs. A second barracks complex was also completed within the Quarantine Station Reserve. The 1st Heavy Brigade moved its headquarters to North Head in 1938. The first Australian land-based radar station was established at Blue Fish Point in 1941, during the Second World War, protected by an anti-aircraft battery and searchlights (Freeman, 2000 and Schwager Brooks, 1996). Before 1940 the entire Sydney Defence had been commanded from the North Head Barracks, but after the declaration of war, in 1939, command was transferred to Dover Heights (Freeman, 2000 and Schwager Brooks, 1996).

After the Second World War the permanent barracks complex became the School of Artillery in 1953. The School remained a crucial component of the basic individual training of officres, NCOs and gunners in the 1970s and 1980s. However, in 1960 the North Fort guns and other equipment were removed. Although remaining in use, the physical limitations of the site would eventually bring about the relocation of the artillery function. In 1979 the Commonwealth/State Foreshores Agreement provided for the exchange of certain State and Commonwealth lands and in December 1989 the artillery directorate was transferred to Canberra. The School of Artillery was relocated to Puckapunyal in Victoria in 1997-1998 (Freeman, 2000 and Schwager Brooks 1996).

The North Fort is now in use as the Royal Australian Artillery (RAA) Museum (from 1990) and remains in Defence hands, while the Artillery Barracks complex is managed by the Sydney Harbour Federation Trust, as part of former defence lands in Sydney Harbour, before it is returned to the State of NSW.

The NSW Heritage Register describes the significance of the fortifications as follows:

Statement of significance:

> North Head Battery is of historic significance as a key link in the World War Two defences of Sydney, Newcastle and Wollongong, operating in conjunction with other 9.2 inch batteries at Newcastle, Cape Banks and Wollongong. The Battery is of significance also because it is a major element in the extensive collection of Sydney defence facilities which represent the range of military technologies operating in the colony and state from the early nineteenth century to the present day.
> Part of national coastal defence system (World War II) and general Port Jackson defences: they also represent important advances in targeting procedures.





LEGEND

Listed Area

Produced by: Heritage Division
Projection: MGA Zone 56 Date: 5 May 2006 Canberra, © Commonwealth of Australia Created in ArcGIS 9 using ArcMap

North Head - Sydney

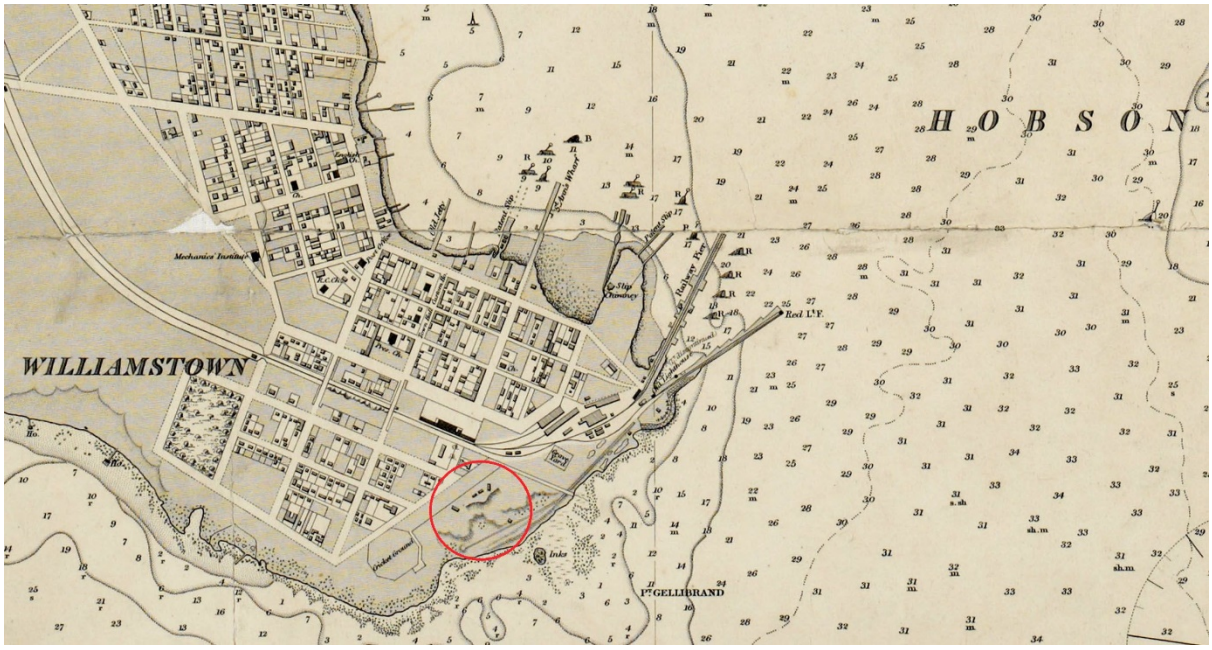
National Heritage List
Place ID: 105759 File: 1/13/024/0019

0 150 300 Meters

Australian Government
Department of the Environment and Heritage

FORT GELLIBRAND

(WILLIAMSTOWN)



Detail from map 'Hobson Bay & River Yarra leading to Melbourne', 1864, Commander H.L. Cox R.N. Collection State Library of Victoria

EXISTING STATEMENTS OF SIGNIFICANCE

Fort Gellibrand (Williamstown) is on the **Commonwealth Heritage List** which describes its significance as follows:

Summary Statement of Significance

Fort Gellibrand, developed from the 1860s onward, is the only substantial surviving remnant of the original Hobsons Bay defence system, constructed as part of the scheme for the defence of Melbourne during the nineteenth century. In conjunction with the other fortifications around Port Phillip Bay, Fort Gellibrand is important as an element in defence planning of the time. Additionally, the artillery training phase and the weapons testing phase at the Fort reflect changed defence priorities during the late nineteenth and twentieth centuries. (Criteria A.4 and B.2) (Themes: 7.7.1 Providing for the common defence)

The site is especially important as it contains evidence from the first phase of development of the Port Phillip Bay defences. Further, the Drill Hall, as well as being a good example of its type, is one of only two drill halls surviving in the Port Phillip Bay defences. The hall's residence is very rare. The former Artillery Store is the only one to exist at any of the Port Phillip Bay forts, and its rarity value is heightened by the fact that it was designed by (then Captain) Peter Scratchley. The Heating Chamber Building also is very rare and illustrates distinctive technological requirements at the Fort. The gun emplacements and associated structures reflect developments in the design of defences and ordnance. (Criterion B.2)

Contained within the site are important examples of defence buildings and other structures and areas constructed during the late nineteenth and twentieth centuries. These include the Drill Hall and Residence, Mess, Quartermaster's Store, former Gun Shed, Offices, former Artillery and Side Arms Store, former Artillery Store, General Store, Side Arms Store, former Heating Chamber Building, Boiler House, Store, Sick Bay, Splinter Proof Shelter, Old Magazine, Parade Ground, Observation Platform and Shelter, Infantry Parapet and four Gun Emplacements with some accompanying Pump Chambers and Magazines. The original and early fabric in these places contributes to the significance, as do the spaces around the places. (Criterion D.2)

Fort Gellibrand has additional significance for its association with Lieutenant Colonel Peter Scratchley and Colonel Sir William Jervois. Both of these officers played important roles in colonial defence planning in the latter part of the nineteenth century. (Criterion H.1)

Official Values

Criterion B Rarity

The site is especially important as it contains evidence from the first phase of development of the Port Phillip Bay defences and is the only substantial surviving remnant of the original Hobsons Bay defence system. Further, the Drill Hall, as well as being a good example of its type, is one of only two drill halls surviving in the Port Phillip Bay defences. The hall's residence is very rare. The former Artillery Store is the only one to exist at any of the Port Phillip Bay forts, and its rarity value is heightened by the fact that it was designed by (then Captain) Peter Scratchley. The Heating

Chamber Building also is very rare and illustrates distinctive technological requirements at the Fort. The gun emplacements and associated structures reflect developments in the design of defences and ordnance.

Attributes
The early fabric that is associated with the Hobsons Bay defence system, the Drill Hall, the Artillery Store, The Heating Chamber building, gun emplacements and associated structures.

Criterion D Characteristic values

Contained within the site are important examples of defence buildings and other structures and areas constructed during the late nineteenth and twentieth centuries. These include the Drill Hall and Residence, Mess, Quartermaster's Store, former Gun Shed, Offices, former Artillery and Side Arms Store, former Artillery Store, General Store, Side Arms Store, former Heating Chamber Building, Boiler House, Store, Sick Bay, Splinter Proof Shelter, Old Magazine, Parade Ground, Observation Platform and Shelter, Infantry Parapet and four Gun Emplacements with some accompanying Pump Chambers and Magazines. The original and early fabric in these places contributes to the significance, as do the spaces around the places.

Attributes
The building and structures noted above, including their curtilage and setting.

Criterion H Significant people

Fort Gellibrand has additional significance for its association with Lieutenant Colonel Peter Scratchley and Colonel Sir William Jervois. Both of these officers played important roles in colonial defence planning in the latter part of the nineteenth century.

Attributes
The whole of the complex, and in particular the artillery store.

Fort Gellibrand is listed on the **Victorian Heritage Database** where its significance is described as follows:

What is significant?
From the 1850s to the turn of the century a series of coastal defensive works were built in the Colony of Victoria in response to a perceived threat of attack from hostile warships. The battery in front of the Lighthouse had been constructed in 1855. In the early 1860s the strategy for the defence of the port of Melbourne was based on a number of shore batteries inside Port Phillip Bay. The area known as Fort Gellibrand is dominated by the earthworks and gun emplacements of the only remaining battery from four nineteenth century batteries at Point Gellibrand. These batteries were in turn part of a system of shore defences which stretched from the Point across Hobsons Bay and along the foreshore to Point Ormond. New batteries were built at the Cricket Ground, at the end of Breakwater Pier, and at the Fort. The small stone building once designated as an ‘artillery store’ at the fort dates from this period.

The technology of artillery was developing rapidly in this period and the batteries were changed to accept, and protect from, new types of guns. Improvements were made to the Point Gellibrand batteries in 1871. Convicts from the hulks moored offshore were employed on these works and accommodated in an old military barracks at the Fort. The buried central magazine at the Fort dates from this period. The most expansive period of building of shore defensive works in the State was the late 1880s and early 1890s. By this stage the primary defences of Port Phillip were located at the heads, but Fort Gellibrand batteries were also upgraded in this phase. Most of the nineteenth century fabric that survives at the Fort today dates from this period, including the gun emplacements, earthworks, front magazine and drill hall and attached residential wing. The batteries have retained up to the present their original commanding view over low level clear open space to the Bay.

The importance of the Fort batteries declined from the 1890s, but they were used for practice up until the 1920s. Commonwealth activity resumed from the 1930s to the late 1940s with the adaptation and use of the site for use as an artillery proof range. A number of buildings were added to the area around the Drill Hall during this period.

The Fort Gellibrand site also contains historic fabric from the period when convict hulks were moored off Point Gellibrand. From 1854 five prison hulks were moored just offshore. Treatment of prisoners on the hulks was harsh. In Inspector General of Penal Establishments in Victoria John Price was attacked at Point Gellibrand by convicts from a working party and died of his injuries. The brutality of the hulk system was given as a reason for the attack in subsequent Government inquiries. Some of the convicts from the hulks were employed in quarrying and building activity in a number of bluestone quarries along the shoreline, producing both mass stone and finished stone for government projects within the reserve and buildings in the town of Williamstown. A convict barracks was located in the area of the later Fort. One obvious area of shallow quarrying remains visible to the south west of the Fort. The current road along the shore is thought to follow the line of the tramway built by the convicts to facilitate movement of stone. Convict quarries elsewhere along the shore in front of the Fort and elsewhere at the Point, have since been filled in.

How is it significant?
Fort Gellibrand is of historical, educative and illustrative significance to the State of Victoria

Why is it significant?
Fort Gellibrand is of historical importance to the State of Victoria for its association with the development of defence strategies for the colony in the nineteenth century and for its association with the convict hulk period of the penal system in the colony. The Point Gellibrand shore batteries were first developed as part of an immediate defensive system for the city and port of Melbourne, prior to the establishment of batteries at the Port Phillip heads. The fort site contains the only remaining visible physical evidence of the system of four battery positions at Point Gellibrand from this period. The batteries at the fort were upgraded in the 1870s and 1880s, and the fort remained an integral part of the defensive system for Port Philip up until the late 1880s and 1890s. The Fort's commanding outlook over open coastal landscape to the bay has been retained to the present. An open area of stepped shallow quarrying is visible evidence of the convict hulk system which operated from the 1850s to the 1870s. Convict working parties from the hulks were employed in quarrying and associated building activities at Point Gellibrand, and specifically in the Fort area, during this period.

Fort Gellibrand is important because it has educative and illustrative potential for demonstrating

the extent and operations of defensive artillery works at Port Phillip in the second half of the nineteenth century. The Fort retains a range of batteries, guns, magazines, earthworks, and military buildings from that period and also retains a clear relationship to the target area in the Bay.

FORT GELLIBRAND

WILLIAMSTOWN

Keith Quinton - Researcher AAHU Fort Queenscliff

Keith Quinton has been a volunteer researcher with the Australian Army History Unit (AAHU), Fort Queenscliff since 2007. As a child he spent many years visiting Swan Island Naval Depot and various other “Heads Fortifications”, which fostered a keen interest in various warships and fortifications that guarded Port Phillip during the nineteenth century, and into the early twentieth century. After studying at Melbourne University, Melbourne Teachers College, and RMIT School of Art, he pursued a 30 year teaching career in various Victorian Secondary Schools. Since 2002 Keith has self-published a number of books (via Blurb Books USA); including *Defending Port Phillip* (2009), *Port Phillip Forts* (2010) and, *Stop the Pfalz – 1914* (2012). He has also published articles on Port Phillip’s defences for the Military History and Heritage Victoria Inc., website. He is currently writing a biography of John Blackbourn C.E. – Victoria’s only Defence Engineer (1882-1907).

SIGNIFICANCE

Fort Gellibrand is the only surviving example of ten shore batteries constructed by Captain Peter Scratchley R.E. at Williamstown and Sandridge following delivery of his 1860 Defence Plan for Hobson's Bay, Victoria.[1] Initially constructed between 1861 and 1865 as an earthwork battery, Fort Gellibrand was the 'Central Battery' in a group of Williamstown shore batteries protecting Melbourne's commercial shipping anchorage. The earthworks link to Victoria's aspiration to secure its growing 'bullion' and commercial wealth from external attack. Vessels purchased for the Victorian Naval Squadron were also at the forefront in the transition towards British Colonial and Imperial defence co-operation and wide-ranging developments in mid-19th Century ordnance and fortifications. Fort Gellibrand is still largely intact, although its four developmental stages require an understanding of the progressive alterations to its original 1860 trace.

DESCRIPTION

Fort Gellibrand is a chevron shaped earthwork and concrete battery. It stands on 12.2 acres (4.94 hectares) of Commonwealth land on the low shoreline that forms the southern border of Williamstown on the western bank of the Yarra River. The site commands Hobson's Bay anchorage - still used by merchant vessels waiting for permission to enter the Port of Melbourne dock facilities. The current defence base encloses a drill hall, administration offices, storage buildings, garages, and a variety of gun emplacements (some with historical ordnance in situ) dating back to 1861.

West of the Yarra River entrance the Port Phillip Bay shore sweeps in a curve of wetlands to Werribee and Corio Bay. While tidal waters along this shore are extremely shallow, central Port Phillip maintains sufficient depth (once clear of the Great Sands shoals) to allow for free movement of shipping. The rear (north) of Gellibrand battery was not enclosed, although the central guns had a small Redan with gorge - protected by a 'rifle' land wall. Now utilized by the Commonwealth as an (ADF) Army defence base for 2nd Commando Company of the 1st Commando Regiment, Fort Gellibrand forms the northern perimeter of Point Gellibrand Coastal Heritage Park – Parks Victoria.

HISTORY

1854 - 1856

At the time of Sir Charles Hotham's arrival as replacement Lieutenant-Governor in 1854, the Victorian Legislative Council was a partially appointed, partially elected, group of thirty men. One of

the principal questions confronting all of the Australasian colonies was Britain's impending war with Imperial Russia and how colonial ports could be protected from a raid by a Russian naval squadron or cruiser. Under the looming shadow of war with Russia, on January 27 1854, Council Chamber debate centred on the exposed position of the city of Melbourne with almost every participant presenting a separate plan of defence. Some proposed fortifying Port Phillip Heads, a measure others declared to be useless. Some were for mooring steam-frigates in the shipping channels, others desired to form a citizen militia. The result was appointment of a Select Committee tasked with establishing the locations liable to attack and the colony's existing means of defence.[2]

The committee recommendations included immediately increasing the establishment of the 40th Regiment of Foot to a full Corps - stationed solely in Victoria - while one hundred retired artillerymen, a battery of field guns, and three hundred trained infantrymen were sought in Great Britain to commence establishing a local defence force. The committee also urged a steam paddle-warship, similar to the war-sloop *HMS Devastation,* be stationed at Port Phillip. The British Parliament and Admiralty refused to immediately increase the number of British troops, or naval vessels stationed in Australian colonies, as all available resources were being mustered for the Anglo-French action in Crimea. However, permission was granted to form a Citizen Militia in each Australian colony.

In unison the colonies pressed for the provision of artillery pieces and proceeded to construct, or upgrade, harbour fortifications at the principal ports. In early 1855 twenty 32-pounder cannons were despatched to Port Phillip. These cannons arrived aboard the sailing-ship *Aerolite.* The *Geelong Advertiser* was unimpressed*:*

> The thirty-two pounders on the Sandridge jetty are of tried virtue. They were cast in the reign of William and Mary, and did great execution at the Battle of Blenheim (1704). They were then kept in the Tower for many years, but were again called into use at the siege of Quebec (1775). They also were used by Wellington in the Peninsular (1808-1814), and on the return of peace were stuck up as corner posts in Portsmouth Dockyard. They were taken up by order of the Ordnance department, and shipped to this place as eminently adapted for colonial use. It is said that since Mr Childers has become Captain of the Artillery Company, the insurance offices have refused to grant him a policy on his life at any premium. Three of the guns are in much better order than the others, having been wrecked in the Royal George (1782).[3]

Two earthwork batteries were constructed at Melbourne. The newer ordnance going to an embrasured battery at Gellibrand Point, Williamstown, and the obsolete guns to a simple earthwork at Kerferd Road, Sandridge.[4]

Defence Royal Commission – 1858

In July 1858 a Defence Royal Commission was convened to '*Examine the defences of the Colony of Victoria.*'[5] The Governor in Council appointed fourteen members - led by Major General Edward Macarthur C.B. - who presided over a commission that included parliamentarians and the most senior military and naval officers available to the colony. On January 11, 1859, eleven resolutions were adopted:

1. Whatever decision may hereafter be arrived at with regard to the erection of batteries or other defences at the entrance to Port Phillip, it is indispensable that Hobson's Bay should be fortified sufficiently to protect the ship line and the city from any force which it is probable may be brought against them.
2. For this purpose guns should be placed in position at intervals along the northern shores of Hobson's Bay, for about one mile and a quarter on each side of the Government pier at Sandridge; also on the southern shore, at a point one mile north-west of Gellibrand's Point, at the present battery, and on the coast about one-quarter of a mile south of the point; also a battery at St Kilda.
3. On account of the great width of the entrance to Hobson's Bay, nearly the whole of which is deep water it is necessary, in order to complete the system of defence, that a battery should be placed in the middle of the bay, near the white buoy.
4. The best and most economical battery for this purpose will be either one of the recently constructed steam floating batteries, protected with iron plates, the mounting at least sixteen guns, or a steam block ship carrying sixty guns.
5. The commissioners are led to believe that the heavy 68-pounder is the most suitable gun for the proposed shore works and for the floating batteries; but they also recommend that some long 32-pounders be added for the purpose of firing hot shot.
6. Sixty 68-pounders and ten 32-pounders should be procured from England without delay, to arm the shore batteries, together with all necessary stores, platforms, &c.
7. The imperial government would be requested to supply the floating battery or block ship, together with its armament and stores complete.
8. As the share which the floating battery or block ship is expected to take in the defence of the harbour is for the protection of the shipping only (of which the great majority belongs to British ship owners), the Imperial government should be requests to contribute one-half of its cost.
9. It was desirable that the armament of the steam sloop *Victoria* be completed.
10. No system of artillery defence can be complete without the support of infantry, 6,000 of them, approved rifle for light troops, with accoutrements, & ammunition, should be procured and stored by the government for the purpose of arming any local force which may be raised, and that of this number 2,000 be ordered immediately.
11. It was advisable that a complete 9-pounder field battery, consisting of four 9-pounder guns and two 24-pounder howitzers, should be procured together with limbers, wagons, stores, harness, ammunition, &c., and also for the purpose of training recruits) six light 3-

pounder guns, similar to those used at the Royal Military Academy for the instruction of the cadets.

In coming to these preliminary conclusions the committee resolved that the two batteries and 32-pounder guns emplaced at Sandridge and Williamstown were quite unable to protect Hobson's Bay from attack. Although a defence of Port Phillip Heads was thought preferable, it was also impossible; due '... *First, (to) the very short time during which an enemy's ship would be under fire, even at a long range; and, secondly, the very high number of trained artillerymen who would be required to be permanently stationed at the Heads.'*[6]

Not all were fully convinced of the urgency of the situation. In July, 1859, the Defence Commission waited upon Governor, Sir Henry Barkly, to induce him to recall Parliament in order to adopt measures for the defence of the colony. Sir Henry apparently treated the matter lightly - refusing to recall the two Houses and stating invasion fears were 'almost groundless'. He postulated that New Caledonia was a 'mere bugbear', where, if supplies emanating out of Sydney were curtailed, 'the inhabitants would be starved out in a fortnight'.[7]

News reached the Australian colonies of a preliminary peace settlement in Europe, resulting from a French-Austrian compromise negotiated at the Conference of Villafranca - July, 1859. This had removed any immediate risk of a French attack on British colonies and the whole affair prompted an *Argus* editorial condemning the 'absurd talk that had abounded ... as though the French squadron was already off the Heads'.[8]

Captain Peter Scratchley R.E. – 1860, Victoria - Defence Report

The struggle to overcome the Sepoy Insurrection in India had continued through much of 1857-1858; British retribution was harsh and absolute. As a result the East India Company was dissolved and its ruling mandate transferred to the British Crown in 1858. Britain increased the overall ratio of British garrison to Indian recruits. Lieut. Peter Scratchley saw service during the siege of Lucknow and a number of later operations. He was promoted Captain R.E. in October 1859. In early 1860 General Sir Robert Napier offered an appointment as personal Aide-de-camp on an expedition being formed to campaign in China (The Second Opium War 1860). In his diaries Scratchley stated that he reluctantly refused this significant career opportunity, as he had been temporarily appointed C.O. of the 4th Company Engineers. Disappointingly, they were being sent to Mauritius - a posting Scratchley apparently loathed. In a twist of benign fate encapsulating proximity, depth of fortification experience and availability, he was instead ordered to Melbourne to assist that colony in the design and construction of a fortification system for Port Phillip.[9]

Scratchley was not provided with information regarding the nature or extent of the defences. However, the officer commanding Royal Engineers in India did permit him to personally select twenty-one men, whom, from personal knowledge, would be of great service. At Melbourne, Scratchley immediately surveyed Port Phillip and its various channels. The survey was utilized to discredit advice presented before the 1858 Victorian Defence Commission on positioning Martello towers[α] at Point Nepean and Queenscliff. Scratchley insisted both locations required fortifications with defensible outworks and barrack buildings enclosing the gun platforms as shown on Map No.2 of the 'Victoria - Defence Report - 1860' have distinctive polygonal outlines rather than circular Martello Towers. No construction or contract drawings appear to survive in any public repository, so it is difficult to establish the true form of these batteries.

Scratchley accepted the 1858 Defence Commission's recommendation No. 1 - to initially focus upon Hobson's Bay. Governor Sir Henry Barkly wrote in support of Scratchley:

> .... It is essential, therefore, that a plan for fortifying Port Philip should, without further loss of time, be sanctioned by Parliament, and a resolution come as to appropriate annually such sum as will admit of the works being executed in the course of the next year or two. The total cost need not, it would seem from the reports of those best competent to judge, be very serious probably less than is being laid out on three or four miles of our trunk railway lines, of which nobody thinks much. The precise amount must depend, of course, on the scheme adopted. That recommended by Captain Scratchley does not materially differ from the proposals which have already received the sanction of the Defence Commission.[10]

Scratchley's ambitious concept for defending Port Phillip was established through an exacting and costed report, with three accompanying maps dealing with land and sea defences for Hobson's Bay; a pile fort near South Channel and a group of future fortifications at Port Phillip Heads. The total cost of constructing the inner Hobson's Bay batteries was estimated to be £81,200. At Williamstown the existing battery was to be altered to take heavy 68-pounder guns - the most powerful weapons then available in the British arsenal - rather than the existing 32-pounders. Further west a group of three batteries containing ten guns would provide a protective arc ranging to 2,000 yards. The new breakwater pier was to mount a three gun battery designated to guard a moveable boom - linked with his proposal for a central pile fort. A fixed chain boom would carry from the pile fort to battery

[α] Martello towers are small defensive forts that were built across the British Empire during the 19th century, from the time of the French Revolutionary Wars onwards. They stand up to 40 feet (12 m) high (with two floors) and typically had a garrison of one officer and 15–25 men. Their round structure and thick walls of solid masonry made them resistant to cannon fire, while their height made them an ideal platform for a single heavy artillery piece, mounted on the flat roof and able to traverse, and hence fire over, a complete 360° circle.

No.8, located on the Sandridge shore. Batteries No.4 and No.6 were to guard the entrance to the Yarra River. Further east, a string of single gun batteries would follow the shoreline towards St. Kilda. Scratchley stipulated if the colony came under threat of attack, all commercial vessels were to anchor inside the boom, to provide clear lines of fire for the guns.[11]

By the release of Scratchley's Progress Report in November 1860, it was clear that obstructive forces within the Legislature and colonial press had achieved ascendancy. Both groups were firmly against provision of the requisite funds for completing the purchase of thirty 68-pounder ordnance in England, and attempted to modify the extent of Scratchley's plans. Significantly, it became known the British Admiralty steadfastly refused to supply a blockship. This unwelcome news was followed by Major Andrew Clarke R.E. - acting for the Colony behalf in London - communicating that even if funds were immediately forwarded to England, 68-pounder guns might not become available until late 1861.[12] The delay was an indirect consequence of the British Parliament provision of more than £5,000,000 towards new fortifications at naval 'Home' ports, shipyards and docks.

Fort Gellibrand

In January 1861, the Defence Select Committee examined whether the Hobson's Bay defences might be reduced in number, or at least commenced in stages. It reported in late March, that:

> … the plans of Captain Scratchley … are fully supported by the evidence of Captain Pasley, R.E.; Lieutenant Crawford, U.K.; Mr. Payne, a gunnery lieutenant of experience; and by Captain Ferguson, the chief port and harbor master. Looking, however, to the vast sum necessary to carry out all the works proposed for the defence of the Heads, the channels, Hobson's and Corio Bays, your committee was induced to inquire of Captain Scratchley if, without departing from his general plan, he could not reduce the extent and, proportionately, the expense of the works to be immediately constructed, leaving their full completion for a future period. Captain Scratchley lay before your committee such a scheme; and, while your committee considers that the whole plan should be kept in view, it would, recommend that the reduced plan should be proceeded with immediately.[13]

If he had any hope of commencing the task, Scratchley was compelled to agree. Work commenced on four Batteries at Williamstown - other would follow along the Sandridge shore.

While the Victorian Government, on Scratchley's advice, were keen to acquire the latest breech loading 80-pdr and 100-pdr Armstrong weapons then being tested at Shoeburyness, the British Government replied that they would only supply Victoria with smooth bore 68-pounder muzzle loading guns, until Imperial defences were adequately supplied with new weapons. As a result the

Hobson Bay batteries were fitted-out for 32-pdr SB guns already in the colony along with the promise of 68-pdr SB guns to follow:

> …. the thirty-two pounders are old twenty-four pound pieces rebored, and are quite useless, inasmuch as their accuracy cannot be at all depended upon. They are to be replaced with sixty-eight pounders, a gun which experiments seem to have established as the most effective of smooth bore pieces, and which is now generally used in the defences of the English coast. At its own range, it is held to be more dangerous to shipping than the rifled cannon, for though the latter may penetrate further, the smashing effect of the round shot is more destructive. *14*

32-pdr guns were incapable of inflicting serious damage to a warship at more than 1,000 yards while a 68-pdr gun was considered of little use beyond 2,000 yards. As a result enemy warships would be able to approach the Hobson's Bay ship anchorage without encountering any damaging fire from the shore batteries at Sandridge, and probably Williamstown.

The Williamstown Central Battery was provided with seven 32-pdr guns - distributed behind angled earthen embrasured wings either side of the battery Redan in 1863. While no plan from 1862-65 survives, it is highly likely the embrasures of the 1872-76 redevelopment were located in the same emplacements as the earlier weapons. Most of these positions have been established by examination of 'old battery' dotted lines on various 1886-89 alteration plans.

The *Argus*, in a description of the works reported:

> … The central battery, the next fortification, is intended for ten guns, but its present armament consists of seven thirty-two pounders, worked on wooden platforms. This battery, which has been strongly built, with a view of carrying two tiers of guns, has a couple of faces. Owing to the contour of the ground, they are separated from each other but are joined by a Redan-shaped connecting parapet. Inside the face of the Redan, looking southwards, there is a banquette, or continued step, for riflemen to stand upon to fire over the parapet. Here the marksman can remain thoroughly sheltered, and when the crew of the hostile ship get within range he can, like Bailey's soldier, "pick 'em off like fun." [15]

When the colony acquired, twenty-four 80-pounder Armstrong RML's, and six 300-pounder 9-inch, rifled muzzle loading guns in 1870 the Central Battery was described as a nine gun battery:

> …. A few hundred yards farther along the shore the Central Nine-gun Battery, not nearly as well built as the other. It has wooden platforms for the guns. The last feature shows its unfitness for cannon of a heavier calibre than the obsolete 32-pounders, which is probably the reason why it is dismantled.[16]

At this time contracts were let for the technical portions of the gun footings and battery embrasures and convicts were utilized in general labouring duties and substantially increasing the thickness of the earthwork.

A description of the Central battery in March, 1871 outlined progress:

> …. stone foundations having been laid for the new guns to work upon, five 80-pounder Armstrong and one 300-pounder Armstrong were removed a distance of about 800 yards and mounted by the convicts. This latter gun weighs 12-tons without its carriage, yet eighteen of them were all that were employed mounting it, so that they must have done a little more than the usual 'Government stroke' as affected by those employed at stone breaking and similar jobs. The embrasures of the battery were cut away and made larger, in order to allow of the guns being trained round in all directions, to give them the command of a large radius of the Bay. Originally this battery was nothing better than a mud hole after any rain had fallen, but a substantial stone drain was laid, and the place is now perfectly dry. The facings of the earthworks were thickened and also the roofing of the magazines, so that at present there is a thickness of about 6-feet of earth above the magazines. The whole of the guns and shot having been scraped and lacquered…[17]

A second 'redevelopment' stage was undertaken between 1872 and 1876.

Williamstown Central Battery was the only Scratchley battery to include a Redan. It appears to have been conceived during the construction period to block uneven ground between the two central 32-pounder gun batteries at Williamstown, by using an earthwork Redan to accommodate riflemen:

> …. However strong the shore fortifications may be, they are able to be turned by a force landed below their range; and there are few places in the port where a disembarkation could not be effected. A land force, therefore, is necessary to support the batteries, either to prevent the disembarkation of the enemy, or to give him battle should he succeed in reaching the shore.[18]

Volunteer Militia were acknowledged as essential to the defence of Port Phillip against an enemy force that might be disembarked at Western Port, the Mornington Peninsula, eastern Port Phillip, or, a scattering of small Bass Strait harbours, such as Warrnambool and Portland. A land attack on the flank of the Williamstown batteries was a clear danger to the port defences and Scratchley recommended a Martello tower be constructed east of the Right Battery, to prevent a land thrust from the direction of Point Cook.



9-in. 300-pdr Gun, Gellibrand Battery, c. 1895
Photographer: Austral Studio, Douglas Parade Nth. Williamstown, Private Collection.

Gellibrand battery encountered a third stage of armament circa 1888- 1893. The alterations appear to have commenced in July 1888, when a 5-inch 3-ton BL gun on HP mount was emplaced at the western end of the battery. In 1889 a major new magazine complex, to serve two 5-inch BL guns on HP mountings, and a 6-pdr Nordenfeldt QF gun on a balanced pillar - located on the upper parapet. It is this third stage of development that remained to the present day. From the same period detailed plan drawings of an 'Emergency Battery – to be located near the old lighthouse and Breakwater pier at Williamstown' - are held in the N.A.A. Melbourne, collection. The dates provided in the catalogue range through 1887, 1890, and 1893. No drawings bear contact details.[19] The battery design – of earth and timber construction – shows five mounted guns; two 80-pdr RML, one 9-inch RML, one 14-pdr QF, and one 6-pdr QF. I have located no references to this battery being constructed, or an outline of the 'emergency'. However, a folio plan produced by A.C. Allan & A. Tuxen in 1888 – *Plan of Melbourne & Suburbs* does indicate there were two small gun batteries located at the shoreline in the eastern corner of the Central Battery - in close proximity to the railway workshops.[20] This may suggest an earthwork was constructed - but not armed.

Beyond Federation, Fort Gellibrand was largely regarded to be superfluous as an active fort. A training garrison remained on site until August, 1922, when the old battery gun emplacements were dismantled:

> …. the immense mounds of earth and masonry which shelter them will also be removed, together with the cordite magazines and other small buildings. Ultimately the 11 acres of land comprising the whole area of the fort enclosure will probably be used as an exercise ground for horse drawn guns. The spacious drill hall will also be retained.[21]

Although the emplacements rapidly fell into disrepair, in 1936 Fort Gellibrand was reactivated to become a practice firing range for the 6th Heavy Brigade R.A.A. - which held annual 'fire practices' after two 4.7-inch QF guns were mounted on old gun pedestals.

Fort Gellibrand was utilized for testing Australian designed and made Anti-aircraft guns, field guns, and various military vehicles, during 1942-1943, and possibly to war's end. In the 1950's and early 1960's the site was periodically used as a 'proofing' range by the Australian Army.



Fort Gellibrand, Williamstown. Vic. 3 Feb 1943 1943. Mr. L.W. Brockington KC BA LL.D special adviser to the British Ministry of Information (3rd from right) and official party inspecting the new 13-pdr Anti-tank gun which is undergoing proving tests. Photographer unknown. Collection: AWM - Photo No. 029418

CURRENT CONDITION OF WORKS

Understanding the purpose and development of a fortification requires establishment of its original 'trace' (the outline of the fortification at a particular development stage), followed by subsequent alterations. In the case of 1860-1865 fortifications constructed on the shores of Hobson's Bay, the absence of construction plans and 20th Century demolition has made analysis problematic. In early September 2012 a small group of Military officers, MHHV members, and members of Fort Queenscliff Museum, were given access to Fort Gellibrand to examine the present trace in an attempt to establish what remains of the earliest battery structures. We were pleased to note that considerable restoration and preservation work to magazines and emplacements had been carried out by the resident Australian Army Commando Unit.

For the majority of its existence, Fort Gellibrand was known as Williamstown Central Battery and dates to the group of 1860 -1865 'Scratchley' batteries. Scratchley's 1860 plan shows the Central Battery as two 32-pdr batteries - the eastern wing defending the approach to the anchorage in Hobson's Bay, the western wing defending waters directly offshore of Point Gellibrand.

A sketch plan from 1865 compares the 1860 Scratchley Report with the 1865 Commodore Wiseman Report, provides the initial trace of the Central Battery.[22] An editorial in the Argus Newspaper of July 22, 1863 also confirms the sketched trace as that of the completed structure.[23] This trace is clearly visible as a series of dotted lines in the general plan produced in 1892. It remained the underlying battery form of all later embankments and emplacements. The first trace was altered in 1870, as the battery had fallen into a 'poor state of disrepair'. At this time the 32-pdr (pounder) SB (smooth-bore) weapons were placed in storage and their obsolete wooden platforms replaced by stone footings with iron racers for three 80-pdr Armstrong RML guns; one 300-pdr, 9-inch RML (rifled muzzle-loading) gun, and three 68-pdr guns. Each gun in new or restructured embrasures.

Another significant aspect examined by the study group was the first (1864) magazine, which is perhaps the oldest remaining portion of the original battery. It can be linked to a £775 building contract published in an 1863 newspaper.[24] The magazine was buried and forgotten until footings were being excavated for a memorial to fallen members of 2nd Commando Company of the 1st Commando Regiment. The intact magazine was excavated and is now fully restored. In several aspects it matches the severely damaged Right Battery Magazine discovered during a grandstand refurbishment at Williamstown Sports Oval in 2011 - partially excavated by archaeologist Geoff Hewitt, and then reburied.[25] It is also a close match to the Shortland's Bluff Battery magazine

(confirmed as part of the 1863 battery by research (undertaken by the author) in 2011 as the extant 'Magazine H' Fort Queenscliff.)[26] Both of these magazines date to circa 1863-1864. On the Left flank of the Gellibrand Battery is a small basalt shed dated to c.1862-64. This is an Artillery store that can be firmly linked to a plan held in the NAA collection.[27]

The final structures visited by the group were the HP gun emplacements and underground magazine of the 1886-89 trace. At this time Gellibrand Fort was the only 1863 battery at Hobson's Bay - was equipped with one 38 cwt. 2 ton 5-inch gun (1887), and two 3 ton, 5-inch BL guns (1889), all on HP carriages. Centrally a single QF 6-pr (1889), mounted on a hydraulic pillar, was on what had been the rifle Redan. Directly below this gun position is a two room magazine (1889) surrounded by a series of shell hoists and lamp passages. The magazine, although long ago stripped of shelving and equipment, has been refurbished and is now in excellent condition.

Towards the end of the western flank two 300-pdr 9-inch RML's are located in 80-pdr emplacements. The records show only one 9-inch gun was positioned at Fort Gellibrand. The second gun probably links with the Lighthouse Battery, or a gun returned to storage from Port Phillip Heads. In 1915 Prahran Council were offered, 'for ornamental purposes', a choice between two 9-inch guns and two 32-pdr guns held at Williamstown. Given the high cost of moving two 12-ton, 9-inch guns, plus extremely heavy iron Elswick carriages, it seems the heavier ordnance has luckily remained 'in situ'.

Archaeologist Geoff Hewitt (La Trobe University) extensively examined the buried remains of the Williamstown Right Battery in 2013. He has produced a detailed and valuable report on the battery foundations, construction details, magazines, and ammunition lockers.[28] Unfortunately the excavated works have been reburied beneath the Williamstown Sports Club facility. As the Right Battery was never altered, Hewitt's report provides the most detailed information available on 1860-1863 Scratchley period battery construction at Port Phillip.

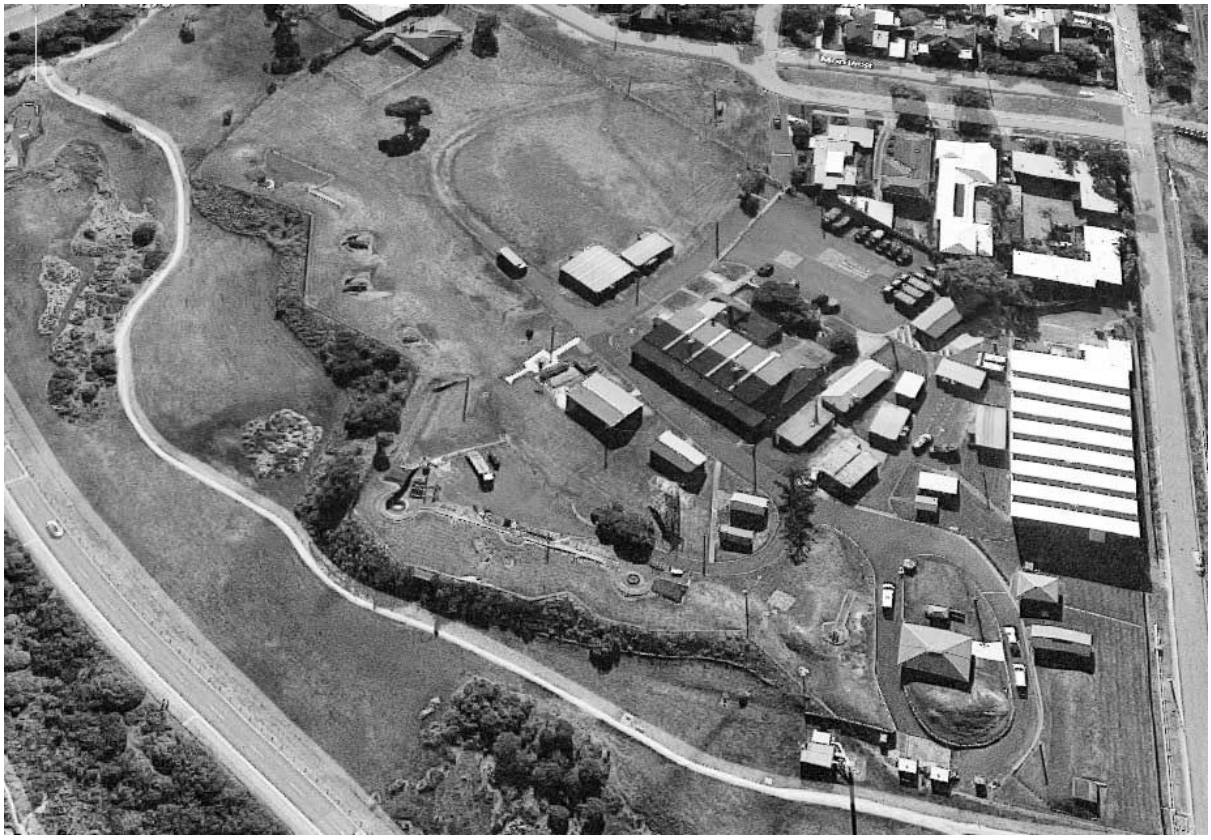
Fort Gellibrand is all that remains of the complex system of Hobson's Bay 19th Century fortifications and its future preservation is absolutely essential.



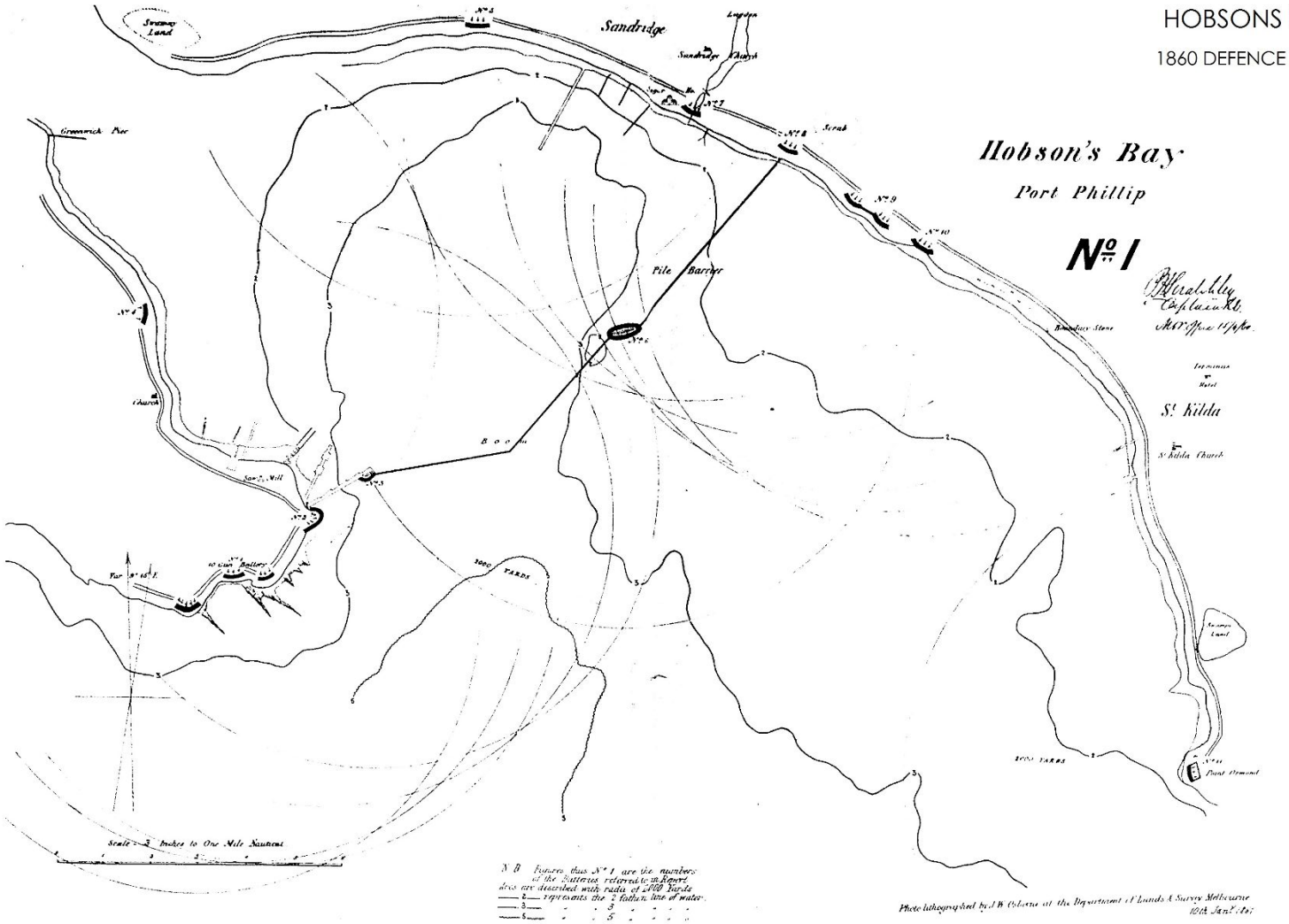
Fort Gellibrand - derelict fort with concrete bunkers and gun emplacements. February 1969. Photographer John T. Collins. Collection: State Library of Victoria



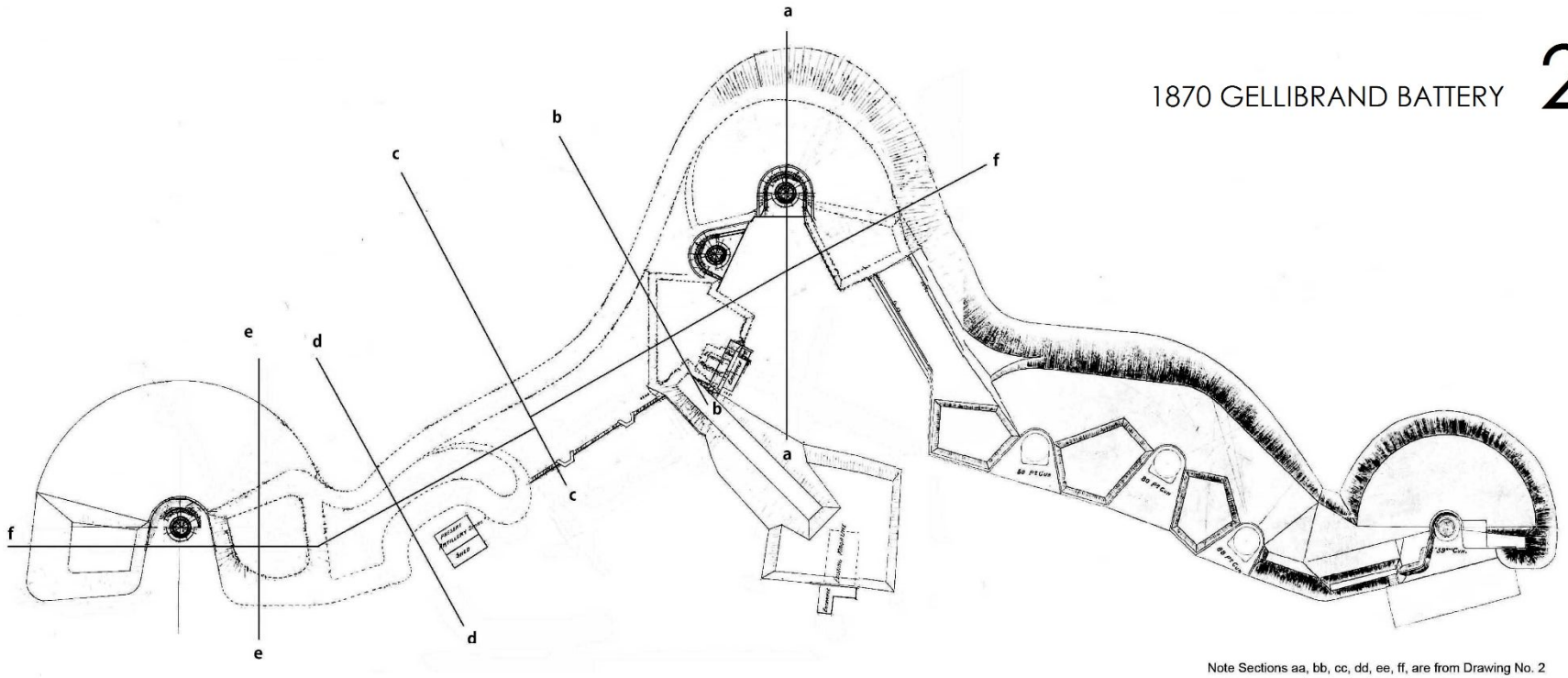
Fort Gellibrand – Rear of gun emplacements and entrance to Main Magazines, 2012. Photographer Keith Quinton.



Fort Gellibrand from the air c. 2016. Photographer unknown. Keith Quinton collection

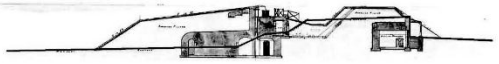

Sandridge
Hobson's Bay
Port Phillip
No 1
Pile Barrier
Scale 3 Inches to One Mile Nautical
Photo lithographed by J.B. Osborne at the Department of Lands & Survey Melbourne
10th Jan.y 1861

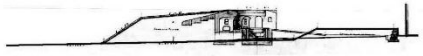
1870 GELLIBRAND BATTERY 2



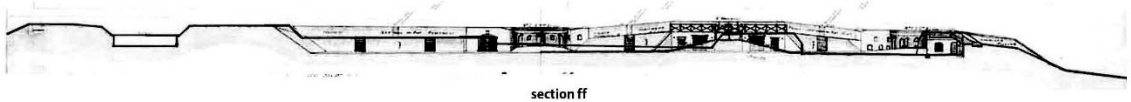
Note Sections aa, bb, cc, dd, ee, ff, are from Drawing No. 2


section aa


section bb


section cc


section dd


section ff

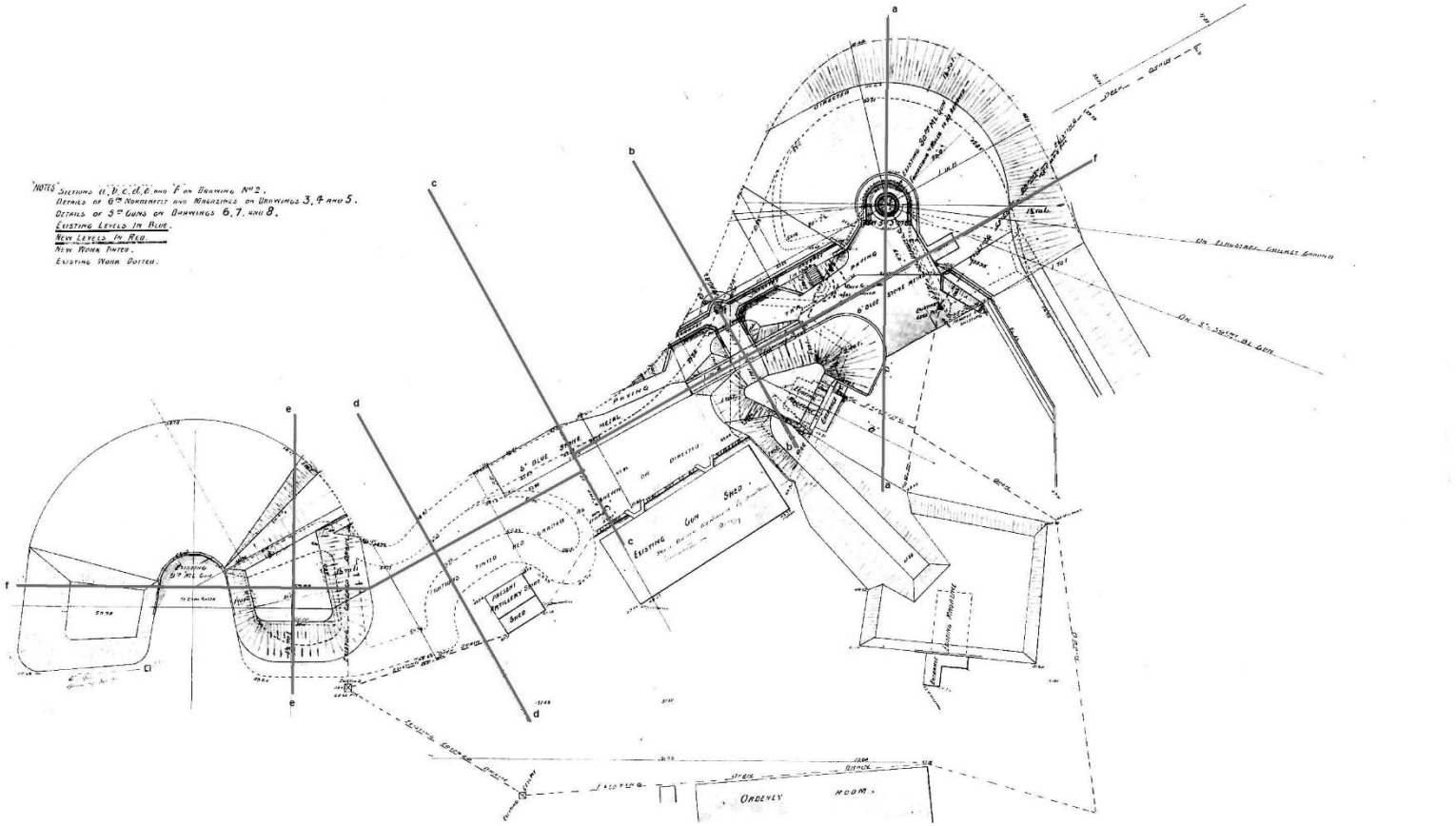
1870 TRACE SHOWING SECTIONS FROM THE 1886 PLANS

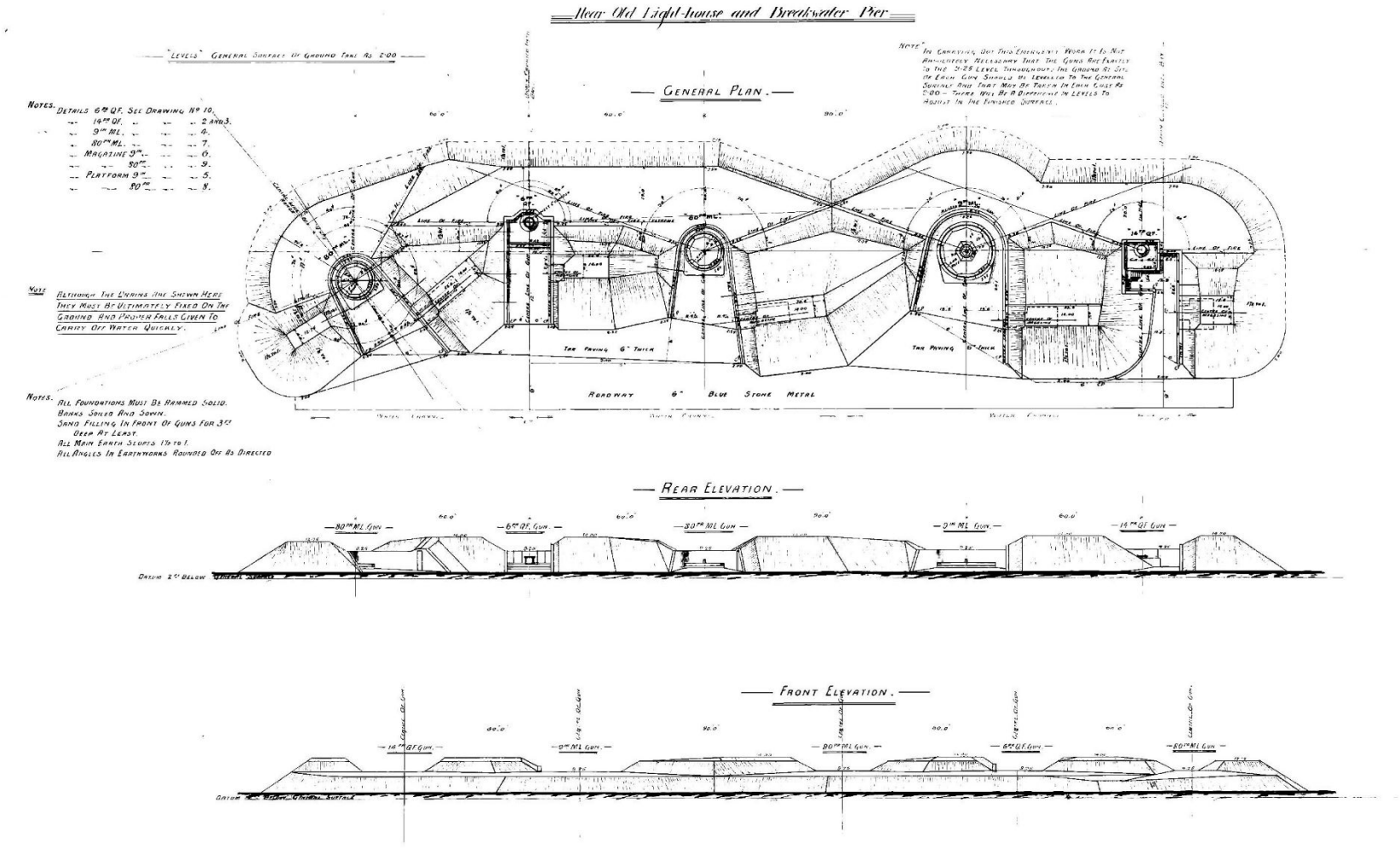
Keith Quinton 2012

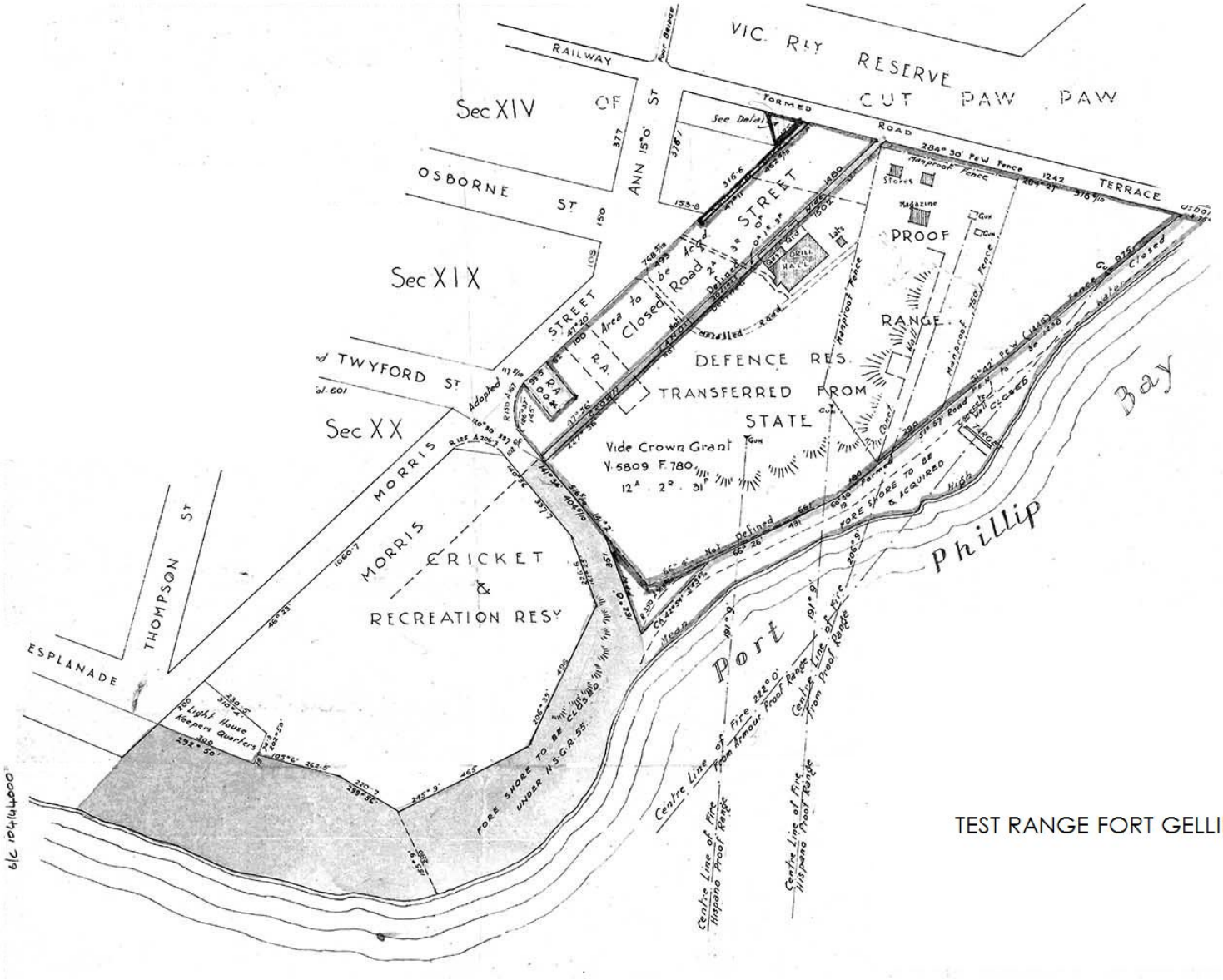
1886 GELLIBRAND BATTERY

TWO 5-in. 3TON BL GUNS / ONE 6 Pdr NORDENFELT QF & MAGAZINES

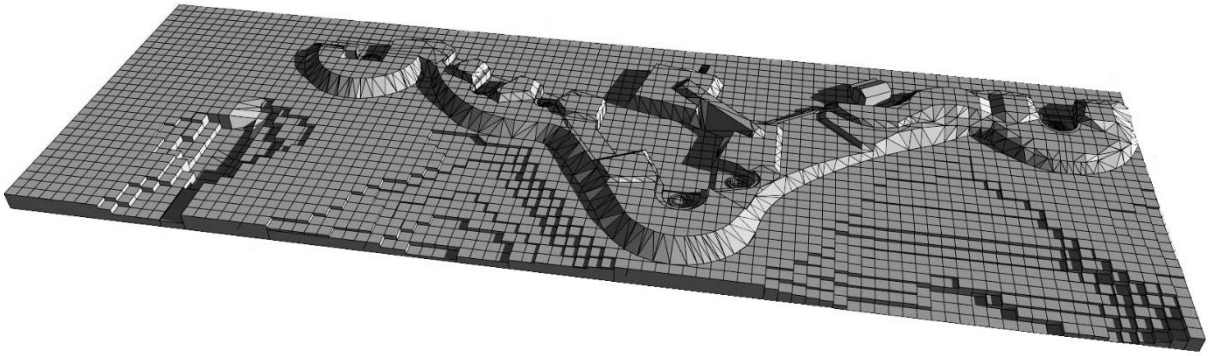
3

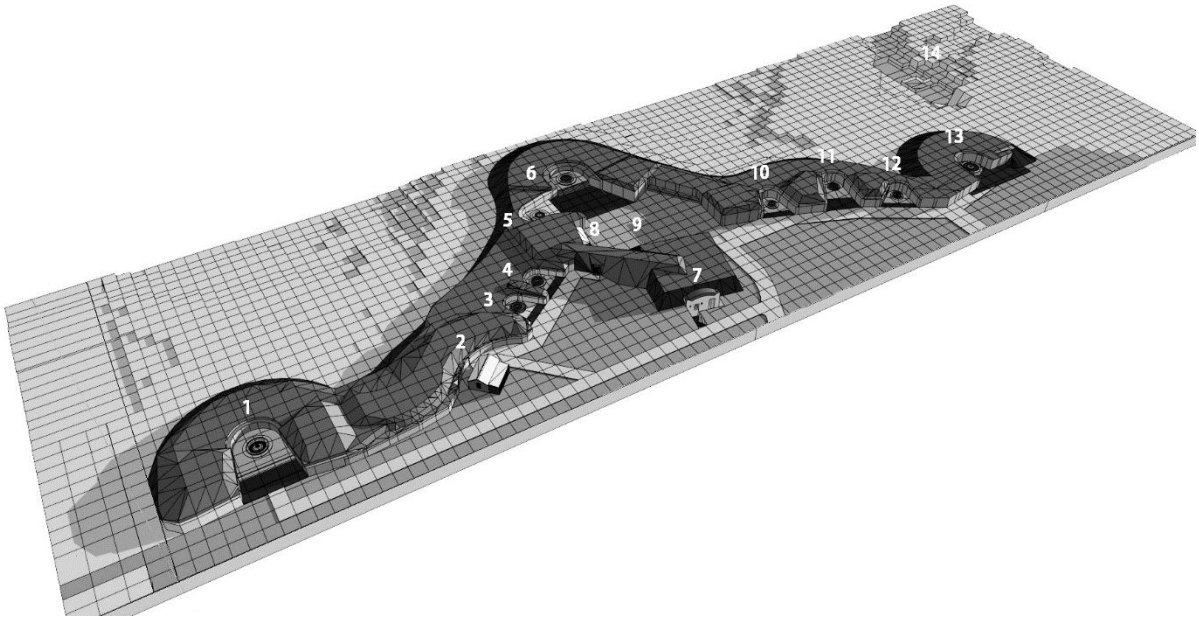



Near Old Light House and Breakwater Pier
"LEVELS" General Surface Of Ground Taken As 2·00
General Plan.
Notes. Details 6ᵗʰ Q.F. See Drawing Nº 10.
14ᵗʰ Q.F. 2 and 3.
9ᵗʰ M.L. 4.
80ᵗʰ M.L. 7.
Magazine 9ᵗʰ 6.
80ᵗʰ 9.
Platform 9ᵗʰ 5.
80ᵗʰ 8.
Note Although The Drains Are Shewn Here They Must Be Ultimately Fixed On The Ground And Proper Falls Given To Carry Off Water Quickly.
Notes. All Foundations Must Be Rammed Solid.
Banks Soiled And Sown.
Sand Filling In Front Of Guns For 3ft Deep At Least.
All Main Earth Slopes 1½ to 1.
All Angles In Earthworks Rounded Off As Directed
Note In Carrying Out This Emergency Work It Is Not Anticipated Necessary That The Guns Be Fixed To The 31·25 Level Throughout The Ground At Site Of Each Gun Should Be Levelled To The General Section And That Men Be Taken In Each Case As 2·00 – There Will Be A Difference In Levels To Adjust In The Finished Surfaces.
Tar Paving 6" Thick
Roadway 6" Blue Stone Metal
Rear Elevation.
80ᵗʰ M.L. Gun
6ᵗʰ Q.F. Gun
9ᵗʰ M.L. Gun
14ᵗʰ Q.F. Gun
Front Elevation.



TEST RANGE FORT GELLIBRAND 1942 5





Keith Quinton 2018

FORT GELLIBRAND ORDNANCE - 1876

1. 300-pdr, 9-inch, RML

5, 6, 11, 13. 80-pdr RML Armstrong

7. 1860 Powder Magazine

14. Quarry

3, 4, 10, 12. SB 68-pdr ML

2. Artillery store

8. Ready-use / Fuse Magazine

[1] Defences of the Colony – 1860 Report by Capt. Scratchley RE VPP 1860-61 Vol.3

Arming the batteries under the 1860 plan required sixty guns of suitably power and sufficient range. Scratchley's report relied upon Victoria obtaining thirty 68-pdr ML guns from the U.K. for his most important batteries, and using the 32-pdr ML guns already in the colony for the remaining batteries.
Hobsons Bay Defences, Plan No.1. Date: 15/11/1860 - Williamstown: Right Battery (five guns); Central Battery No.1 (10 guns); Point Gellibrand Battery No.2 (five guns); Railway Breakwater Battery No.3 (6 guns); Yarra River Battery No.4 (2 guns). **Sandridge:** Battery West of Railway Pier No.5 (3 guns); Harbour Pile Battery No.6 (12 guns); Lagoon Battery No.7 (3 guns); Emerald Hill Left Battery No.8 (3 guns) Emerald Hill Central Battery No.9 (6 guns); Advanced Battery No.10 (3 guns) Point Ormond Battery No.11 (3 guns).
The batteries at Sandridge would fire 'en barbette' over open earthworks. Those at Williamstown needed to be in embrasured earthworks due to the proximity of deep water at the Yarra entrance. The 68-pdr guns and carriages arrived during 1861-1862 via the ships; 1861- *Maria, Golden Horn, Elizabeth Ann Wright.* 1862- *Queen of England, Vortigern, Lord Raglan.*
Not all of these batteries were constructed and some did receive mounted guns as the Government pondered the purchase of heavier rifled ordnance. By 1866 Victoria had purchased twenty-five 80-pdr RML guns. In anticipation, much of the earlier ordnance was dismounted and several batteries were dispensed with. The situation was then complicated even further by the decision to request a three decker 'Ship-of-the-Line' from the RN Reserve Fleet - as a naval training-ship (HMVS Nelson), and purchase an ironclad harbour defence monitor (HMVS Cerberus).

[2] Report of the Select Committee into Defences of the Colony 1854 VPP 1853-54 Vol.3

[3] Geelong Advertiser & Intelligencer 24 September 1855 *'The Guns'* Page 4

[4] Quinton, Keith. *Gellibrand Point Battery 1854-1860* - Military History & Heritage Victoria Website. http://www.mhhv.org.au/?p=3281

[5] Report of the Royal Commissioners into the Defences 1858 VPP 1858-59 Vol.2
While Capt. Peter Scratchley has been largely credited with developing the 1860 Port Phillip Defence plans, it was the 1858 Defence Commission that established the parameters of Port Phillip defence. As a relatively inexperienced R.E. Lieutenant serving in India (recently promoted to Captain) Scratchley largely lacked fixed fortification experience. This possibly led him to 'over-development' in establishing so many batteries at Hobson's Bay. High construction costs, and a growing uncertainty over gun suitability and range of shot, simply exacerbated inherent problems in defending Melbourne's inner harbour anchorage. By the late 1870's Victoria had spent several million pounds on defences and had very little to show for it. Fortifications built by Sir William Jervois along England's south-coast were similarly considered redundant before completion – vulnerable to new BL guns, impossibly expensive, over-armed, and requiring more artillerists than were ever likely to be available. Arguably, they deserved the epithet many late 19th Century parliamentarians and newspaper editors postulated - 'Palmerston's Follies'.

[6] Report of the Royal Commissioners into the Defences – 1858. VPP 1858-59, Vol.2

[7] Portland Guardian and Normanby General Advertiser. 15 July 1859. Page 2

[8] Argus 15 July 1859 *'Our Defences'* Page 5

[9] Australian Dictionary of Biography - Scratchley, Sir Peter Henry (1835 – 1885) http://adb.anu.edu.au/biography/scratchley-sir-peter-henry-4552

[10] Correspondence between Governor Barkly and Defence Comm. VPP 1861-62 Vol.1

[11] Report of the Select Committee into Defences of the Colony. VPP 1861-62 Vol.2

[12] Correspondence between Capt. Clarke and Defence Comm. 1860. VPP 1860-61 Vol.2

[13] Report of the Select Committee into Defences of the Colony. VPP 1861-62 Vol. 2.

[14] Ibid.

[15] Argus. 22 July 1863. *'Our Defences'* Page 6

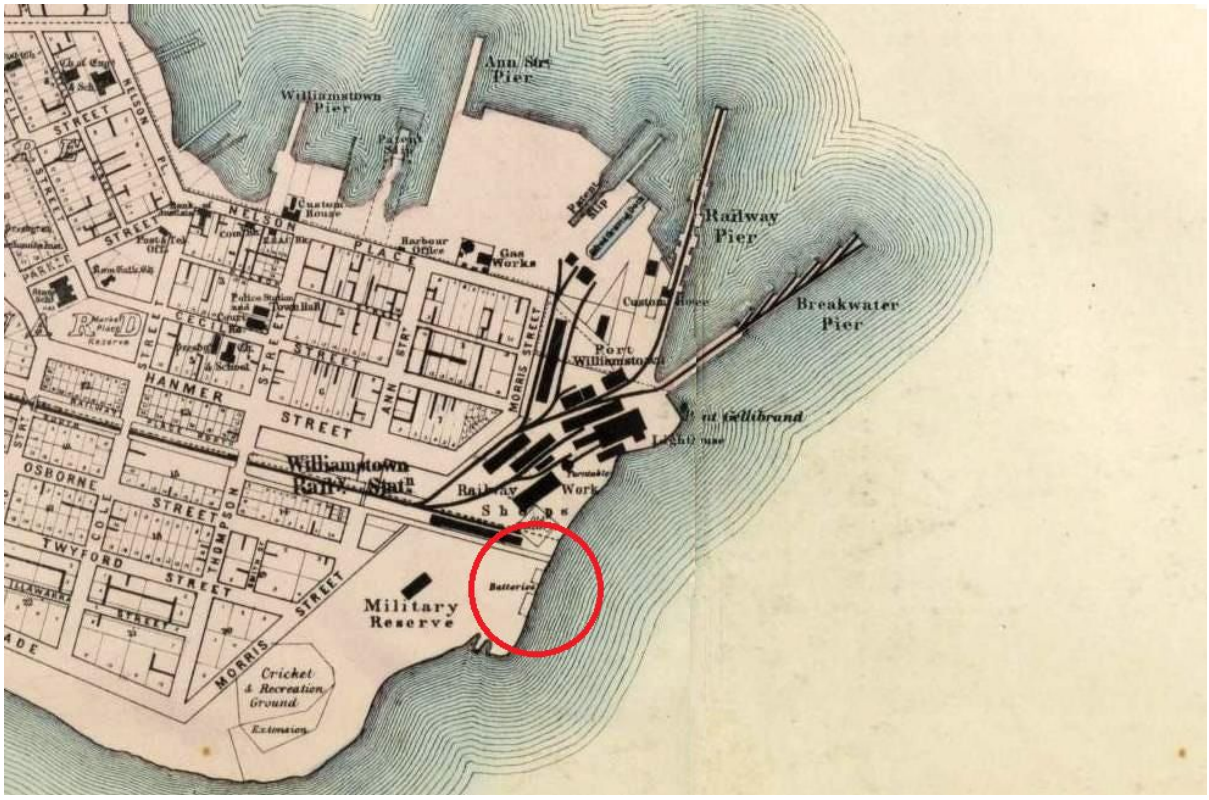
[16] Argus. 8 September, 1870 Page 6

[17] Argus. 22 July 1863. *'Our Defences'* Page 6

[18] Portland Guardian. 23 March 1871. '*Convict labor and our Harbor Defences'* page 5

[19] National Archives of Australia, Melbourne. Victorian Defences - Emergency Battery. (1887-1893) Barcodes: 3346167. 3346169. 3346258. 3346262. 3346265. 3346266. 3346267. 3346269.

[20] A.C. Allan & A. Tuxen. 1888 – *'Plan of Melbourne & suburbs 1888 / compiled from the latest surveys and most reliable sources to date by A.C. Allan and A. Tuxen, surveyors' Published; (London) Charles F. Maxwell.* National Library of Australia Collection.



[21] Argus. 30 August 1922. '*Fort Gellibrand*.' Page 9

[22] Comparative Scratchley/Wiseman sketch map – note fort Gellibrand trace.



[23] See endnote reference No. xiv

[24] Argus. 22 July 1863. *'Our Defences'* Page 6

[25] Ballarat Star. 21 October 1863. *'Contracts Accepted'* Page 3

[26] Quinton, Keith; Slaney, Rafe; Hose, Siranne. 2011. Shortland's Bluff Battery – Queenscliff, 1863-1879. Blurb Books USA

[27] Williamstown – Artillery Store MP427/1 Barcode: 3346157

[28] Hewitt, Geoff. & Thomas, David. *The Right Battery Williamstown Victoria: Archaeology, Historical Context and Cultural Significance. A report to Heritage Victoria and the City of Hobsons Bay.* 2013

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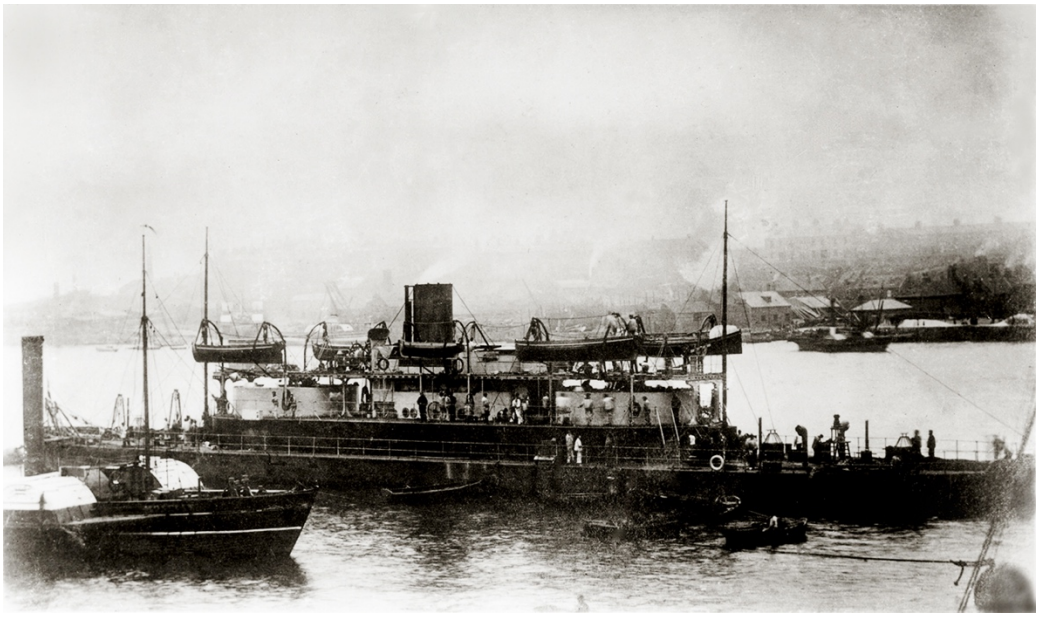
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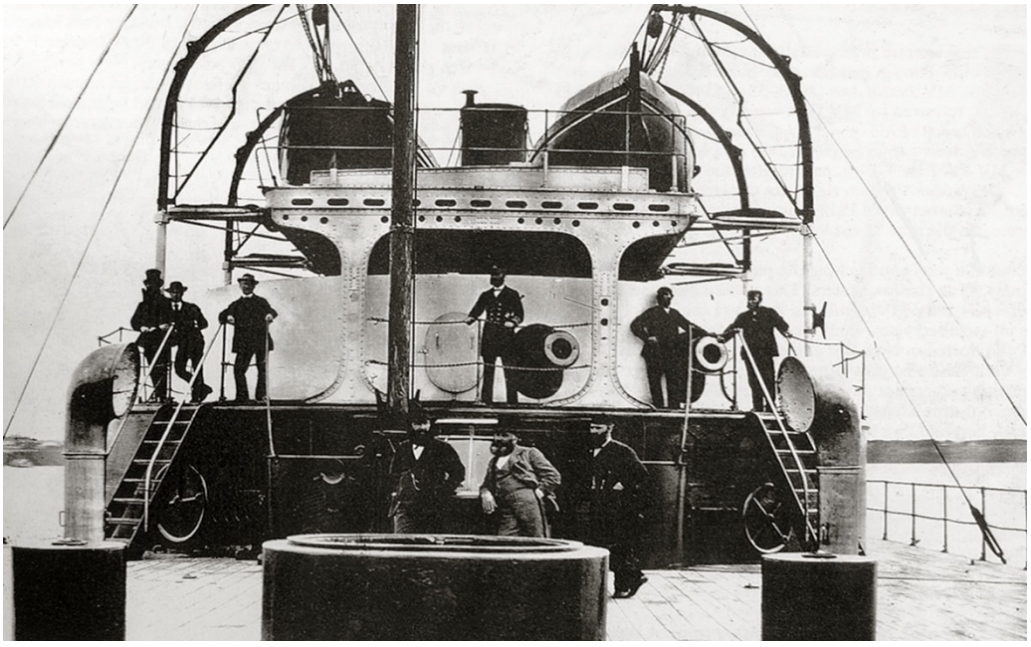
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HMVS *CERBERUS*





Top: Cerberus - designed by Edward James Reed, Chief Constructor to the Royal Navy. Constructed by Palmers Shipbuilding and Iron Company; Yarrow upon Tyne – 1870. The first breastwork monitor, differing from U.S. Civil War monitors through the fitting of a raised superstructure carrying twin rotating turrets.

Bottom: H.M.V.S. Cerberus visit to Corio Bay, Geelong - 19 August, 1871

EXISTING STATEMENT OF SIGNIFICANCE

The HMVS *Cerberus* is on the **National Heritage List** where its significance is described as follows:

Summary Statement of Significance

The HMVS *Cerberus* is important as evidence of the development of Australia as a nation and as part of the British Empire. The British Parliament passed the *Colonial Naval Defence Act 1865* giving the colonies the power to make laws to provide for their own naval defence. The construction of HMVS *Cerberus* (1867-1870) reflects a period in Australia's history when the colonies were thought vulnerable to coastal attack and invasion. This was especially felt by Victoria, the wealthiest colony, and from which, a significant amount of the wealth from the goldfields was exported following its discovery in 1851.

The HMVS *Cerberus,* both as an example of the design work of the British Admiralty's Chief Constructor, E. J. Reed (1863 to July 1870) and of a transitional monitor style vessel, is a rare feature of Australia's maritime and naval history. The design of HMVS *Cerberus* captured the characteristics of a particular period in British maritime history when new construction and design techniques were employed. The *Cerberus,* as the first ship to have a central superstructure, with gun turrets above deck both fore and aft, was also the first British designed warship to use low freeboard in the monitor style and the first to have iron breastwork protection. As the last of its type, *Cerberus* illustrates the historical role of Britain in providing naval expertise and technical assistance to the Australian colonies following the establishment of self-government in the 1850s.

The history of the service of HMVS *Cerberus,* from 1871 to 1924, illustrates the development of Australia's defensive needs as part of the British Empire. The desire of the colonial governments to produce a coordinated defence was one of the major considerations in the move towards federation, and one, which moved the *Cerberus* from the Victorian Colonial Navy to the Royal Australia Navy in 1911.

Official Values

Criterion A. Events, Processes

The HMVS *Cerberus* is important as evidence of the development of Australia as a nation and as part of the British Empire. The British Parliament passed the *Colonial Naval Defence Act 1865* giving the colonies the power to make laws to provide for their own naval defence. The construction of HMVS *Cerberus* (1867-1870) reflects a period in Australia's history when the colonies were thought vulnerable to coastal attack and invasion. This was especially felt by

Victoria, the wealthiest colony, and from which, a significant amount of the wealth from the goldfields was exported.

The history of the service of HMVS *Cerberus,* from 1871 to 1924, illustrates the development of Australia's defensive needs as part of the British Empire and the role of Britain in providing naval expertise and technical assistance to the Australian colonies. The desire of the colonial governments to produce a coordinated defence was one of the major considerations in the move towards federation, and one, which moved the *Cerberus* from the Victorian Colonial Navy to the Royal Australia Navy in 1911

Criterion B Rarity

The HMVS *Cerberus* was one of only three vessels of its exact type ever built, and is the only surviving example of this type of vessel in the world. It is the only substantially intact, surviving warship of Australia's pre- Federation colonial navies.

The HMVS *Cerberus* was the first British built naval ship in which sail-power was dispensed with and which used steam power alone for propulsion. It was the first ship to have a central superstructure, with gun turrets above deck both fore and aft. It was also the first British designed warship to use low freeboard in the monitor style and the first to have iron breastwork protection.

The HMVS *Cerberus,* both as an example of Reed's naval design and a monitor style vessel, is a rare feature of Australia's maritime and naval history at a time when the defence of the Australian colonies relied on British expertise and technical assistance.

HMVS Cerberus is on the **Victorian Heritage Database**. This is the summary statement of significance:

1. The Cerberus is one of the most historically important naval vessels in existence with worldwide significance in the history of naval architecture.

2. The design of the Cerberus by the eminent naval architect E.J. Reed, chief constructor for the British Admiralty, was the prototype upon which all major battleships from 1885-1905 were based. Representing a complete break from established tradition, it was known as a turret ship or breastwork monitor.

3. The first breastwork monitor built, she commenced the development of the ironclad battleships and is now the only surviving vessel of her type in the world.

4. Cerberus was the first armoured fighting ship built for service in Australia and the first designed

to operate without sails.

5. Cerberus was the flagship of the Victorian navy and in 1911, following federation, became part of the newly formed Royal Australian Navy.

6. Ordered on behalf of the people of Melbourne in 1866 and serving always within Port Phillip Bay, she has closer ties with the history of Melbourne than any other vessel.

7. Cerberus played a key role in the numerous naval mock battles and exercises with the shore forts at Queenscliff and the Heads.

8. She was used as a floating store for explosives during World War II and was used as a submarine depot ship.

9. The Cerberus history of service was such that the Royal Australian Navy named its base at Flinders after the ship.

10. By 1924 the Cerberus was sold as scrap, and most of the valuable parts were stripped from the ship. The City of Sandringham purchased the hull, together with turrets, guns and anchors. The Cerberus was scuttled at Half Moon Bay and has served as a breakwater for sixty years.

11. The hull, internal divisions, turrets and four guns survive at Half Moon Bay. The anchor is at the Sandringham Yacht Club. The mast is at Williamstown Yacht Club. The binnacle and other small items are held at HMAS Cerberus (Flinders Naval Depot).

HMVS *CERBERUS*

Keith Quinton - AAHU Researcher - Fort Queenscliff Museum

Keith Quinton has been a volunteer researcher with the Australian Army History Unit (AAHU), Fort Queenscliff since 2007. As a child he spent many years visiting Swan Island Naval Depot and various other “Heads Fortifications”, which fostered a keen interest in various warships and fortifications that guarded Port Phillip during the nineteenth century, and into the early twentieth century. After studying at Melbourne University, Melbourne Teachers College, and RMIT School of Art, he pursued a 30 year teaching career in various Victorian Secondary Schools. Since 2002 Keith has self-published a number of books (via Blurb Books USA); including *Defending Port Phillip* (2009), *Port Phillip Forts* (2010) and, *Stop the Pfalz – 1914* (2012). He has also published articles on Port Phillip’s defences for the Military History and Heritage Victoria Inc., website. He is currently writing a biography of John Blackbourn C.E. – Victoria’s only Defence Engineer (1882-1907).

SIGNIFICANCE

The significance of HMVS *Cerberus* is recognised within National and State Heritage listings included in this study. The history of *Cerberus* has been examined and written about in considerable detail over decades. In spite of such heritage recognition, for several decades the remnant hulk of *Cerberus* has been left to deteriorate at Half Moon Bay, Black Rock, Victoria, and is now in such poor condition that long term preservation of the hull, and possibly the turrets, must be measured as extremely doubtful. A preservation application proposal by Bayside City Council to stabilize the hull with concrete received approval from Heritage Victoria (August, 2018). The process of completing further heritage documentation was expected to take around 12 months, after which a contractor will be appointed.

The purpose of this paper is to understand the role played by armoured breastwork monitor HMVS *Cerberus* following her arrival at Port Phillip in 1871 - as the Colony of Victoria sought to protect Melbourne from seaborne attack. As command vessel of the Victorian Naval Squadron during the last two decades of the 19th Century HMVS Cerberus played a significant role in the integrated naval and military defence scheme for Port Phillip Heads.

HISTORY

Captain Peter Scratchley R.E. arrived at Melbourne, Victoria, in 1860 tasked with improvising a coast defence artillery scheme to secure Port Phillip from attack by foreign warships. Rapidly understanding that a defence of Port Phillip Heads would prove impossible, Scratchley constructed a grouping of eleven gun batteries along the shores of Hobson's Bay at Williamstown and Sandridge. Scratchley's proposals had included the construction of two ironclad sea forts at the centre of the harbour. The proposal could never be described as successful, because rapid developments in steam propulsion, breech loading naval ordnance, and ships' armour made the ML gun obsolete before the fortifications were complete. Melbourne's port was situated at the mouth of the Yarra River, with the main anchorage in central Hobsons Bay beyond the protective range of the guns. By 1866 several of the earthworks had fallen into disrepair. A loss of faith in coast defence led Victoria to defend the Bay by purchasing an ironclad harbour defence monitor with the aid of the Imperial government.

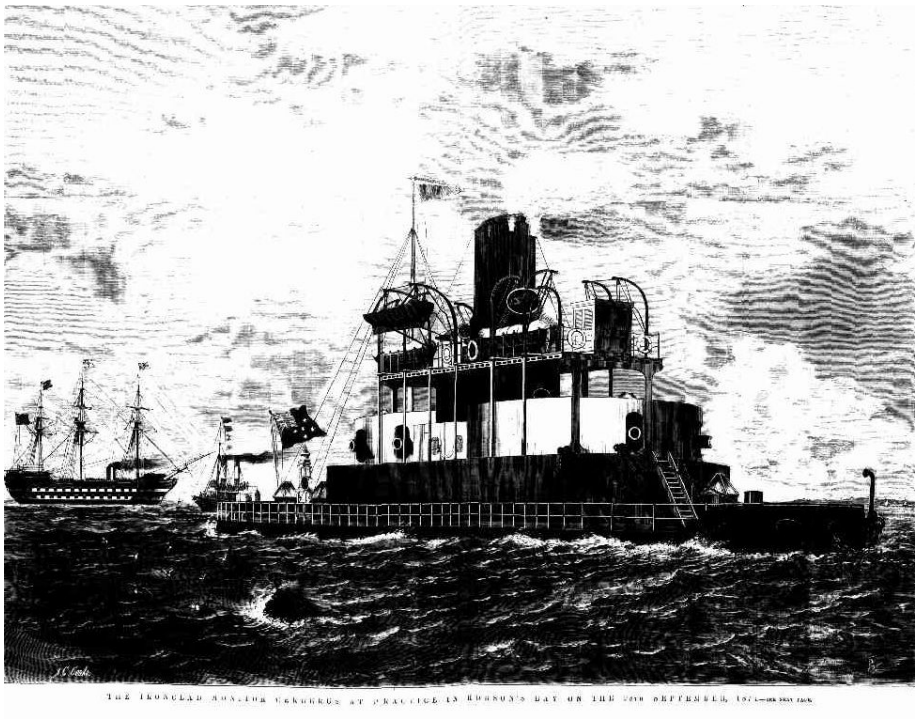
HMVS *CERBERUS*

In May 1869 the *Pall Mall Gazette* published a description of the new warship, hinting at the significance of E. J. Reed's mastless 'Breastwork Monitor' to naval development in the Home Country, as well as Victoria.

> This vessel, to be called the Cerberus has been constructed under the auspices of our Admiralty, in Messrs. Palmer's yard, at Jarrow-on-Tyne. One-fifth of the cost of the vessel it appears, is to be borne by the authorities of Victoria, who also have agreed to furnish her armament, and to get her navigated to Melbourne at their own expense. Wise in their generation, they stipulated for a monitor, and the people of this country are somewhat indebted to them for doing so, since she is likely to be followed by several others of similar design for home service, as well as for the defence of our various colonies.

John Beeler in *Birth of the Battleship* states that in 1871 the 'Admiralty Committee on Designs of Ships of War' recommended the navy abandon building cruiser vessels and concentrate on the mastless breastwork monitor type, …. representing in its broad features the first-class fighting ship of the immediate future.' While *HMS Devastation* (1871) and *HMS Thunderer* (1872) marked the beginning of Britain's new first-class 'turret' battle-fleet, HMVS *Cerberus* (design & construction 1867-1870) had been the lead vessel of three British turret ironclads specifically designed for 'coast-defence' in British colonial ports.[1] On her 'nightmare' voyage from Portsmouth to Melbourne, *Cerberus* demonstrated all of the traits of a 'floating log.' In reality, *Cerberus* was a prototype for features included on turret cruisers and British 'Dreadnought' style battleships, which would soon dominate the World's Oceans.[2]

At Port Phillip there was a total lack of trained crewmen capable of working a technically advanced warship and with her delivery crew discharged, detachments from the Sandridge and Williamstown divisions of the Naval Reserve came aboard *Cerberus* on 25 August 1871, for her first trial voyage on Port Phillip Bay - Williamstown to Corio Bay. Often tied to places of employment, few Reservists were willing to take up positions as permanent *Cerberus* crew. On the 28th September 1871 the Victorian Government decided on a pleasure excursion in Hobson's Bay, in order to give Victorian Ministers and delegates attending an intercolonial conference the opportunity of judging the capabilities of *Cerberus*. Five to six hundred ladies and guests boarded *HMVS Nelson* to follow *Cerberus* towards Brighton and observe her crew at gun practice. The reservists formed two gun crews who fired shots at a floating target at ranges from 3,700 to 2,600 yards.



25 August 1871 Cerberus & Nelson during the practice firing of guns.

Illustrated Adelaide Post – 3 November 1871

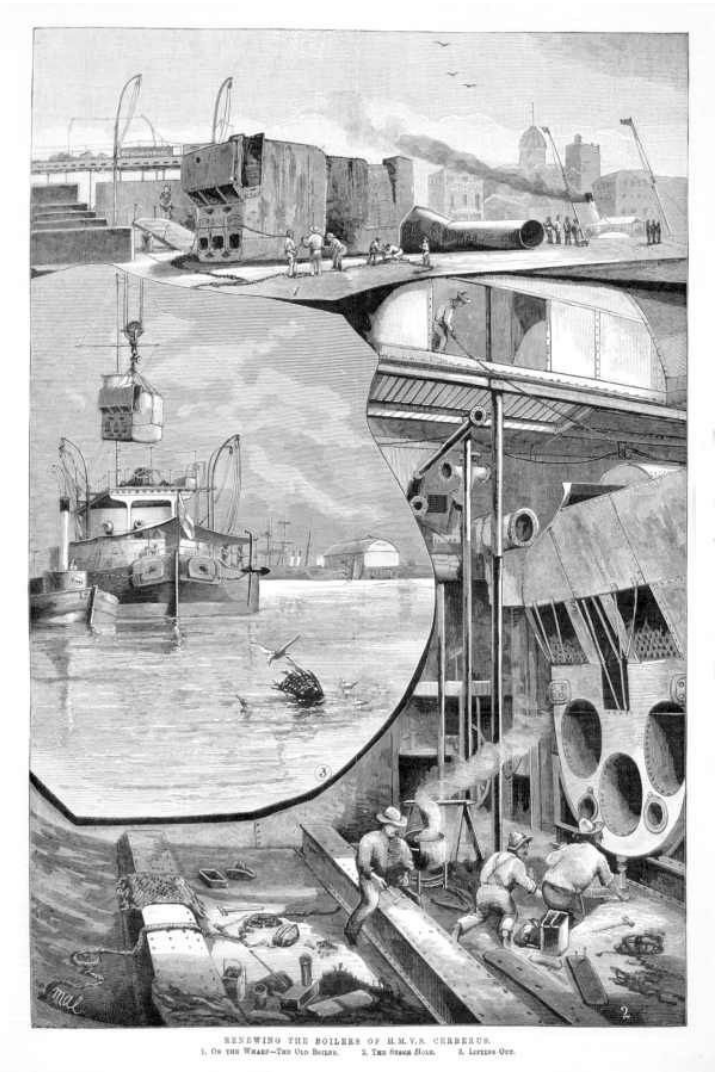
This left the ship to be managed by '… a skeleton crew supplemented by two or three men from *HMVS Victoria* and sixty boys from *Nelson*.'[3] Problems in retaining permanent crewmen (particularly skilled engineers and stokers) were to beleaguer *Cerberus.* While successive Defence Royal Commissions reached the conclusion that the solution to an attack on Melbourne lay at Port Phillip Heads, rather than Hobson's Bay, for the rest of the decade *Cerberus* - the most powerful warship in the Southern hemisphere - remained the principal defence of Victoria.

in 1875, when a Volunteer Commission inquired into the best method of defending the colony, Commodore Hoskins[4] aboard the visiting *HMS Pearl* was asked to report '…. as to the best course to be pursued for rendering the *Cerberus* thoroughly efficient and for improving the naval defences of Port Phillip'. The request included an opinion on the proposed appointment of a naval gunnery lieutenant officer who could also supervise a torpedo corps.[5] Presented in November 1876, Hoskins' report formed a foundation for the future development of Victoria's defence plans. His key recommendation was to acquire an officer of Royal Engineers instructed in the Torpedo branch, to select a minefield locality at the Heads and decide on principles to be applied. Hoskins promulgated, as Melbourne was so far from the entrance at the Heads, it would prove difficult to provide a force of trained artillerists sufficient to man land batteries. He also suggested preventing torpedos from

being taken up by an enemy force was a naval problem in which *Cerberus* could '…. provide powerful and effective support of the system against any squadron likely to be sent against you.' Two batteries were to be retained at Hobson's Bay where, in conjunction with the retreating *Cerberus* and a second turret ship (to be acquired) they could provide a final defence of the city, the harbour, and the port infrastructure.[6] Lieut. Dugdale reported on the manning of *Cerberus*.[7] He had inspected all 216 men of the Victorian Naval Reserve – finding only 10 percent were seamen, with the remainder coming chiefly from the stevedore population. He suspected the reason was poor pay, and although he described them as 'a fine body of men,' thought the title Naval Volunteer Artillery was more suited.

In 1878, Sir William Jervois and Colonel Scratchley toured all the principle Australian colonies. Expanding on Hoskins' recommendations, Jervois inaugurated construction of a defence zone of the southern channel system at Port Phillip, using submarine minefields protected by significant land batteries, supported where possible by *HMVS Cerberus* and *HMVS Nelson*. The role of land forts at Port Phillip Heads and the associated channel minefields at South and West Channels are examined in other sections of this report. On taking command of *Cerberus* in 1878, Captain Mandeville R.N.,[8] suggested he could illustrate the invulnerability of the monitor by steaming through the Heads while ordnance newly emplaced on Shortland's Bluff, Queenscliff, fired directly upon his vessel's armour.[9] The suggestion triggered hilarity in the press, but, had a clear precedent in gunnery experiments carried out in the U.K. on the turret of *HMS Glatton* using *HMS Hotspur's* guns.[10]

In early March 1881, during a cruise to Queenscliff *Cerberus* suffered boiler problems that caused her to travel the length of the Bay at a speed of only 6-7 knots (normally 10 knots). After the enforced slow voyage the boilers were condemned by authorities as being unsafe. The ironclad was starting to show her age, and in July 1882, Alexander Wilson, engineer and marine surveyor, was employed to make a further report on the condition of her gear. [11]

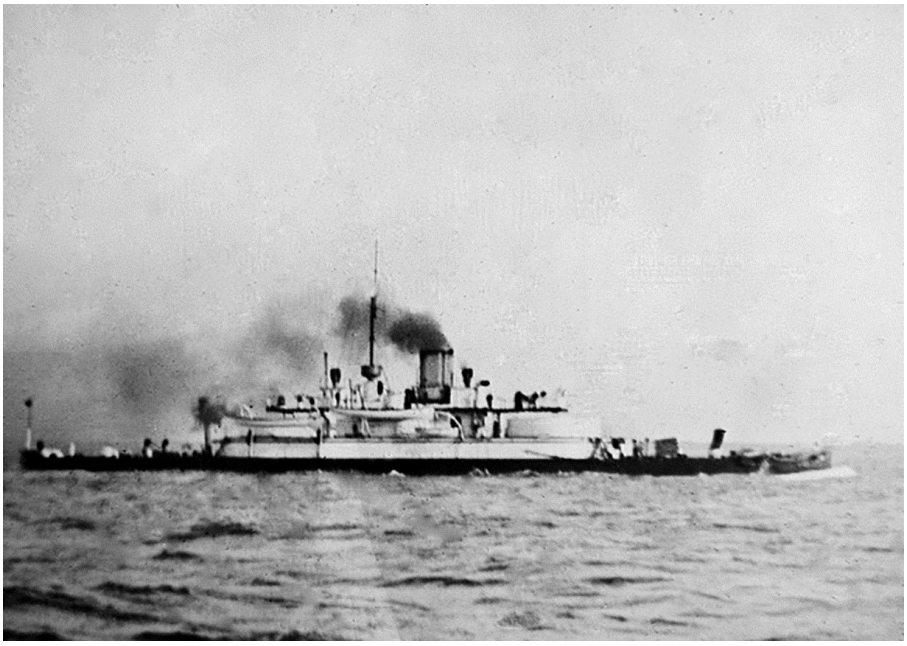


Renewing the boilers of HMVS Cerberus. Illustrated Australian News - 21 March 1883. p.41.

The ironclad would spend the next two years in the Yarra River precinct, while contracts were tendered, boiler iron was obtained from the UK, and four replacement boilers were constructed and fitted. Removal and repair were to prove difficult until the engineers, Messrs Forman and Co, completely removed the funnel from the upper deck to gain access to the boiler room. The old boilers were of the 'low fighting pattern'- below the waterline - in order to be safe from injury in action. There were five old boilers; three weighing fifteen tons, and two nine tons. The four replacements were of a more modern circular boilers of multi-tubular pattern, each a uniform weight of nineteen tons. In March 1882 Colonel Scratchley wrote a memorandum reporting there had been little progress with the Heads fortifications, and that it might be two years before they were complete.[12] With *Cerberus* layed up, Port Phillip Bay, and therefore the entire colony, was almost defenceless. Both Scratchley and Sir William Jervois (Adelaide) had gradually come to the

conclusion that gunboats and torpedo boats were necessary to support *Cerberus* in directly defending Port Phillip's channel minefields.[13]

In 1881, Colonel William Crossman R.E., [14] the U.K.'s top mine expert in transit to his new post at Fiji, had been directed by the War Office to advise the Australian colonies on establishing mine defences. Crossman confirmed the need for *Cerberus* to be supported and Victoria ordered two gunboats to aid in the defence of Port Phillip - of a class advocated and constructed by Sir William Armstrong, Mitchell & Co. Ltd., for the Chinese Navy. Torpedo mines were to become the defence foundation for Port Phillip Heads by blocking the two navigable channels. In turn the mines would be protected by forts, gunboats, and various land corps. The Argus reported that, Sir William Armstrong was in perfect agreement with the Victorian proposal; '…. he says no system of harbour defence can be deemed complete that does not embrace the application of submarine mines.' [15] One 1st class, and two 2nd class, Thornycroft torpedo boats equipped with 14" Whitehead mobile torpedoes were also ordered.



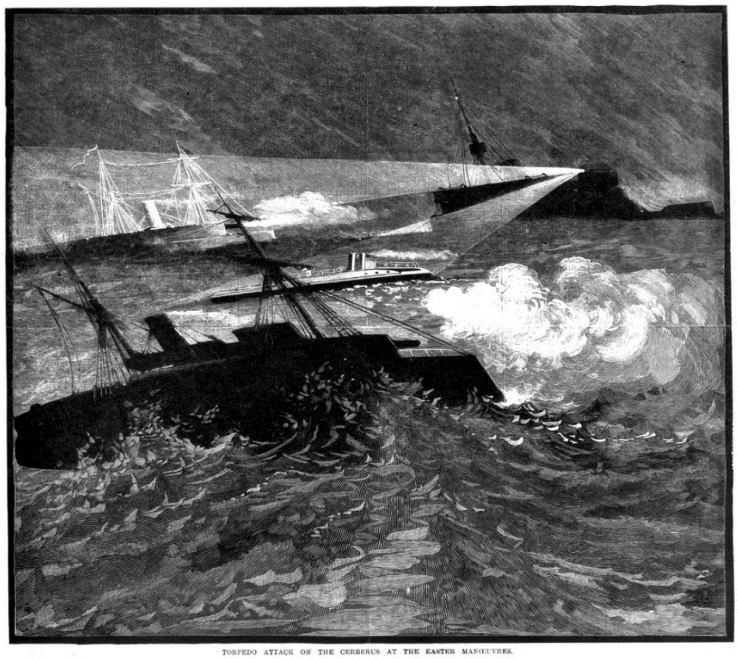
HMVS Cerberus steaming at full speed off Williamstown – (c. 1888 configuration)

Collection: Flickr - HMVS Cerberus

Two Rendel's were purchased; *HMCS Victoria,* armed with a single 25 ton 10-in RBL Armstrong gun at her bows, that could only be fired directly ahead; HMCS *Albert,* armed with an 8-inch RBL Armstrong gun mounted in similar fashion. To engage the enemy these ships had to be steered directly towards their target. Both vessels mounted 6-inch Armstrong guns at the stern, and two

machine guns. While Armstrong's sold the concept overseas and in Victoria, they rarely saw service in the Royal Navy after the 1870's, although the Chinese Navy had purchased eight Rendel's to be used in unison to surround enemy ironclads.[16] During the first half of 1884 various elements of the new naval squadron arrived. Two dredges, *Batman* and *Fawkner* entered the bay in March, *Victoria, Albert* and *Childers* in June, with *Nepean* and *Lonsdale* arriving in July - as deck cargo aboard *S.S. Darwin*. The services of Captain Mandeville had been dispensed with - replaced by Captain Alan Broderick Thomas R.N., [17] given command of the two gunboats on their voyage to Melbourne. As the new commander of the Victorian squadron Thomas took command of *Cerberus* and attaining a speed of 9 knots led the squadron across Hobson's Bay to Brighton for gunnery practice.[18] In September, upon surveying the condition of *Albert* and *Victoria* Mr Wilson Inspector of Government Naval Machinery was not 'overly impressed' by their design or the workmanship of the builders[19]

Towards Easter 1885 works on some Heads fortifications were nearing completion and 200 members of the Naval Reserve joining the naval squadron under the command of Captain Fullarton.[20] *Cerberus* travelled down the West Channel towards Swan Spit, where the crew prepared for a mock night torpedo attack by *Childers* and *Albert* after the gunboats had conducted a mock attack on the forts.



TORPEDO ATTACK ON THE CERBERUS AT THE EASTER MANŒUVRES.

Australasian Cover Image 11/04/1885. 'Torpedo attack on the Cerberus at the Easter manoeuvres'

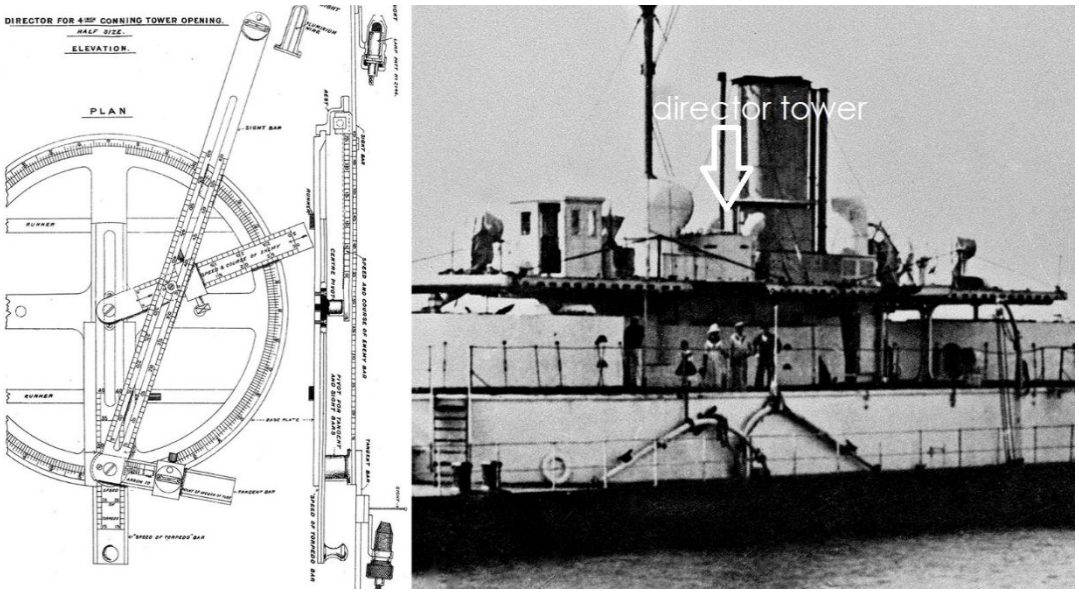
> The last vestige of confidence in our scheme deserts us as the powerful light flashes against our rigging. But its flash is too momentary. We have not been picked up, or the light would dwelt upon us. It would have fixed us yard by yard by yard in our progress up the channel, and the ship would

> have been ready to receive us with a broadside. It goes up and down and all-round the channel like a will o' the wisp, which is here, there and everywhere. The pall of night protects us, but we are still a long way from the Cerberus. The wind rises, higher till it blows a gale, and spray is driven into our eyes…..[21]

Searchlights were also experimented with as guard lights, by garrisons manning Fort Queenscliff and Fort Nepean. In 1886, *Cerberus* was surrounded by 12 picket boats to give warning of approaching vessels and used her searchlights to frustrate a night torpedo attack. Next morning *Victoria, Albert*, and *Gannet* made unannounced dawn attacks on the coastal towns of Warrnambool, Portland and Port Fairy, where startled citizens were aroused by '…. the roar of cannon from the armed cruisers, which shelled the most prominent public buildings with impunity, proved conclusively the complete panic that would have been produced had the warships been foes instead of friends.'[22] The armed-dredges *Fawkner* and *Batman* carried out similar attacks at Geelong, and at Cowes (Western Port Bay). On the final day a full scale mock attack was made on the Heads forts.[23]

Communications at the Heads defence was initially confined to rudimentary use of flags, semaphore masts, & etc., until a submarine telegraph was connected to the Nepean shore and South Channel fort, although these were frequently (accidentally) disconnected and infrequently repaired. Communication between the naval squadron vessels and battery defences was more difficult as there seems to have been little co-ordination with the military Signal & Torpedo Corps. Although there was clearly a battle plan there is little mention of co-ordinating military and naval arms within the Heads (1st line) defence zone. The primary stage of the Heads forts development had been reassessed in 1886 and over the next five years all the old RML guns were systematically replaced by heavy calibre B.L. ordnance. Gunnery drill and firing practices were conducted throughout the year.

1888 began peacefully, and the Naval Brigade assembled without fuss for the Easter manoeuvres. Captain Thomas tested a newly acquired 'Fire Director' and successfully discharged *Cerberus'*s turret guns by electrical current activated from inside the armoured director tower.[24]



HMVS Cerberus: Left – The Direction Finder. Right – Cerberus's armoured director tower

Two months later on 30 June, there was a breakage in cable communication between Australia and Europe. The Heads batteries were in disarray with new H.P. emplacements under construction and the B.L. ordnance still to be mounted. The navy proceed with all despatch to Queenscliff to board all foreign men-of-war entering Port Phillip and request the captains to anchor pending instructions from Melbourne. *Albert* had been first away at 11.30 a.m. Sunday. However, *Cerberus*, *Victoria,* and the auxiliary vessels, were drastically short of engineers and stokers.[25] The government authorised an immediate callout of 10 engineers from the Naval Brigade and hired 28 stokers. 270 reservists assembled at the naval yards, where partially completed torpedo nets for *Cerberus* were gathered from the marine yard. Finally, at 5 p.m. on Monday *Cerberus* departed for the Heads. Thomas later declared his object in going to Queenscliff had been '…. to get everything in working order, and to rehearse the usual plan of defence, as it is to be carried out when the whole forces of the colony are called out. ….. I found it has not the intention to lay the mines in the channels, nor to fully man the forts, (and) I deemed it advisable to retire on Hobson's Bay.'[26] By weeks end the crisis dissipated and a state of calm had returned. The situation led to an increase in the number of permanent engineers and stokers in the naval force. Thomas and Disney suggested Fort Gellibrand should be supplemented by a battery of guns positioned on the shoreline, close to the Williamstown station of the Torpedo Mine Corps.[27]

The Easter cruise for 1889 was curtailed to three days, '…. rendered necessary by the wholesale changes in 'Staff' personnel.[28] Captain Mann, late of *H.M.S. Rapid*, succeeded Thomas as

commandant. The 1889 manoeuvres are of particular interest, as the first occasion where newspapers specified warships stations in detail, along with ship to shore signal interaction. Gun practice on the first day was lost as the small paddle-steamer *Gannet* dragged *Nelson*, (on which all floating targets were kept) at 2 knots-per-hour towards the rendezvous point at West Channel. *Cerberus* led the squadron line abreast to the entrance of Symond's Channel, from where *Victoria* and *Batman* steamed to West Channel and *Albert* and *Fawkner* to South Channel. During the afternoon signals were exchanged between ships and the forts as the crew of *Cerberus* exercised at gun and torpedo net drill.'[29]

Battle arrangements of the naval squadron were linked to defence of the channel minefields and 'Appendices Map No.2' indicates various ship positions in the Port Phillip channel defences. Clearly the majority of gunboats and torpedo boats were positioned behind minefields in West Channel and South Channel - to work in unison with the forts as a 2nd defence line. Torpedo boats could pass across the minefields and attack enemy cruisers when the opportunity arose. (Effective torpedo range was less than 500 yards. QF guns and machine guns could also resist enemy attempts to counter-mine.) *Cerberus'*s armour protection allowed it to operate between Pope's Eye Shoal and Symonds Channel - to fill the 'gap' in the 1st defence line. Armed barges, No.3 & No.4 with single 6-inch BL guns, were placed in South Channel to block entry to Pinnace Channel - preventing small boat landings on the largely unprotected rear face of South Channel fort. Armed barge No.1 was placed to carry out a similar role at the entry to Loelia Channel. Armed barge No.2 was in the 'gap' between Fort Queenscliff and Fort Swan Island to prevent a land attack on the reverse of Fort Swan Island.

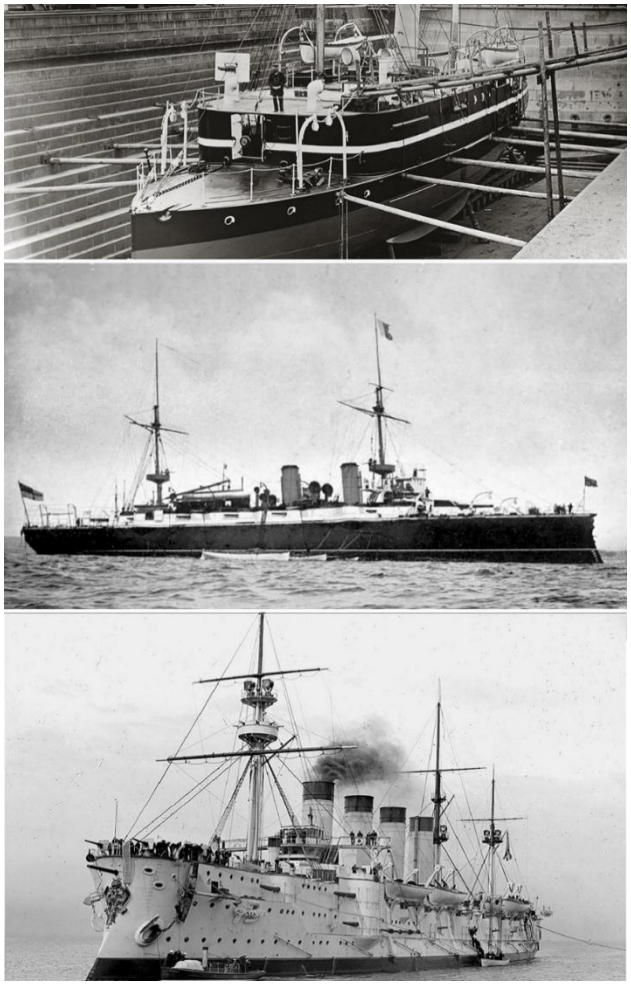
Following the 1890 Easter manoeuvres, Mann reported '…. he was satisfied, from Captain Fullarton's report, that good progress has been made, and no difficulty will be experienced in rapidly assembling the naval forces in case of emergency. The working of the (*Cerberus*) torpedo nets quite justifies the late expenditure. They can now be placed in position and taken in satisfactorily. I had hoped that the alteration of position of the searchlights might improve matters, but it appears they are still inefficient.'[30] A year later Mann was requesting supply of more powerful searchlights, to replace those originally fitted to *Cerberus* in 1876. Of greater significance, *Cerberus'*s worn out steam steering-gear failed five times during the 1891 Easter cruise while navigating the channel system. However, by the Easter cruise of the following year '…. the steering gear has been

thoroughly overhauled by Mr. Breaks, the fleet engineer, and now works without fault….. It steered beautifully down the bay, followed by the vessels of the fleet.'[31]

Article VI of the 1887 Australasian Naval Defence Act had agreed to establish a dedicated Auxiliary Squadron, consisting of:

> …. five fast cruisers and two torpedo gunboats, as represented by the 'Archer' (improved type) and 'Rattlesnake' classes in Her Majesty's navy. Of the above, three cruisers and one gunboat to be kept always in commission, the remainder being held in reserve, in Australasian ports, ready for commission whenever occasion arises.

The Auxiliary squadron arrived at Sydney on 5 September 1891 to join the protected cruiser *HMS Orlando*. Emphasis as to just where an enemy fleet might first be engaged shifted, triggering a change in perspective on the appropriateness of Victoria's squadron to the future defence of Port Phillip.



Top: H.M.V.S. *Albert*, Alfred Graving Dock, c 1890. Centre: H.M.S*. Orlando* at Sydney, c.1895. Lower: *I.R.S. Gromoboi* at Melbourne, c. 1901.

The powerful ordnance and great speed (16-18½ knots) of various new Russian and French cruiser-classes would have severely tested the firing rate of hydro-pneumatic guns at the Heads forts. It was also clear the Victorian auxiliary vessels and gunboats were obsolete, and that to remain effective *Cerberus* would require a gun upgrade to large calibre B.L. ordnance.[32]

The abandonment of long-term plans to establish an iron fort at Pope's Eye Shoal to guard a minefield stretching from Queenscliff to Observatory Point on the Nepean shore, was due to financial constraints that also led to rejection of a proposed Zalinski gun battery at Observatory Point, and a Brennan Torpedo station at Pope's Eye annulus. Both would have greatly strengthened the first line of defence. The shift to large calibre BL guns (8-inch, 9.2-inch, and 10-inch) at Shortland's Bluff and along the Nepean shore, between 1887 and 1893, almost certainly gave 'Liberal' Premier of Victoria, George Turner, an excuse to direct the Secretary for Defence in 1895 to prepare an order for reducing the strength of the Permanent Artillery and the Permanent Naval Force, as he intended to lay up the gunboats *Albert* and *Victoria*.[33]

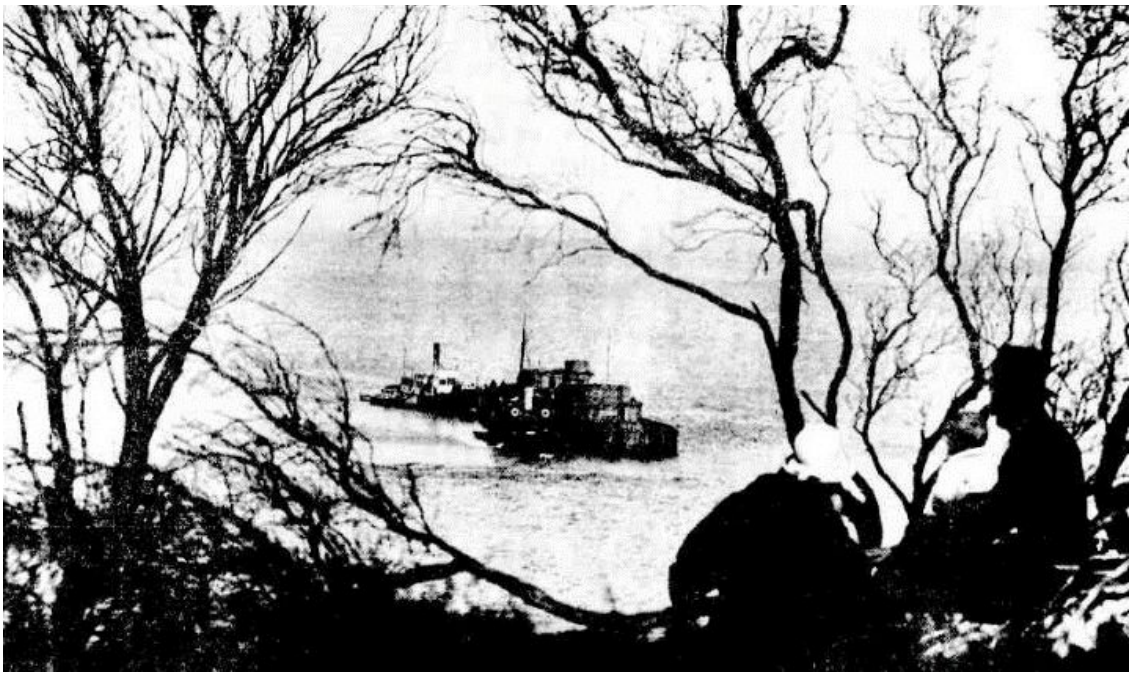
The argument for a naval presence on Port Phillip was not entirely over and *Cerberus* and the torpedo flotilla continued in service. In 1897, in a final flourish of rhetoric the *Age* once again put the case for warships to remain an arm of the colony's defence. Quoting such eminent figures as Sir George Clarke - professing the worth of a mobile navy rather than fixed coast defence – and the observations of the President of the British Empire League, whom the *Age* trumpeted:

> …. embody the whole case for the maintenance of a powerful guardship in Port Phillip, and the question to be considered is whether the floating defence we have provided is sufficient to meet any contingency that might arise. Apart from the fortifications at the Heads, the defence of the port is left to the Cerberus and the torpedo flotilla, and in the view of the highest authorities, they are sufficient to protect the port from attack. Captain Neville, the present commandant of the Victorian naval forces, is so enthusiastic as to the value of a powerful, heavily armoured vessel of the Cerberus type for defence purposes in a harbor like Port Phillip that he considers if a second vessel had been purchased— of perhaps of slightly more modern character— the Bay would have required no further defences and the colony have been saved the millions of preliminary outlay and the heavy expenditure for keeping-up the forts.[34]

At this point a trunnion on one 10-inch gun was fractured on *Cerberus*. Replacement of all her muzzle loading guns with 8-inch BL guns was briefly considered and abandoned – 'due to excessive costs'. Instead, a surplus 18 ton 10-in ML gun was purchased from the Admiralty for £300 and shipped to Melbourne aboard the *S.S. Australasian*.

Following Federation in 1901 the future focus and structure of Australia's naval defences came under dispute between the Imperial and Commonwealth governments. *Cerberus* and the Victorian torpedo boats, in company with other colony's warships, were designated as 'The Commonwealth Naval Force' under the command of Captain Creswell, R.N. (Qld.), and an Australian Naval Reserve of 700 men was promulgated. Plans were drawn up to place Vickers 6-inch BL guns in *Cerberus'*s turrets, and again, failed to achieve expenditure approval. In September 1905, Creswell ordered *Cerberus, Protector, Gayundah, Puluma,* placed in 'reduced commission' - with the Victorian torpedo boats to be kept in 'running order'. Two gunboats were sent on short cruises around the principal ports as a training exercise that would 'show the flag', but the remaining vessels of the Victorian squadron remained firmly attached to Port Phillip. In 1911 *Cerberus* was assigned to reserve status, along with the mine-layer *Vulcan,* and the five torpedo boats. Once the pride of the Victorian navy, *Cerberus* spent WW1 'guarding' the mouth of the Yarra River. In 1919 she was cleaned and overhauled at Williamstown dock yards, preparatory to being towed to Flinders naval base as a store ship.

When the British Admiralty gifted six J-class submarines to the RAN in 1921, *Cerberus* – renamed *Platypus II* – became 'mother ship' to four of the J-class submarines (J-1, J-2, J-4, and J-5) on Corio Bay, Geelong. The cost of refitting and maintaining these vessels was so high that any prospect of retaining them rapidly disappeared.[35] In May 1924, after laying idle for months, the final link with the old Victorian Navy was sold to a Melbourne Salvage Syndicate for £409.[36] In May 1926 at a meeting of the Sandringham Council Mr. H. T. Williams (town clerk) reported that the Sandringham Yacht Club and the Black Rock Life-saving club had both made application for the council to use its influence to obtain the hulk of the obsolete H.M.A.S*. Cerberus*, to be used as a breakwater at a point to be decided upon. After being purchased by the Black Rock Yacht Club for £150 and the resold to the Municipal Council for use as a breakwater in Half Moon Bay, the old warrior was towed by the tugs *Agnes* and *Minah* to her resting place on Thursday 2 September 1926. Three sea cocks were opened and she settled in 15-feet of water to rest on the bay floor.[37]



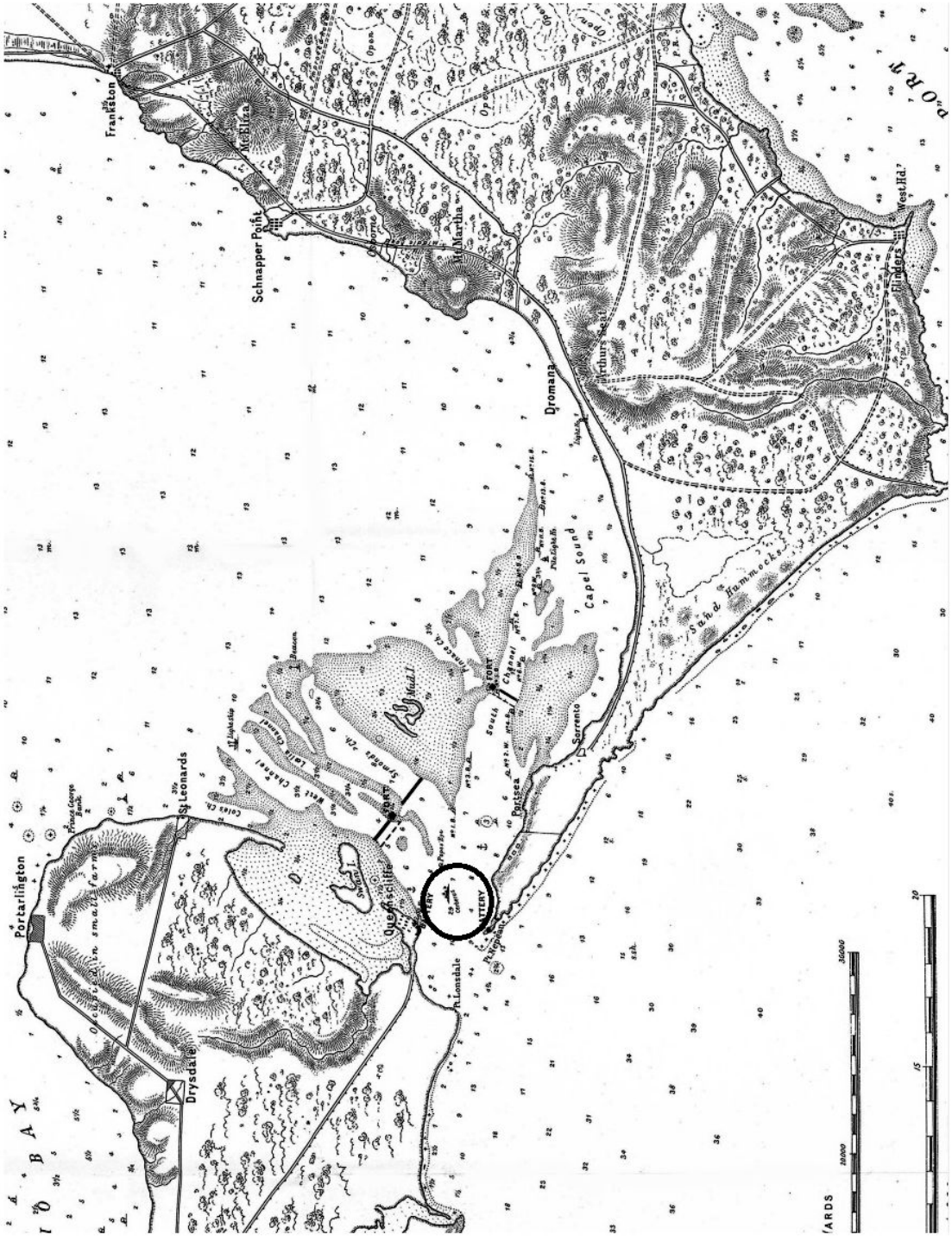
Newspaper photo: Cerberus as Breakwater - Half Moon Bay: Argus. 3 September, 1926. Page 9

APPENDICES: MAPS & CERBERUS PLANS

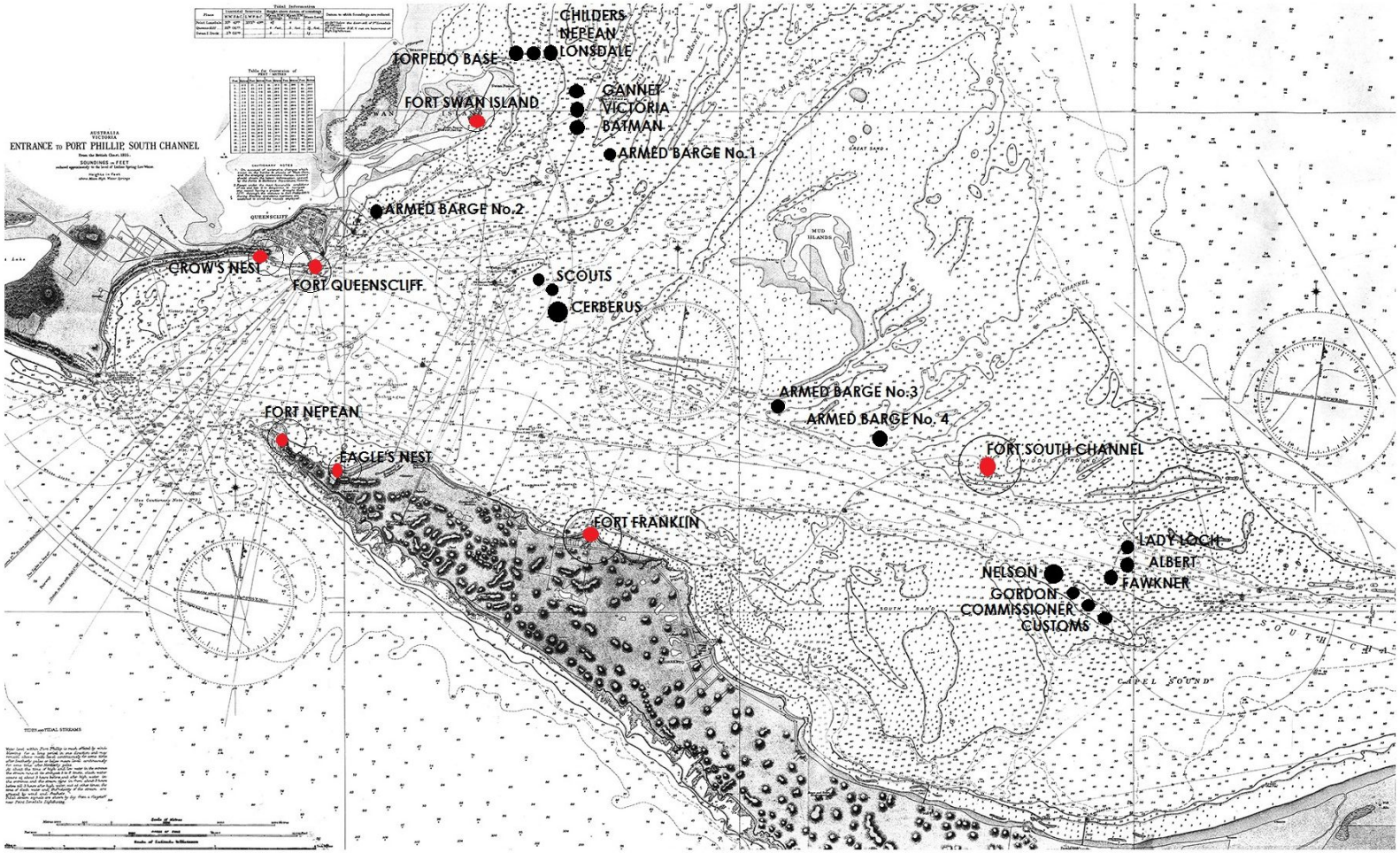
MAP 1

JERVOIS PLAN 1878

CERBERUS



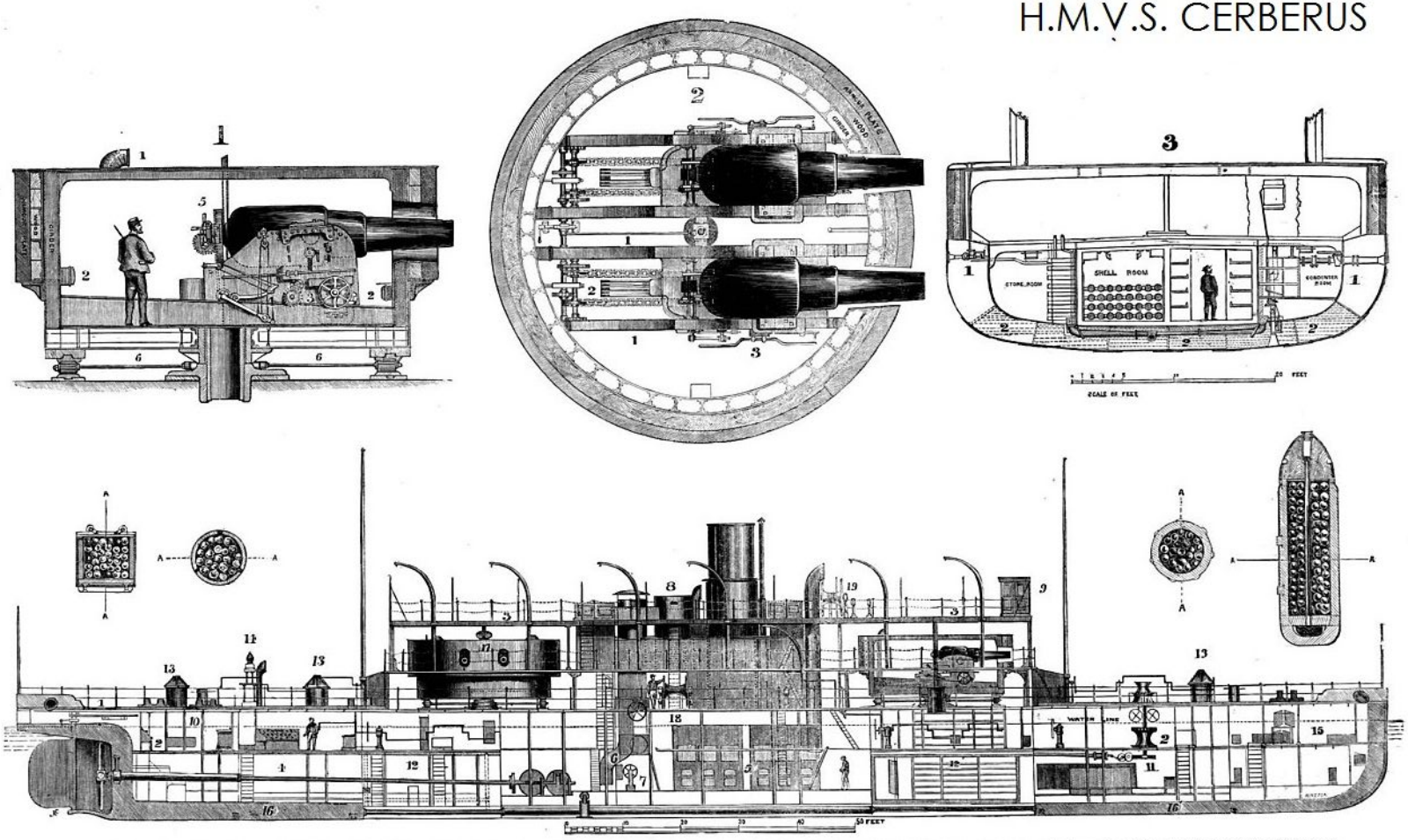
MAP
2



Circa 1890 DISTRIBUTION VICTORIAN NAVAL SQUADRON

KEY ● WARSHIP
● FORT

H.M.V.S. CERBERUS 1



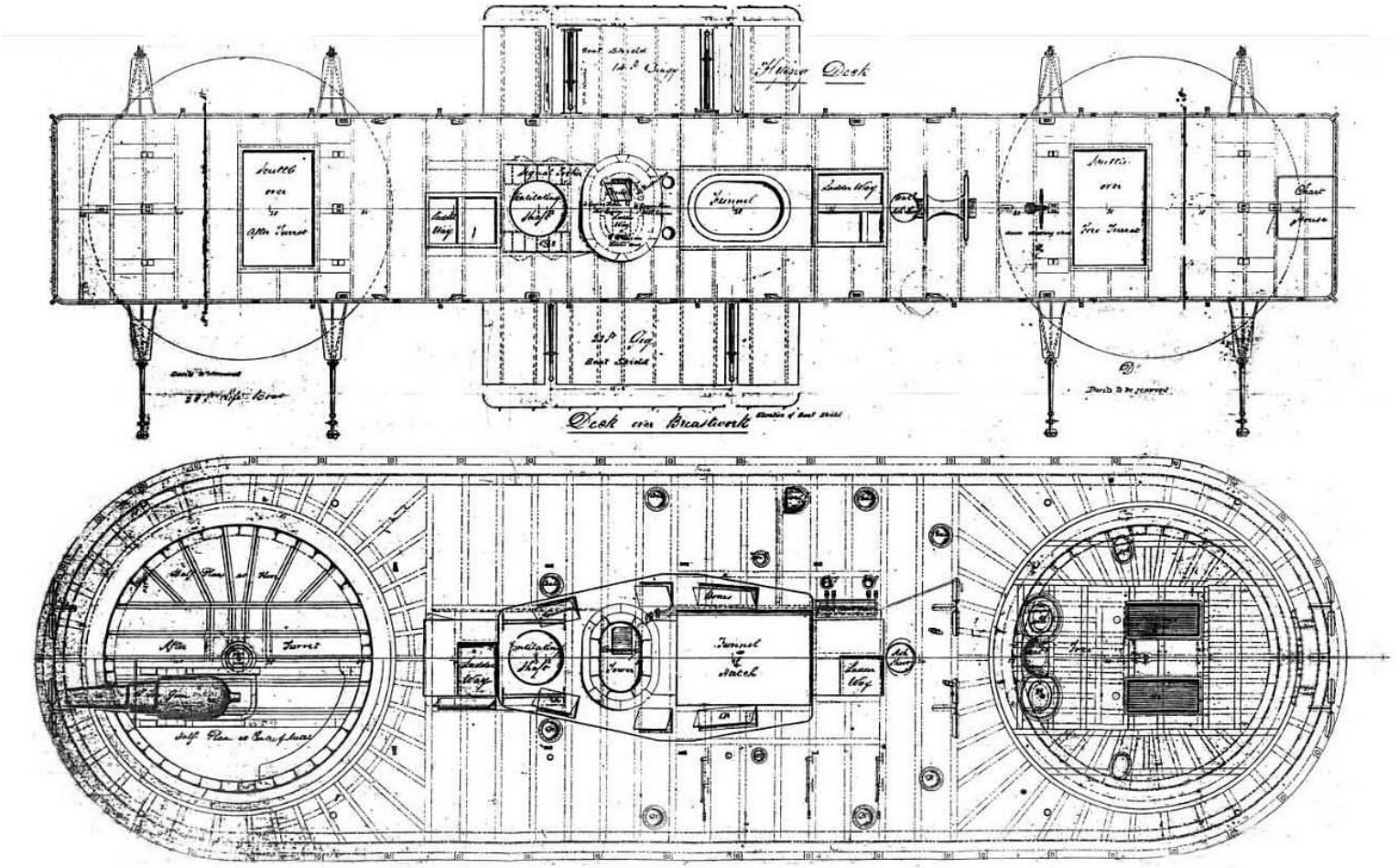
1, Main deck ; 2, lower deck ; 3, flying deck ; 4, screw shaft ; 5, boilers ; 6, general ventilating shaft ; 7, engine to ventilators ; 8, captain's observatory ; 9, binnacle on flying deck ; 10, cables ; 11, engine for working capstan ; 12, magazines ; 13, armour-plated companions ; 14, binnacle ; 15, forecastle ; 16, watertight compartments ; 17, armour-plated turret ; 18, wheel to rudder, in time of action ; 19, wheel to rudder on flying deck.

1. Section of Turret and Elevation of Gun.—1, Ventilating air pipe ; 2, buffer for gun carriage ; 3, apparatus for regulating vertical range of gun ; 4, apparatus for regulating recoil of gun. A.—Sections of shells. 2.—Plan of Turret and Gun Carriage.—1, Inclined plane for gun carriage ; 2, grip for checking recoil ; 3, apparatus for raising or lowering trunnion. 3. Section of Hull at shell room.—1, Watertight compartments, empty ; 2, watertight compartments, filled. A.—Sections of shells.

TRANSVERSE AND LONGITUDINAL SECTIONS OF THE TURRET SHIP CERBERUS.—see page 104.

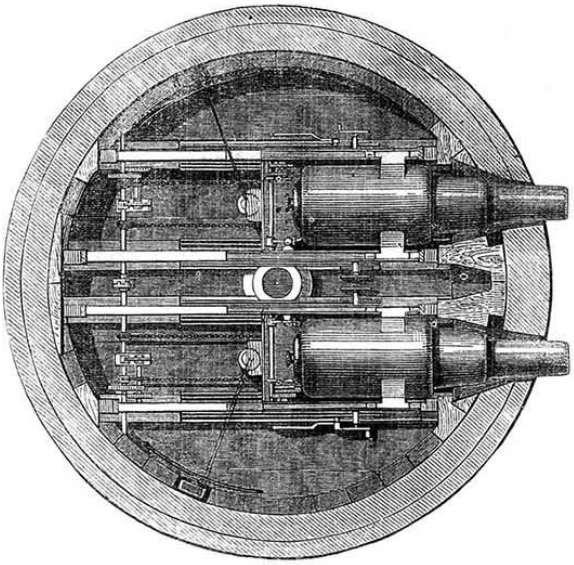
PLAN : FLYING DECK & BREASTWORK DECK
H.M.V.S. CERBERUS

2

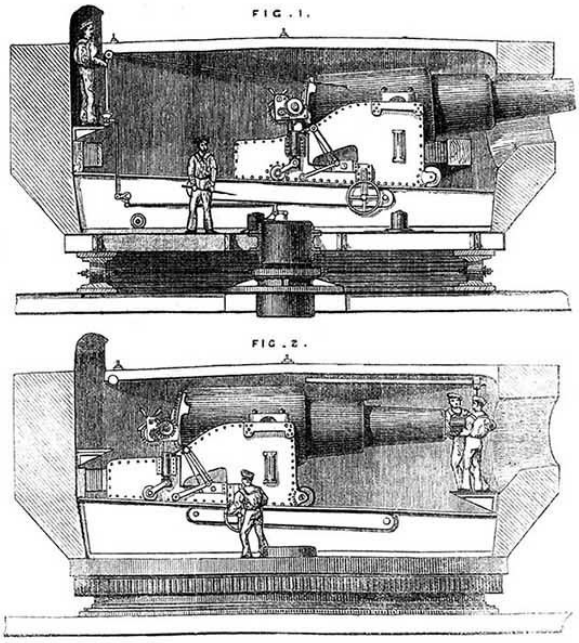


CERBERUS TURRETS 3

1870

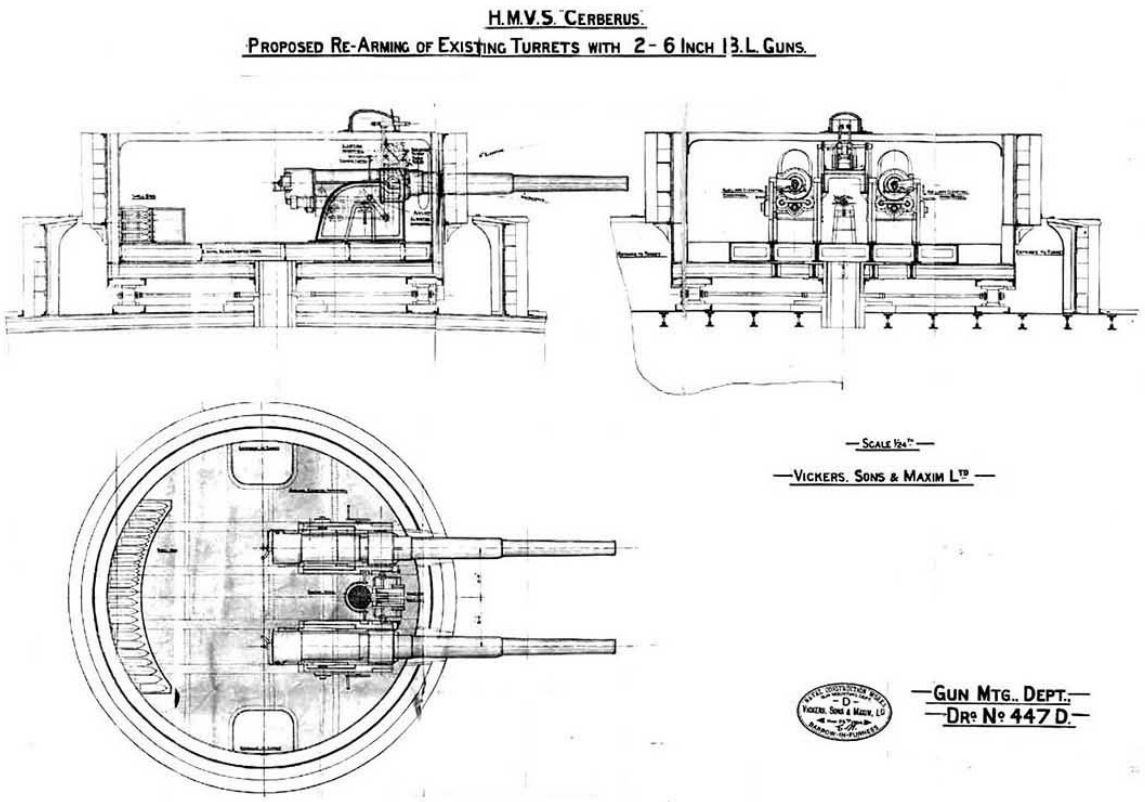


PLAN OF TURRET AND GUN-CARRIAGES.



SECTIONS OF TURRET, WITH A GUN CARRIAGE IN TWO POSITIONS.

1904



ENDNOTES

[1] Beeler, John. 2001. *Birth of the Battleship – British Capital Ship Design 1870-1881.* Page 108.

[2] Gardiner, Robert. 1992. *Steam, Steel & Shellfire – The Steam Warship 1815-1905.* pp 80-92. Conway's History of the Ship. Chartwell Books.

[3] HMVS Nelson had become a school training ship for orphaned & destitute 'street' boys.

[4] Admiral Anthony Hiley Hoskins (1828-1901) – Commodore aboard *HMS Pearl* & *HMS Wolverine;* Australia Station (1875-1877)

[5] Reports on the naval Defences of Victoria by Commodore Hoskins R.N.; Captain Townsend, T.N.; and Lieutenant Dugdale, R.N. – 1877 VPARL1877-78No.40pdf

[6] 'In giving the above sketch of what I consider desirable, in compliance with your request; I have looked only at the naval defensive side of the question, and have not of course taken into consideration its political, economic, or other bearings; nor have I thought it necessary to dwell on the advantage it would be to a colony without a regular army to develop a force which already exists, and make the most of one arm, rather than to divide effort and authority by having several of equal importance.' …. 'Should my suggestions, from any reason of cost or otherwise, not be considered feasible or desirable to adopt, I should recommend that batteries of the heaviest possible guns should be constructed on the Heads to command the entrance and cover the torpedo system, which I consider a *sine qua non*. The engineer officer would probably, in view of the double requirement, be the best judge of the sites, and it should be left for him to decide upon them.'

[7] Lieutenant Edward S. Dugdale – Gunnery Lieutenant of *HMS Wolverine* – 1878 VPARL1877-78No.40pdf p.p. 5, 6.

[8] Captain Colebrooke Thomas Mandeville R.N. had retired from Royal Navy service with the rank of commander in October 1876, to visit his brother in Tasmania.

[9] The guns were the precursor of Fort Queenscliff. There were three 300 pounder RML emplaced in temporary sand-bag Lower Battery and four 80 pounder RML in the old Shortland's Bluff, Upper Battery. The Victorian Government were appalled at the idea of the heavier 300-pdr ordnance being used, and eventually refused to allow the 80-pdr ordnance to be fired directly at Cerberus.

[10] *Sydney Daily Telegraph*. 22 July 1882. *The Victorian warship – Cerberus.* Page 3. *H.M.S. Glatton* was fired on using 85-lb charges, three 600-lb shots were fired from the *H.M.S. Hotspur's* 25-ton guns at a distance 200 yards. Although all the shots penetrated to the oak backing, and had partially dislodged several iron plates, *Glatton's* turret continued to revolve easily, and she remained in full fighting trim.

[11] 'The crown or spur wheels used for revolving the turrets arc not of the best description, either as regards the material they are composed of (cast iron) or the plan adopted in their construction. The teeth of the wheels in question have given evidence of their insufficiency by one or more of them breaking on nearly every occasion when the turrets have been revolved at their greatest speed, and then suddenly pulled up by the engines being thrown into reversed action. To work the turrets as described must not be considered as handling them roughly, as it is precisely the usage they would be subjected to if the Cerberus were in action, and no turret revolving machinery can be said to be equal to its work unless it is capable of remaining stanch when suddenly reversed under the following conditions, namely, guns run out, vessel listed, and the turret revolved in the direction of incline at their greatest possible speed.'

[12] 1882. Victoria. *Reports and Suggestions Relative to the Defence of Victoria. Scratchley memorandum.*

'It should be observed that Sir W. Jervois has never opposed .the employment of floating defences in their proper sphere. In his Report of 1877 (pages 12 and 13), the advantages attending the adoption of fixed defences, such as forts and batteries, were fully discussed. Floating defences are known to be very costly to maintain the Cerberus, for example; they require periodical repairs; they are liable to be disabled by accidents, to which fixed defences are not exposed. Gunboats being unarmoured can be sunk by the enemy's fire, or by the action of his offensive torpedoes. Forts and batteries are practically indestructible, and cost an insignificant sum to maintain. They are always present when wanted.'

[13] 1882. Victoria. *Reports and Suggestions Relative to the Defence of Victoria. Scratchley memorandum.*

'Having in view that it would take several years to construct the South Channel Fort, according to the original design proposed by Sir W. Jervois, and that it would be unwise to commence such a large and important ·work until a loan had been authorized for the purpose, it is necessary to consider what steps should be taken in the meantime to prevent hostile vessels passing up the South Channel. Sir W. Jervois intended that the Cerberus, and a fast gun vessel, together with torpedo boats, should guard this channel pending the completion of the fort. The gun vessel and torpedo boats not having been provided, and the submarine defences for the channels not having been organized, there is a general impression that it would be unwise to leave to the Cerberus alone the defence of the channel. It is, therefore, proposed to provide additional floating defences, in the shape of gun boats and fast torpedo boats.'

[14] Colonel William Crossman (1830-1901) Member of Treasury Committee on the Irish Board of Works in 1870. He was promoted to major in 1872 and to lieutenant-colonel in 1873. From 1874 to 1875 he was Assistant Director of Works for Fortifications. In January 1876. Crossman was placed in charge of submarine defences at the War Office. In 1881 he was on special service to report on the defences of the principal Australian colonies - which included a visit to New Zealand.

[15] *Argus*. 23 March 1882. *Crossman Defence Report*. Page 6.

[16] Wright, Richard N. J.; 2000. *The Chinese Steam Navy 1862-1945.* p.p. 43-46.

[17] Captain Alan Broderick Thomas R.N (1844-1910)
http://www.cerberus.com.au/muster_dadabik/index.php?table_name=crew&function=details&where_field=id&where_value=129

[18] 'A target was laid at a distance of 2,000 yards from the vessel, but it was unable to withstand the westerly gale which prevailed, and it soon disappeared from sight. A brandy cask, with a heavy shot attached, from which a piece of bunting tied to a broom handle gaily waved was fixed some 600 yards from the Cerberus, firing was resumed, only one shot having been discharged at the more distant object. One turret merely was used, and not more than five shots were fired. The rough sea put anything like accurate shooting out of the question, but two shells fell in somewhat close proximity to the target. During the firing the windows of the chart-house were smashed, and one of the 18-ton guns split in three places.'

[19] Messrs Wm Armstrong, Mitchell & Co Ltd, Elswick, Newcastle-upon-Tyne.

[20] Fullarton, Robert Russell R.N. (1829-1895) http://adb.anu.edu.au/biography/fullarton-robert-russell-3581

[21] *Australasian*. 11 April 1885. *Torpedo Attack on the Cerberus.* Page 14.

[22] *Age*. 27 April 1886. *The Cruise of the Victorian Fleet.* Page 5.

[23] The manoeuvres of the Victorian fleet were brought to a successful termination today by a naval engagement between ono half of the fleet, assisted by the batteries at Queenscliff, Point Nepean, Point Franklin and South Channel fort, as opposed to the other half of the fleet. The disposition of the battle was as follows: The gunboats Victoria and Albert and the Harbor Trust boats Gannet, Batman and Fawkner were to compose the enemy, which was to force the Heads and drive the defenders back to Melbourne and then shell the city. The enemy being outside the Heads the Victoria and Gannet were to pass through, engaging the forts at Queenscliff and Point Nepean; then steam along the South Channel and attack the South Channel fort, which was to be defended by the Nelson, assisted by the torpedo boats Gordon and Commissioner. The Batman was to run under the lee of Point Nepean and engage the Point Franklin fort, which was to be supported by the Childers. In the meantime the Albert and Fawkner, after engaging the forts, were to steam towards and attack the Swan Island battery, which would be defended by the Cerberus and the torpedo boats Nepean and Lonsdale. The enemy having forced the Heads and driven the defending fleet back a short distance was instructed to retire beaten through the Rip, followed by the Cerberus, Nelson and the torpedo boats. At three o'clock on Monday morning the anchor of the Nelson was weighed, and an hour later she steamed across the Bay from Cole's Channel and took up a position with the South Channel fort on the starboard. At seven o'clock, surprised by the Gordon and Commissioner. The Cerberus, followed by the Nepean and Lonsdale, passed down the West Channel and brought up opposite the Swan Spit. The enemy had previously gone outside the Heads, and waited for eight o'clock, the time agreed upon for the commencement of hostilities. When the hour arrived, tho Victoria and Gannet, followed by the Albert, Fawkner and Batman, steamed through the Rip and engaged both the Queenscliff and Point Nepean batteries. The latter replied to the fire in a vigorous manner, but, owing to the rapid steaming of the Victoria and Albert, the gunners on shore could only train a few guns before the boats had passed out of range. Approaching the Pope's Eye buoy the Victoria and Gannet, the latter too far in the rear to be of any use to the former, swept into the South Channel, whilst the Albert and Fawkner passed away in the direction of the West Channel. The Batman, whose duty it was to tackle the battery at Point Franklin, did not follow her instructions in a seamanlike manner, for instead of coming up quickly under the starboard quarters of the Victoria and Gannet, with the object of taking off the fire of the fort from those vessels; hung back. The Childers which lay to the foreshore at Fort Franklin waited a long time for an adversary to come up, and finding that she was too slow rushed out, and was supposed to have sunk her with a torpedo. The fort Franklin battery which was splendidly served maintained a continuous fire on the Victoria and the Gannet as they advanced upon the old Nelson and her supporters, the Gordon and Commissioner. The Victoria, still unsupported by the Gannet, opened fire with her 26 ton gun on the Nelson, which replied with her two 6-inch Armstrong guns located in the bows, and then turned round and delivered deadly broadsides from the port and starboard guns. The crews worked like Trojans, and it was easy to see that they were firing more rounds than any other three vessels in the fleet. The Nelson altogether fired 127 rounds and burned 1,016 lb, o£ powder. Had the charges been full ones the amount of powder consumed would have exceeded 3,000 lb. Tho South Channel fort after firing three miserable shots subsided. The Victoria, having been raked fore and aft by the steady and continuous fire of the Nelson, turned round and retired, followed by the Gannet, both being considerably harassed by the Gordon, which darted through the water at a rapid rate, and was supposed to have discharged the torpedoes she did not carry. The poor little Commissioner struggled gamely through the water, but her utter uselessness as a spar torpedo boat was demonstrated by the fact that she could barely pass the old Nelson, which was only steaming at the rate of seven knots an hour. Had the latter been able to increase her speed she would undoubtedly have captured the Gannet, which moved through the water in a very sluggish manner. As the vessels retired pursued to the Heads they again encountered the cross-fire of the Queenscliff and Point Nepean batteries, as well as the heavy ordnance from the Cerberus, which had driven back and utterly defeated the Albert and Fawkner, with the assistance of the torpedo boats Nepean and Lonsdale. The Childers having sunk the Batman, steamed at a rapid rate into the centre of the Rip, and whilst she discharged torpedoes at the Fawkner and Batman, the Nelson brought the engagement to an end by firing a broadside from the starboard and port guns at the Victoria, Albert and Gannet, whose utter demolition was supposed thereby to have been completed. The order to cease firing was then .given from the Cerberus, which had been

boarded in the morning by his Excellency Sir Henry Loch and Master Loch. Excerpt from the Age. 27 April 1886. *The Cruise of the Victorian Fleet.* Page 5.

[24] *Argus*. 3 April 1888. *HMVS Cerberus.* Page5.
Thomas apparently utilized an adaption of a 'Torpedo Director' which he had acquired while visiting the UK in 1887.
'The director consists of a horizontal arc, and a support carrying a telescope which is worked on trunnions, and provided with the vertical correction arcs and verniers. The horizontal arc is a semi-circular frame graduated in degrees representing bearings before and abaft the beam. It enables the manipulator to ascertain the angle and elevation of an object, and to make corrections for the speed at which the vessel is steaming. The instrument has been in use in the Imperial navy for many years. Its introduction to the Cerberus is one of the improvements which have been made by Captain Thomas since his return from England. It is intended to be used for broadside firing. For this purpose it is shipped on the conning tower, which is the station occupied by the commander in action. It gives the commander entire control over the fire, and enables him to deliver it at any time, and on any point he may select. He has an all-round view, and he would often see the object when it is out of sight from the gun deck owing to the smoke, darkness, or direction. He takes his sight with the director, he gives his advice with regard to angle and elevation to the man in the turrets by means of speaking tubes, and he fires the guns simultaneously by simply turning a key in the battery of the electric gear. The electric gear on the Cerberus is not complete, and the firing has to be done by the men themselves. It is, however, in process of construction.'
Also see - http://www.cerberus.com.au/director.html

[25] Thomas reported there were still only 5 engineers in Victorian Naval squadron, which had recently expanded to include 8 vessels.

[26] *Age*. 13 July 1888. *Official Reports of the Commandants.* Page 6.

[27] This request led to plans for a new earthwork battery; to be known as the 'Emergency Battery – Point Gellibrand.'

[28] *Age*. 22 April 1889. *With the Fleet. Aboard HMVS Cerberus.* Page 6.

[29] Ibid

[30] *Age*. 17 April 1890. *The Naval Forces.* Page 6.

[31] *Argus*. 18 April 1892. *The Fleet at the Heads.* Page 6.

[32] Both breastwork monitors in the Royal Indian Marine - *HMS Malaga* And *HMS Abyssinia* - were upgraded to carry four BL 8-inch turret guns in late 1892. As early as 1883 Victoria had sought to upgrade the Cerberus ordnance. 'Mr. R. Murray Smith, the Agent-General for Victoria, recently received instructions to consult the Admiralty as to the advisability of having the new 8in. or 10in. breech-loading guns mounted on the turrets of the Cerberus, instead of the present less powerful 18-ton muzzle-loading guns. Mr. Murray Smith has received a reply from the Admiralty, stating that they disapprove of the proposed change in the armament of the Cerberus.' - Advocate. 4 August 1883. Page 11. Then, in 1898, the government had … 'At first it was proposed to replace the four guns, which are muzzle-loaders, with quick-firing breech-leading cannon, but this idea had to be abandoned, owing to the expense, an outlay of about £15,000 being necessary to merely strengthen the mountings. - Evening News. 28 January 1898. Page 3. The idea was reintroduced in 1900 with four 6-inch guns being suggested and plans drawn up, but the gun upgrade was again rejected. Williamstown Chronicle. 24 March 1900. Page 3.

[33] *Newcastle Morning Herald and Miners' Advocate*. 2 April 1895. Page 6.

[34] *Age.* 2 October 1897. *The Cerberus Armament. Is it Defective?* Page 13.

[35] *Daily Telegraph*. 17 November 1921. *Our Submarines – Huge Costs.* Page 6.
The total amount spent on each for repairs was: J1, £19.444; J2, £28.723; J3, £45,424; J4, £30.103; J5. £16,945; J6, £52,541. Expenditure to the extent of £82,000 had also been incurred on batteries.

[36] *Daily Telegraph*. 24 April 1924. *Old Cerberus sold for £409.* Page 6.

[37] *Mercury*. 6 September 1926. *End of the Cerberus.* Page 4.

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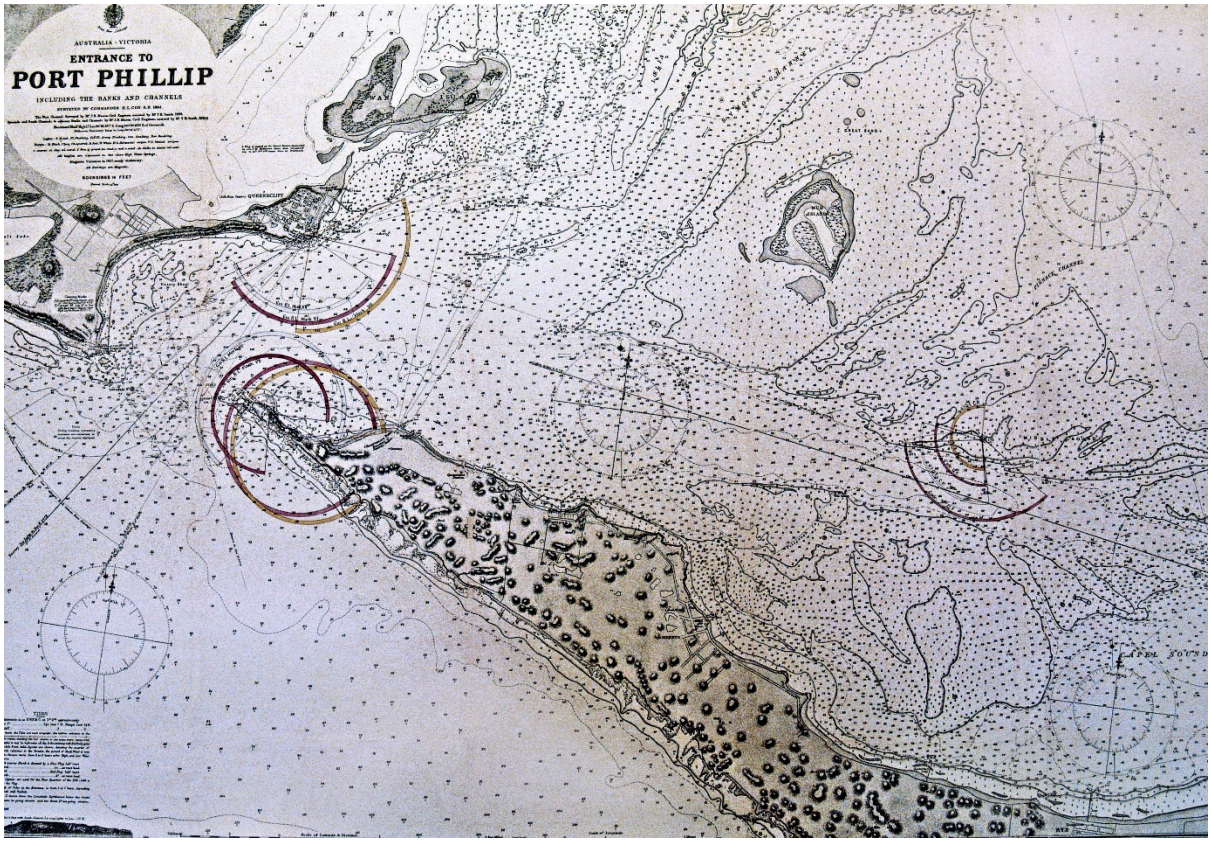
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POINT NEPEAN DEFENCE SITES



1915 map showing arcs of fire from Point Nepean, Fort Queenscliff and South Channel Fort. Map collection, Fort Queenscliff Museum.

POINT NEPEAN DEFENCE SITES

EXISTING STATEMENTS OF SIGNIFICANCE

The **Point Nepean Defence Sites and Quarantine Station Area** is already on the **National Heritage List**. However, most emphasis in this listing is on the quarantine station. It is proposed that Point Nepean should be recognised as part of the Port Phillip Defence Group as it became a central element in the defence scheme in the late nineteenth century and was even more significant in WWI and WWII.

The following are the relevant excerpts from the current **National Heritage List** which demonstrate the defence significance.

Summary Statement of Significance

Point Nepean is the site of the oldest, surviving, purpose-built, barracks-style, quarantine accommodation buildings in Australia, as well as fortifications demonstrating the primary importance of coastal defence to the Australian colonies…

Point Nepean has been part of a strategic outer line in the defence of Melbourne's ports and harbours since the 1870s, in conjunction with fortifications at South Channel Fort, Swan Island and Queenscliff. Fort Nepean was known in the 1880s as Victoria's 'Gibraltar' and in 1890 it was reported that Melbourne was the best-defended commercial city of the [British] Empire. The fortifications, based on the reports of Sir William Jervois and Lt Colonel Peter Scratchley in 1877, illustrate British military design and technology of the 1870s and 1880s, similar to Middle Head, Sydney, overlaid by changes in imperial armaments and Second World War coastal defences. Point Nepean, as part of the system of defence for Port Phillip Bay, best illustrates British military design and technology of the 1870s and 1880s, under the influence of Jervois and Scratchley. In addition, Fort Nepean may have archaeological deposits associated with military use, which extend into the waters surrounding the site of the former engineer's jetty serving Fort Nepean. The first shot fired by Australian forces in WW1, from the batteries at Point Nepean, was at the German steamer 'Pfalz', which left Port Phillip during the declaration of war on 5 August 1914. The events are well documented and clearly demonstrate the geo-political importance of coastal defences, and Fort Nepean in particular, in protecting the Australian colonies as part of the British Empire.

John Monash (later Sir) was attached to the [Melbourne] Garrison Artillery, focused on Fort Nepean. Monash rose through the ranks to become its commanding officer by 1897. Monash's biographer, Geoffrey Serle, saw this as crucial to his success as commander of Australian Forces in WW1…

Criterion A, Events and Processes

Point Nepean is a broad historic landscape, featuring a considerable array of historic values relating to national quarantine and defence. Historic fabric at Point Nepean includes mid-nineteenth century archaeological remains and over one hundred year's evidence of quarantine processes and defensive fortifications, which contribute to a richly layered historic cultural landscape.

Point Nepean, at the entrance to Port Phillip Bay, played an important geo-political role from the 1870s, protecting Melbourne, and potentially Victoria, as part of the British Empire. In 1870, the final departure of British Imperial troops placed defence in the hands of the colonial governments. British fortifications expert General Sir William Jervois RE (Royal Engineers) and Lt Colonel Peter Scratchley inspected each colony's defences, leading to the Jervois-Scratchley reports of 1877, which were to form the basis of defence planning in Australia for the next 30 years. The reports suggested that Port Phillip Bay should be defended by a battery and keep at Queenscliffe, a fort at Point Nepean and batteries at Swan Island and South Channel Island. Guns were in place by 1886 at Fort Nepean and in 1888, Eagles Nest battery was implemented and new barracks erected at Fort Nepean. Fort Pearce was completed from 1910-1916 by the Commonwealth government, reinforcing Australia's Empire role. The first shot fired by Australian forces in WW1, from the batteries at Point Nepean, was at the German steamer 'Pfalz', which left Port Phillip, during the declaration of war, on 5 August 1914. The events are well documented and clearly demonstrate the geo-political importance of coastal defences, and Fort Nepean in particular, in protecting the Australian colonies as part of the British Empire.

Significant fortification sites include Fort Nepean, Eagles Nest, Fort Pearce and Pearce Barracks, erected during five development phases. Point Nepean, the first fort, was developed as follows: pre-1880 temporary fortifications; 1880-1886 5 emplacements; 1887-1890 converted and extended to a combination of 10 observation posts and batteries; 1910-1915 reduction in armaments; and 1939-1945 conversion to hooded emplacements and other uses. Fort Nepean was known in the 1880s as Victoria's 'Gibraltar' and in 1890 it was reported that Melbourne was the best-defended commercial city of the British Empire.

Criterion B, Rarity

Geo-political and colonial defence needs drove the contemporary development of coastal fortifications at Melbourne and Sydney from the 1870s. Point Nepean has been part of a strategic outer line in the defence of Melbourne's ports and harbours since the 1870s, in conjunction with fortifications at South Channel Fort, Swan Island and Queenscliff. The fortifications at Point Nepean, as part of the system of defence for Port Phillip Bay, best illustrate British military design and technology of the 1870s and 1880s, under the influence of the reports of Jervois and Scratchley in 1877.

Criterion D Principal characteristics of a class of places

Fort Nepean (1882-1891), Eagles Nest (1888), Fort Pearce (1910-1916) and Pearce Barracks (1911) at Point Nepean illustrate the characteristics of British military design and technology employed from the 1870s to the early 1900s, overlaid by related development during WW I and II. The strategic location and siting of these aspects of the place conform with the General Guiding Principles employed for a typical harbour under the Joint Naval and Military Committee for the defence of colonial ports by 1893. These include overlapping fields

of fire from fortifications on headlands overlooking the approaches and channels and supporting barracks, all features recommended at Point Nepean in the Jervois-Scratchley reports of 1877.

Criterion H Significant People

John Monash (later Sir) was attached to the [Melbourne] Garrison Artillery, focused on Fort Nepean. Monash rose through the ranks to become the commanding officer of Fort Nepean by 1897. Monash's biographer, Geoffrey Serle, saw this as crucial to his success as commander of Australian Forces in WWI.

Description

Fortifications and Defence Training The entrance to Port Phillip Bay, in particular South Channel, was defended from the 1880s by overlapping fields of fire from South Channel Fort, Swan Island, Queenscliff and Point Nepean, the system providing a first line of defence. Surviving fabric at Point Nepean clearly illustrates the implementation and operation of the fortifications, although demolition and adaptation have reduced the intactness of some structures. Significant fortification sites include Fort Nepean, Eagles Nest, Fort Pearce and Pearce Barracks, erected during five development phases.

Point Nepean, the first fort, was developed as follows: pre-1880 temporary fortifications; 1880-1886 5 emplacements; 1887-1890 converted and extended to a combination of 10 observation posts and batteries; 1910- 1915 reduction in armaments; and 1939-1945 conversion to hooded emplacements and other uses. Surviving fabric at Fort Nepean includes brick and concrete gun emplacements 1-8, the Engine House and the site of the Barracks, dating to the period 1882-1891. Eagles Nest was begun in 1888, Fort Pearce in 1910 and Pearce Barracks in 1911 (Historic Buildings Branch 1990). The fortifications at Point Nepean should be considered as one component in the system of outer defences for Port Phillip Bay, in the same way that the defences of Port Jackson developed from the early 1800s in response to perceived geo-political and military threats. By 1890 munitions included the 'latest' hydro-pneumatic weapons (a single Armstrong 9.2 inch disappearing gun), quick firing smaller guns and 6 inch garrison guns, although some muzzle loading pieces were still in evidence. The nature of the terrain at Point Nepean determined the design of the fort layout and its construction, and later development, including the use of brick. For further details of the forts and batteries refer to the Conservation Plan (Historic Buildings Branch 1990).

History – Defence

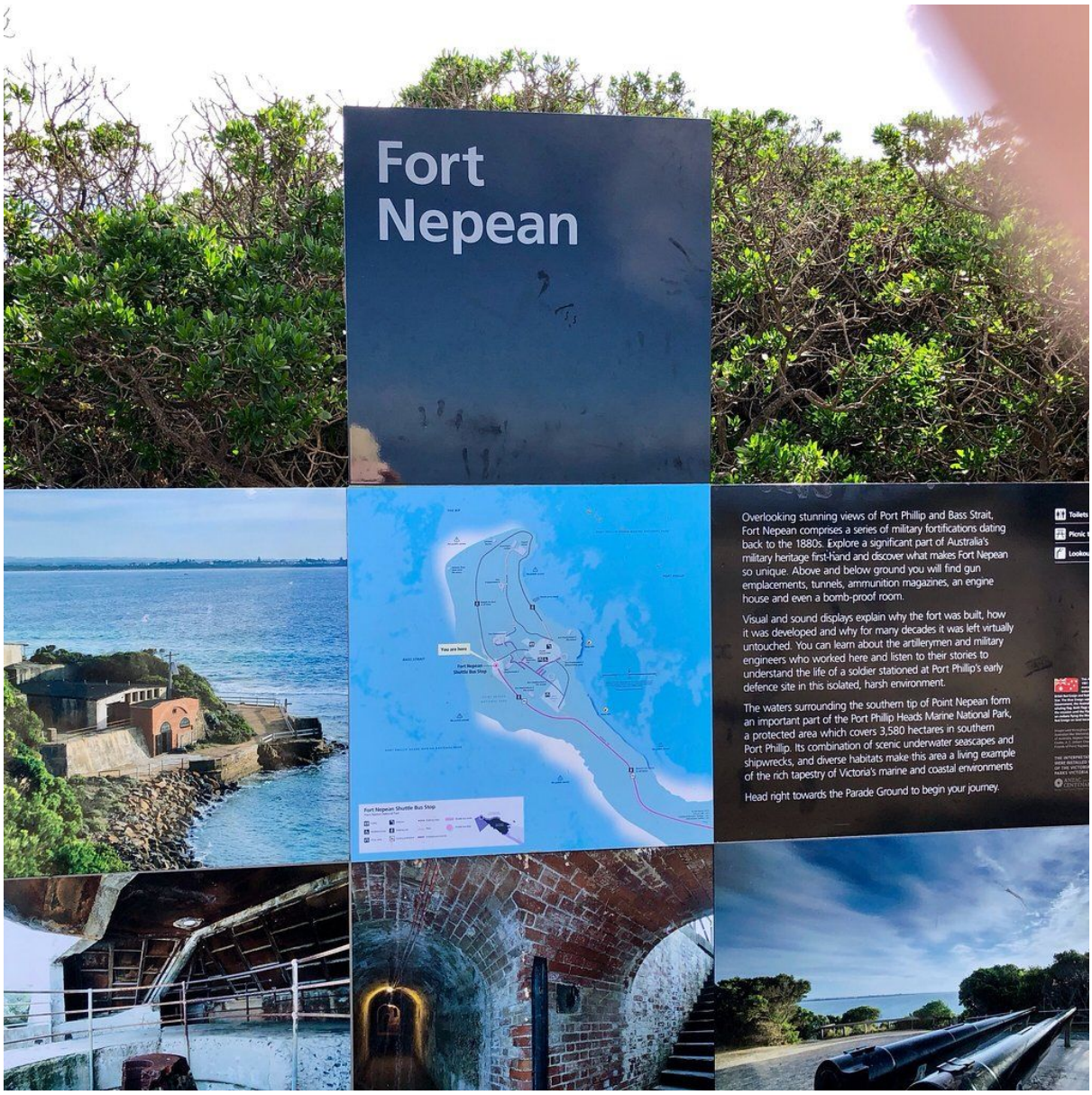
In 1860, Victoria applied to the British Government for the services of an officer of the Royal Engineers to superintend the erection of defences. Captain Peter Scratchley was appointed and advised the provision of batteries in Hobson's Bay and at the Heads, including Point Nepean. The use of Point Nepean for defence purposes began in the 1870s, when the final departure of British Imperial troops left military defence in the hands of the Australian colonies.

Russian activity against Turkey in 1877 prompted a team of Royal Engineers to report on the Australian colonies in 1877. British fortifications expert General Sir William Jervois RE (Royal Engineers) and Lt Colonel Peter Scratchley inspected each colony's defences, leading to the Jervois-Scratchley reports of 1877, which were to form the basis of defence planning in Australia

for the next 30 years. The reports suggested that Port Phillip Bay should be defended by a battery and keep at Queenscliff, a fort at Point Nepean and batteries at Swan Island and South Channel Island. The European crisis of 1882, when it seemed that Britain would be involved in a major war, was decisive in encouraging Victoria to build defences, although preparations for defence appear to have started as early as 1878. Guns were in place by 1886 at Fort Nepean and in 1888, Eagles Nest battery was implemented and new barracks erected at Fort Nepean. Fort Nepean was known in the 1880s as Victoria's 'Gibraltar' and in 1890 it was reported that Melbourne was the best-defended commercial city of the [British] Empire. The men who manned the guns at Point Nepean were brought from Queenscliff by launch, although the accommodation was considered poor. Fort Pearce was completed from 1910-1916 by the Commonwealth government (Historic Buildings Branch 1990).

John Monash (later Sir) was attached to the [Melbourne] Garrison Artillery, focused on Fort Nepean. Monash rose through the ranks to become its commanding officer by 1897. Monash's biographer, Geoffrey Serle, saw this as crucial to his success as commander of Australian Forces in WW1. It is thought that the first shot fired by Australian forces in WW1 was at the German steamer 'Pfalz', which left Port Phillip during the declaration of war on 5 August 1914. During the Second World War 1939-45 the defences were strengthened, with the Port War Signal Station located at Cheviot Hill. The first British shot of the Second World War is also attributed to Point Nepean, when, on 4 September 1939, a small Bass Strait freighter, the 'Woniora', failed to identify itself, resulting in a warning shot. (Historic Buildings Branch 1990).

The Department of Defence was given permissive occupancy of some of the quarantine station buildings for an Officer Cadet School in 1952, following the introduction of National Service. Internationally acknowledged from 1957, the Cadet School (Norris Barracks) remained in use until 1984, training over 3,000 junior officers for the Army. The School of Army Health moved to the site in 1985 (HLCD and HLA 2002).


Fort
Nepean
Overlooking stunning views of Port Phillip and Bass Strait, Fort Nepean comprises a series of military fortifications dating back to the 1880s. Explore a significant part of Australia's military heritage first-hand and discover what makes Fort Nepean so unique. Above and below ground you will find gun emplacements, tunnels, ammunition magazines, an engine house and even a bomb-proof room.
Visual and sound displays explain why the fort was built, how it was developed and why for many decades it was left virtually untouched. You can learn about the artillerymen and military engineers who worked here and listen to their stories to understand the life of a soldier stationed at Port Phillip's early defence site in this isolated, harsh environment.
The waters surrounding the southern tip of Point Nepean form an important part of the Port Phillip Heads Marine National Park, a protected area which covers 3,580 hectares in southern Port Phillip. Its combination of scenic underwater seascapes and shipwrecks, and diverse habitats make this area a living example of the rich tapestry of Victoria's marine and coastal environments
Head right towards the Parade Ground to begin your journey.
Toilets
You are here
Fort Nepean Shuttle Bus Stop

POINT NEPEAN FORTS

Keith Quinton - AAHU Researcher - Fort Queenscliff Museum

DESCRIPTION

The extensive spread of structures which constitute Point Nepean fortifications spread across a number of distinct zones. 1. Fort Nepean: - located on a sandstone knoll overlooking Port Phillip Heads. 2. A central grouping around 500-800 metres west of the knoll: - Eagles Nest, Fort Pearce, Cheviot Hill Battery. 3. Fort Franklin, Portsea: - located 6km to the west - outside the National Park boundary. 4. Two 1890's fortifications that were proposed for locations near Observatory Point: - around 1.2 km west of Fort Nepean. Although never proceeded with, the two proposals are of significant historical & technological interest. 5. Subsidiary emplacements/barracks: - including observation/fire-control emplacements, searchlight emplacements, outlying barracks & service buildings. In general these elements were constructed to complement the principal fortress structures.

SIGNIFICANCE

During the late 19th and early 20th Centuries defence of Melbourne, as locations of 'first engagement' the Nepean fortifications played a key role in protecting Melbourne from attack. Development commenced with two temporary earthworks (each containing two 80 pounder RML guns) that were constructed during the second half of 1878. Subsequent developments include, pedestrian galleries, underground magazines, multiple gun sites, extensive barracks, various subsidiary buildings, and Infantry 'defensive' parapets. The 'Point Nepean Forts Conservation Management Plan' identifies a number of temporal phases of development - 1878; 1880 -1882; 1887-1890; 1910-1916; 1939-1942 - which broadly serve as base dates for this study - with the inclusion of 1885 -1886.

Between 1890 and the dawn of the 20th Century newly large-calibre ordnance was mounted at Forts Nepean and Queenscliff. The new ordnance hade made Port Phillip almost invulnerable to Cruiser attack and Fort Nepean was recognized as the pivotal fortress in the Heads defence plans. However, in the years following Australian Federation breech loading guns on hydro pneumatic carriages were increasingly regarded as weapons of a bygone era. Between 1906 and 1912, Port Phillip Heads fortifications were modernised with, the older ordnance replaced by seven 6-inch Mk. VII Vickers QF guns. Two were mounted at Fort Nepean, two at a new battery named Fort Pearce, after Defence

Minister Sir George Pearce. Three were located within Fort Queenscliff. The first British Empire shot of WW1 was (due to the vagaries of its International Time Zone) fired from Fort Nepean gun position F1 - at around 12.30 pm on 5 August, 1914 - to prohibit the exit of a German merchant vessel, *S.S. Pfalz*.[1] At the closure of WW2 hostilities Australian coast fortifications were permanently shut down. Fort Nepean's guns had rarely fired 'in anger. 'For almost eighty years the guns and the men of the V.G.A., A.G.A., and R.A.G.A., had served to reassure Victorian citizens that the colony was capable of defending itself against attack from the sea.

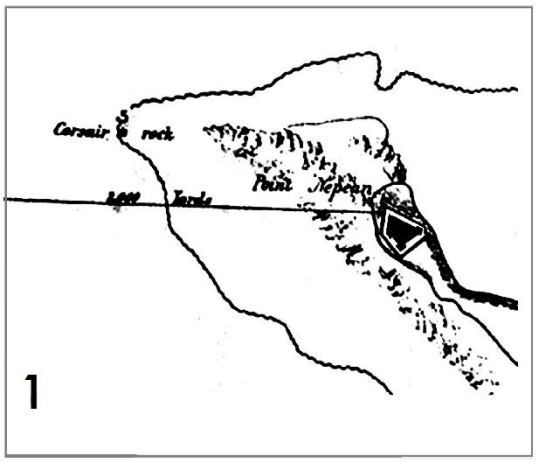
HISTORY

POINT NEPEAN DEFENCES

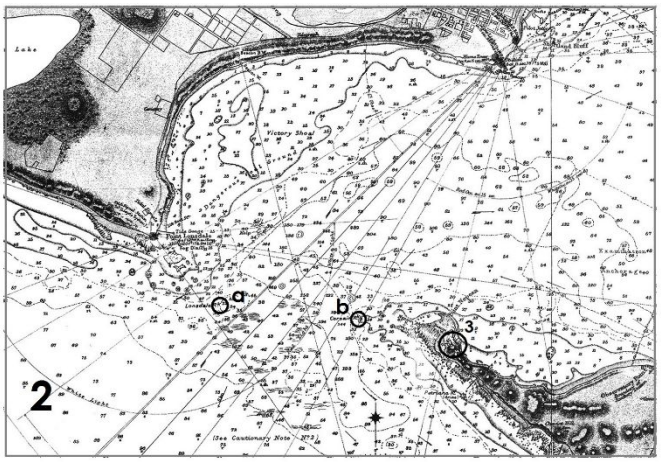
FORT NEPEAN

1860 - 1865

Captain Peter Scratchley R.E. designed four gun batteries to be located in the vicinity of the Heads entrance to Port Phillip as part of the 1860 planned defences for Port Phillip. Of these, only a single 3-gun battery was constructed - Shortland's Bluff Battery (c. 1863-5). Scratchley's 'Victoria 1860 Defence Report' had indicated a redoubt-type structure for Nepean Bluff, to mount eight guns – the proposed 'defendable' battery at Point Nepean was a polygonal work with outer ditch, central enclosed gorge, and three corner bastions - facing east to guard against a land attack across the narrow neck. (fig.1) Poor gun range and the impossibility of accurate fire from the colony's available smooth bore 32 pounder and 68 pounder guns was the principal cause behind delays in constructing and the final scrapping of a considerable portion of Scratchley's fortification proposals.



(Fig.1) Fort Nepean - 1860 plan



(Fig. 2) Lonsdale Rock (a) Corsair Rock (b)

Five years later, R.N. Commander-in-Chief on the Australia Station - Commodore Sir William Wiseman - in his 'Memorandum on the Defences of Port Phillip and the Harbor at Hobson's Bay - 1865'[2] recommended establishing two sea forts outside Port Phillip Heads at Corsair Rock and Lonsdale Rock. Each battery was to mount three 12 ton 300 pounder guns protected by (unavailable) 10-inch armour plate. The two rock pinnacles (fig.2) hidden 12-18 feet below the surface of Bass Strait were located in strong tidal waters - rough enough to render construction impossible for much of the year. Efforts to defend Hobson's Bay and the Port of Melbourne anchorage took precedence throughout the remainder of the 1860's. During the 1870's the Victorian government sought to protect Port Phillip by acquiring a wooden 'frigate' - *HMVS Nelson* - from the R.N. Reserve Fleet, and a revolutionary armoured-breastwork, harbour-defence monitor - *HMVS Cerberus*.

1878

In June 1878, Captain Thomas Mandeville (Commandant of the Victorian Naval Forces and Captain of *HMVS Cerberus*)[3] was incensed by criticisms (perceived to emanate from Scratchley) of the effectiveness of the Victorian Naval squadron and the lacklustre sea qualities of both the ageing three-decker flagship and its 'ugly-duckling' companion. Mandeville openly challenged the forts to fire 80 pounder rounds directly at the stripped down armour-clad monitor from the forts at Nepean and Queenscliff - while it 'ran the gauntlet' of the Heads entry. Within days the press delightedly reported the government had feared accidental damage to *Cerberus* and forced the challenge to regress to use of '…. non-rifled guns of small calibre. ' [4]

Materials had been delivered by barge from Queenscliff to construct two gun batteries on the knoll at Point Nepean during the opening months of 1878.[5] There was no barracks on the sandstone knoll and working parties had relied on sufficiently calm sea conditions to make daily crossings to and from the Queenscliff harbour. Four 80 pounder guns were parbuckled and crab-winched 70-100 feet up the sandy cliffs to the crest in May, 1878.[6] This method of moving construction materials, guns, and garrisons from the rail terminal at Queenscliff to Point Nepean would continue until Australia's coast fortifications were closed in 1945. The 'very temporary' four gun battery at Point Nepean was described in detail in the *Argus* of 24 September 1878, clearly placing the works as equal to the substantive 1878 Fort Queenscliff 'temporary' Lower Battery. (*See endnote description. [7])

1882-1884

'Temporary' was clearly a misnomer, as the earthworks at Fort Nepean were not altered until 1882-1885 with the gun emplacements being converted - one by one - into substantial mass concrete and brick revetment-style emplacements with accompanying magazines.[8] (Map 3) The battery would eventually be the structural core of the developing fortress. After Sir Wm. Jervois's appointment as Governor of South Australia, Scratchley travelled constantly between Australia's colonies developing and supervising their defence works. In March 1882 an English civil-engineer, John Blackbourn (skilled in dock and bridge construction, railway construction & site surveying) was appointed Scratchley's personal assistant in the Victorian PWD.[9] Blackbourn had been employed in 1874 -1875 by Colonel Seaforth Stewart of the US Corps of Engineers at San Francisco as a site engineer at the Fort Point batteries 'East' and 'West'. Familiarity in supervising substantive brick and concrete works in the USA, ideally positioned him for permanent appointment in 1885 as assistant PWD Defence Engineer & Surveyor. [10] Under Scratchley's supervision, Blackbourn produced contract drawings for Fort Nepean, and following Scratchley's death, became Victorian Defence Department Engineer (1885);[11] for the next twenty years converting information being forwarded from the Fortifications Branch of the War Office into contract drawings.[12]

In 1884, two new 80 pounder emplacements were added to the Nepean battery, placed on the upper dune ridge facing directly South to Bass Strait.[13] A 9-inch 300 pounder RML gun was transferred from Swan Island and mounted on a new iron garrison carriage (recently manufactured in England) '…. in a commanding position outside the actual Fort, and with a separate a magazine constructed.'[14]

On 21 July 1884, with Lt. General Sir Wm. Jervois in attendance, a meeting was held at Governor Sir Henry Loch's office tasked with outlining the scheme of defence at Port Phillip. Others Victorian defence officers in attendance were - Capt. Thomas R.N. (Victorian Navy), Colonel Disney R.A. (Commandant); Lt. Colonel Walker R.A. (D.A.A. General); Major Cantley R.E.; Major Ellery (commanding submarine miners); Mr. Steele (Inspector General of Public Works). They discussed increasing the power of the existing works by additions to the armaments at Queenscliff, Nepean, and Swan Island - also recommending new forts for the channels where submarine mines were to be placed.[15] While the meeting reached unanimity of opinion on fortress locations, gun numbers, and gun calibres, they …. 'considered it is desirable to refer to England on some points relating to the mode of mounting and space required for each of these pieces, before arriving at a definite conclusion.'

A War Office postscript was added to a lengthy 'Memorandum' Scratchley penned in London on 16 July 1884 - presenting advice on preparations for, and the distribution of, Port Phillip's Submarine Defences.'[16] The postscript indicated three 80 pounder guns had been emplaced in an embrasured earthwork at Point Franklin, Portsea, during 1884, '… to prevent vessels anchoring in deep water not covered by fire from Point Nepean or South Channel Fort… (and then) … taking deliberate measures to remove the mines.' [17] [18] The document, rather indecisively, assessed future fortifications and guns potentially required to protect Port Phillip's minefields. An accompanying map - indicating locations across the Bay channels - is unfortunately missing. However, sites at West Channel, South Channel, and Pope's Eye shoal, appear to have been discussed. The proposal for purchasing future breech-loading ordnance, included 10-inch, 9.2-inch, 8-inch and 5-inch, calibres. Copies of the report were forwarded to Victoria's Defence Minister, Admiral Tryon (Sydney), and Sir Peter Scratchley (London).

1885 – 1886

A further Defence Conference convened at the War Office, London, on 26 August 1885. In attendance were Sir Andrew Clarke, Harding Steward, Armstrong, Jackson, and Capt. Clarke - all were experienced UK artillery officers, or, Royal Engineer specialists in fortifications and torpedo mines. The core recommendation for Port Phillip was for a line of electrical discharge mines, '…. if possible between Queenscliff and Nepean, with secondary lines opposite Swan Island and the Annulus (South Channel), defended by light guns and guard boats.' The committee also suggested increasing the number of heavy guns at Queenscliff, and placing guns at Observatory Point. Interestingly, they had found that, owing to the present strength of the naval force, no shoal forts with heavy guns were required.[19]

Rapid rearmament of Victoria's defences stemmed directly from the 'War Scare' of 1884[20] and construction at the Heads fortifications proceeded apace throughout 1885-1886.[21] Large-calibre breech loading guns being manufactured for the colony at the Armstrong EOC works (ordered by Scratchley and Jervois in 1884) began to arrive, and the 1885 budget speech noted – 'war materials received over the previous year amounted to …. one 8-inch 11½ ton breech loading gun, on a hydro pneumatic carriage, one 6 inch 6 ton gun, on a similar carriage, six 6 inch 4 ton guns, on Vavasseur carriages, six 10 barrelled Nordenfeldt guns, and four 10 barrelled Gatling guns.' In addition '… War materials ordered, and still to arrive, consists of one 10-inch, three 8-inch, two 9-inch, four 5-inch breech loading guns on hydro pneumatic carriages, six 13 pounder field guns, with 3,800 rounds of ammunition, and 9,000 Martini-Henry rifles. '[22]

Incorporating substantial parts of the six emplacements and mass concrete and brick magazine structures already at Point Nepean would reduce costs, so new pits capable of withstanding the substantial combined weight of hydro-pneumatic carriages and large calibre guns were integrated into the existing emplacements. The *Argus* newspaper extoled:

> The point is a mountain of sand in which an enemy's shot would bury itself harmlessly, unless the guns or men were struck - no splinters no ricocheting of shot, the deep yielding sand is a quick extinguisher of mischief making missiles. The builders of the batteries had a hard task trying to get a sound foundation with the sand coming into the works like water in a mine, but they succeeded at last, and the visitor is lost in perfect catacombs of magazines, powder rooms, shell rooms and stores for other munitions of war, emplacements and underground galleries. There is room for 200-tons of ammunition, and it is to be kept in bomb-proof cells far from the reach of an enemy's fire. There are lifts for the huge powder cartridges and shot and shell which the big guns on the summit of the hill will carry. The present state of the work was reached about 18 months ago. …. The hoisting of the guns from the beach up so steep an ascent over such soft ground, is a herculean task worthy of the ability of Captain Ind and the muscles of his stalwart garrison artillery.[23] (Map 4)

In the Budget speech of 1886, Premier Gilles reported:

> At Nepean Fort …. it is now intended to commence to prepare the emplacements for the two 9.2-inch 18 ton breech loading and four 5-inch 2 ton breech loading guns, which may be expected to arrive within the next few months, the 9.2-inch guns (380-lb shell) to be an addition to the present armament, the 5-inch guns to replace the 80 pounders.[24] (Map 5)

The government had been advised by Harding Steward several months earlier that 12 hydro pneumatic carriages ordered for 80 pounder guns could potentially be adapted for 6-inch 4 ton guns and after consultation with the military commandant Colonel Walker and Major Rhodes, the Minister has sent a telegram direction the agent-general to procure the 6-inch BL guns as recommended by Major General Steward. [25] '…. When this order is completed the colony will have twelve 6-inch guns with a striking force at 2,000 yards of 1,204 tons as compared with twelve 80-pounder ML guns with a striking force at the same distance of 727 tons.' [26] Three 6-inch were eventually positioned in the Fort Nepean works.

In 1885-1886 Nordenfelt machine guns were purchased and dispersed around the forts and the Nepean batteries were edged with barbed wire entanglements across the land-neck and parapets were excavated north and east of the gun emplacements for Infantry defence.

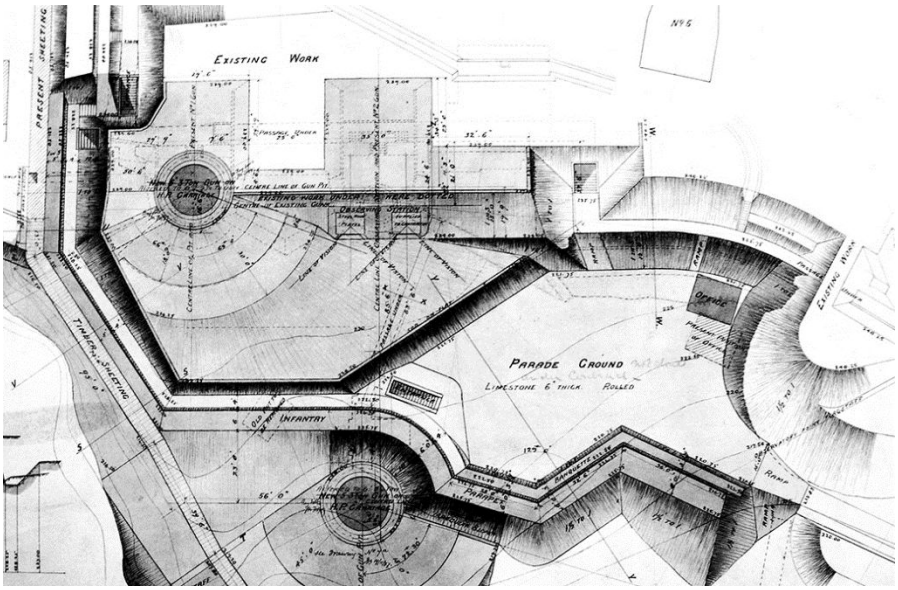


Fig 3: Fort Nepean Infantry parapets protecting the eastern and northern flanks.

Significantly, a mobile searchlight and associated engine room were located at Nepean to work in unison with similar searchlights at Fort Queenscliff and South Channel,[27] and during the following year a gallery was constructed from which the Nepean searchlight could be worked in safety as a fixed sentry-beam. [28] Electric searchlights were also placed on each vessel in the naval squadron. While work was progressing towards completion of fortifications at Swan Island, Queenscliff and Nepean, and torpedo defences for South and West Channels, the colony's advisors remained convinced that a forward zone of defence, could and should be established by constructing a battery at Pope's Eye shoal.

In June 1886, 'The Argus' reported:

> At the conference of naval and military authorities which was held at Government house about a year ago, it was suggested by Admiral Tryon and the late Sir Peter Scratchley that a new fort should be erected at the head of the south channel, to support the land forts at Point Nepean, Queenscliff, and Point Franklin. Borings have been made with a view to find suitable foundations but it is understood that the Government have no present intention of proceeding with the construction of the fort.[29]

By November the fort was back on the agenda - as a fort '…. to be heavily armed and also serve the purpose of a torpedo station. It has been proved that a vessel might pass the Heads at night-time unobserved, and if she did she would probably anchor in the South Channel, and by counter mining endeavour to make a breach in the line of ground mines blocking the way.'[30]

1887 - 1890

The arguments surrounding the advisability of placing a hugely expensive ironclad sea fort at Pope's Eye shoal, as originally proposed by Scratchley, need not be part of this paper. However, the concept

of a forward defence zone between Pope's Eye shoal and the Heads clearly influenced the evolution of the Point Nepean defences. Key to the colony's decision process was advice provided by Major General Schaw and Major General Harding Steward proposing minefields acrosst the Heads, bounded by Point Lonsdale, Point Nepean, and Queenscliff, as the 'first line of defence' supported by secondary defences located inside West and South channels. They, and others, believed without this the Heads could be 'rushed' by an enterprising enemy squadron. Shaw's extensive examination of the defences resulted in a Report presented to the Acting Minister of Defence in May 1887.[31] In October 1887, Steward followed up by forwarding a ten page memorandum from London, outlining his ideas on switching the defence focus from Pope's Eye shoal to Observatory Point.[32] Both firmly advised against proceeding with the large iron sea fort at Pope's eye shoal. In Schaw's opinion the fort was simply a waste of money, when strengthening the existing defences would suffice. Steward's objection was premised on the instability of the shoal - due to prevailing tides and winds; suggesting instead, a rubble breakwater screen was sufficient to establish a temporary work for four 6-pdr guns with a harbour formed by barges moored behind the stone screen.

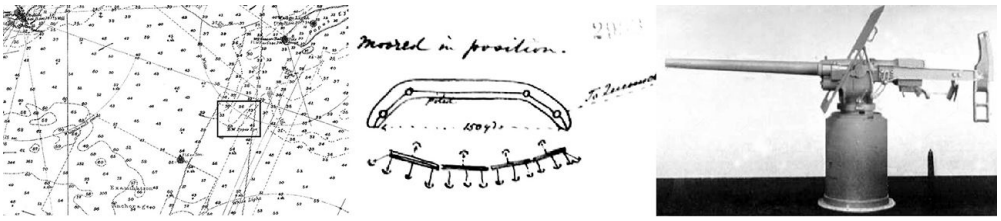


Fig 4: Left: Pope's Eye Shoal Centre: Harding Steward plan Right: 6-pdr gun on hydraulic pillar

He proposed a work at Observatory Point on an offshore breakwater in around 8-feet of water. It would have three 9.2-inch guns protected within an iron casemate, or, a German Grusson Turret - designed to carry two 24 cm (9.45-inch) Krupp guns - which '… might be employed with advantage.' The suggestions of both Generals being considered in the longer term is evidenced by the colony conducting the laying of ground mines across Port Phillip Heads in 1887, and instructing Lieutenant Umphelby V.A. - undergoing Artillery Officer training in the UK - to join a British delegation to the Gruson Iron Works at Magdeburg, in 1890, to assess the cupola turret system and 24 cm. Krupp guns.[33]

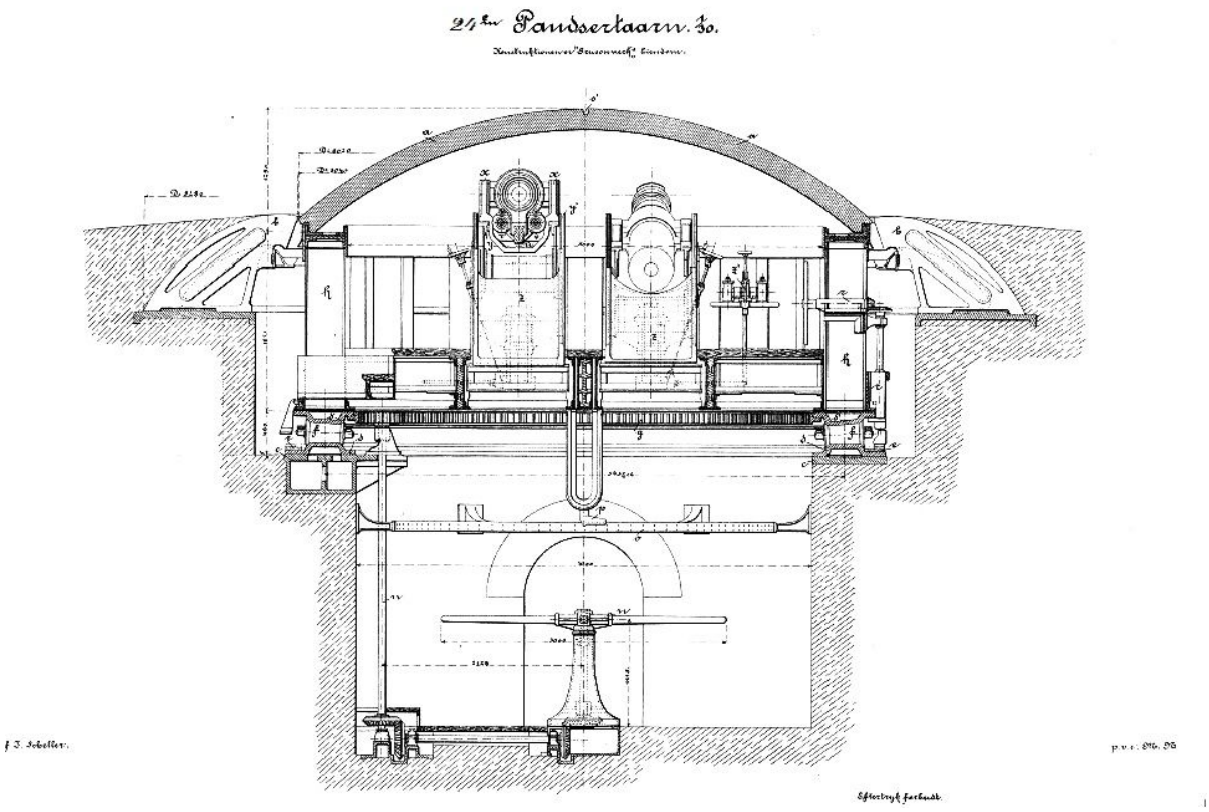


Fig 5: 1887 Gruson Cupola Turret mounting two Krupp 24 cm BL guns

Steward's memorandum also proposed acquisition of a Brennan guided-torpedo station – '… if permission were obtained from authorities in the UK.' The engine house and firing station might then be established onshore behind the breakwater casemate at Observatory Point. 'At present Queenscliff with the Crow's Nest guns form with the battery at Nepean one line. But, if Observatory Point be armed as proposed and additional guns placed near the Crow's Nest, this last site with Nepean will then constitute the first line and Queenscliff and Observatory Point will form a second line, and which with the mines to be laid they will constitute a strong defence.'[34] A further suggestion was to acquire an American Zalinski gun, '… if that invention should fulfil the expectations as to its efficiency. Some such step is necessary for, without a defensible work with a height of 22 feet at high water the provision of a Brennan torpedo station is impossible at Pope's eye.' A compressed air Zalinski gun could fire a dart up to a range of 3,500 yards. But, it required a steam boiler, compressors, and large air storage tanks to become operational. Steward contemplated a steam vessel purpose built to carry a Zalinski gun and assist in laying mines. Victoria's political and military flirtations with the Brennan Torpedo station and Zalinski gun site is discussed in considerable detail in Michael Kitson's 1999 thesis, which examines Brennan's development of a wire-guided torpedo.[35] Kitson tends to attribute the abandonment of both weapons to Major General Alexander Tulloch[36] - a strong proponent of Australian colonial infantry being sufficiently

trained to carry out a future role in 'Imperial Defence'. [37] Reports on testing in the UK had already revealed issues over the range of the Zalinski gun. Growing doubt made Victoria's fortification advisors and political leadership increasingly uncertainty about its cost and suitability. In addition, correspondence (1886-1890) requesting the Imperial Government to supply a Brennan station encountered polite refusal – until all Imperial needs could were complete.[38]

The 1887 'Victoria Defence Report' confirmed the completion of two pits at Nepean for 6-inch B.L. guns; a pit for one 9·2-inch B.L. gun was partially constructed, as was a battery Observing Station to contain a Watkins position finder. A tunnel for the electric searchlight and a permanent bomb-proof cover for its engine-shed were all in place. 9.2-inch 20 ton Mk.1 guns had first entered service in 1881, originating from an 1879 request by the Admiralty for a 'Naval' gun comparable to the Krupp 24 cm gun. (e.g. Gruson Turret) The latest point-hardened 'chilled' shot and shell procured from Armstrong EOC provided dramatically increased armour penetration - the 380-lb projectiles could penetrate up to 18.8 inches of unbacked wrought-iron plate.[39]

1888 War Scare - Nepean

Disruption of telegraphic communication between Darwin and Java on Sunday 1 July 1888, immediately initiated another 'War Scare'. Urgent manning of the Heads defences found the fortifications in the midst of rearmament with few batteries sufficiently intact to be of use. The *Age* reported that Fort Nepean had one 9-inch ML, and one 80 pounder ML, ready for use, while the emplacement walls of a 9.2-inch BL gun were incomplete. Further, the gun and carriage had been inundated by windblown sand, which had caused considerable damage to the gun-breech and elevation machinery. The newspaper observed that while the state of war preparedness at Port Phillip Heads was '…. severely wanting'. [40] However:

> …. two 6-inch (disappearing) guns will be ready to mount tomorrow. The 10-inch gun for the Eagle's Nest is on board a barge at Swan Island, and tenders for its erection are to be opened on Thursday next. The contractors will have to begin at once, four months being the contract time, with a £10 bonus, or £10 penalty, for each day under or over. The gun will be landed on the beach, and hauled up the face of the hill. At Point Franklin the emplacements for the three heavy guns are ready to have the guns, mounted. The 10-inch gun is still waiting for the conversion of its carriage to the right shape. The two 5-inch guns on disappearing carriages are today on their way from Melbourne to Point Franklin… two electricians came down today to attend to the fitting up of the electric light at Nepean. Mr. J. Blackbourn, engineer of construction, has been sent for, to assist in pushing on with the preparations at the different works. In returning to the subject of our insufficient artillery strength, it must be pointed out that the deficiency is so great as to be seriously dangerous. Even on the lowest proportion of men to guns the artillery men available for immediate service are far below the number required to man the batteries for a longer period than a first attack.'[41]

Luckily, within days the crisis had abated. Over the following two months the batteries at Point Nepean and Point Franklin began to present a more finished appearance; although, several of the largest guns remained unmounted.[42]

Eagles Nest

Following completion (July 1888), of a 550-yard military road from Fort Nepean to the top the highest hill in the vicinity work had commenced on constructing the battery at Eagle's Nest.[43] This massive work for a 10-inch 26 ton gun had a pit diameter of 34-ft, with a 13-ft thick protective inner wall and an outer ring corridor and skin-wall. Its foundation was 10 feet of mass concrete buried in a huge wind swept excavation in the sand. (Map 7) Drifting sand played havoc with all the hydro pneumatic mountings and guns at Nepean - necessitating constant coverage in protective tarpaulins. Gun trunnion height at Eagle's Nest was 167-ft above sea level – sufficient to avoid any requirement for a protective splinter shield. With maximum gun range at 17,000 yards, Eagle's Nest commanded '… the bay, the Rip, and far out to sea.'[44] In July 1890, two 'proofing' shots were 'electrically' discharged at a stationary Hong Kong target moored 8,000 yards north-east of the battery. Both landed in close proximity.[45]

Eagle's Nest was in use until 1910, after which Vickers 6-inch QF guns replaced HP ordnance at all the Port Phillip forts.

Fort Franklin (currently a short distance outside the NHL boundary)

A battery of three 80 pounder guns located at Point Franklin, Portsea, in 1884, was from the outset built to protect Weeroona Bay from being used by enemy vessels to conducting counter mining activity and the battery was of limited use in directly defending minefields in South Channel. During rearmament alterations in 1888, the original three gun battery trace was retained when HP emplacements were constructed for two 5-inch 3 ½ ton guns on hydro pneumatic carriages, and a pit for a Vavasseur mounted 10 inch 25 ton gun – (Map 8) previously mounted (unsuccessfully) at the bow of the Rendel Gunboat - *HMVS Victoria*.

The map of South Channel (Map No. 2) indicates the position of South Channel Fort (1); Fort Franklin (2); Contact electrical mine field (A) Area to commence Counter-mining (B) - where attacking vessels would have (inescapably) stopped to lower steam launches. At ranges of 400 yards to two miles Fort Franklin's 5-inch guns held clear command of the attack zone (B). The massive 10-inch BL guns being emplaced at Fort Franklin and Eagle's Nest battery could fire 500 pound projectiles up to 10,000

yards (9.1 kilometres), and, at a range of 3,500 yards (3.2 kilometres) punch through 16-18 inches of unbacked wrought-iron plate.

1891-1908

In the period 1889 – 1891 gradual acquisition, and emplacement, of 8-inch, 9.2-inch, and 10-inch, breech loading guns capable of long range fire up to 10,000 yards, plus the acquisition of disappearing gun mounts, dramatically swung initiative at the Heads from favouring the attacking squadron, to favouring the defences. (Map 6) Cruisers steaming outside the Heads in Bass Strait could no longer subdue the batteries at Point Nepean and Queenscliff - 'one by one' before entering. Equally, 'rushing' the zone of fire immediately inside the Heads without sustaining catastrophic damage - became equally dubious. Few contemporary observers understood, or perhaps, cared to acknowledge, the dramatic shift to dominance of the Heads entry zone by Victoria's land batteries and mine defence. (Map No.1)

The suggestion of a sudden reversal of power at Port Phillip Heads requires justification.

A potentially comparable attack - although a far larger action - took place on 9 February 1904, when six Japanese pre-dreadnought battleships accompanied by six armoured cruisers and fifteen destroyers attempted to breach defences at the principal Russian 'Pacific' harbour - Port Arthur, Manchuria - to overwhelm the shore defences and eliminate a Russian battle squadron at anchor. The Japanese severely damaged five Russian ships in a highly risky manoeuvre that also exposed the Japanese fleet to the full brunt of the Russian guns. The *Shikishima*, *Mikasa*, *Fuji*, and *Hatsuse* all took damage, receiving seven hits amongst them. Several hits were also made on cruisers, before the Japanese turned circle and retreated. Three further attempts to breach the harbour entrance and to sink block-ships, were foiled by fire from Russian defences. On 15 May two Japanese battleships struck mines laid in the approach to the Port Arthur, and were sunk. Port Arthur was eventually invested by land forces and howitzer guns before falling to siege on 2 February 1905.
As a comparison - at Port Phillip Heads during Easter 1908, the Militia Garrison Artillery exercise at engagement under 'battle-fire' conditions. The Melbourne *Herald* reported on what it believed was a totally successful defence:

> …. two Hong Kong targets, representing cruisers bombarding the forts, were towed by the steamer *Albert*. The 9.2 gun at Nepean opened fire first, and, out of 12 rounds, scored 10 hits, Eagle's Nest followed, and with three rounds struck the target each time. The average range was about 3,200 yards. In the third phase, the steamer *Manawatu* towed targets

> representing a cruiser attempting to run past the forts. Queenscliff and Crow's Nest engaged at ranges or from 3,000 to 3,600 yards the former scoring 10 hits out of 10 rounds, and the latter hits for each of the four shots fired. Nepean scored seven out of eight rounds. Swan Island fired no fewer than 46 rounds, with the fine result of 43 hits. The range from Nepean was between 4,500 and 6,000 yards, and from Swan Island about 2,000 yards. For the fourth phase a target was moored near Mud Island, representing a cruiser disabled and engaged by the 10-inch gun at Franklin at a range of 7,000 yards. Three shots were fired. Only one hit was recorded, but the report remarks that this may be accounted for by the difficulty in observation, the smoke travelling down the range, and preventing the officer-in-command observing the fall of the shot. ….. In all 150 rounds were fired, and 127 hits were recorded, thus giving an average of 84.6 per cent. At one stage of the engagement three forts with four different classes of guns were in action at the same time.[46]

After 1891, the 'first defence line' - guarded by seven large calibre guns and 500-lb 'observation' ground mines located between Queenscliff and Observatory Point - and with 'secondary defence lines' at South and West Channels - guarded by South Channel Fort and Swan Island Fort - it is almost certain Port Phillip was invulnerable to the types of protected and unprotected Russian and French cruisers of the East Asia Squadrons, which may have attempted to force Port Phillip Heads.[47]

1909 – 1945

The fortifications at Port Phillip Heads remained unaltered following Federation of the Australian colonies in 1901. However, early Mk's of 8-inch, 9.2-inch and 10-inch guns were not readily adaptable to new British 'Capped' (CP) and 'High Explosive' (HE) (Lyddite filled) projectiles.[48] Imperial fortresses had not adopted hydro pneumatic carriages, due to the low rate of fire achieved (1 shot per 3 minutes) and mechanical vulnerability. By 1906 the War Office choice for coast artillery was for open emplacements with ordnance mounted on central pivot (CP) carriages. Rapidity of fire and improved range and accuracy were expected to counteract the disadvantage of increased exposure. Quick firing (QF) Marks of 6-inch guns had a rate of fire of six rounds per minute, a 100-lb projectile, and a range of 9,050 yds. at 10-degrees elevation.[49] The guns could be aimed by auto-sight at ranges up to 5,000 yards. There was now no 'intermediate' British Naval gun between a 6-inch and 9.2-inch calibre. The heavier calibre was mounted where the power to attack armour was considered essential (Sydney), and the smaller calibre used where unarmoured vessels would be the most likely enemy (Port Phillip Heads).

Fort Queenscliff received three Mk VII 6-inch guns in March 1908, and Fort Nepean two Ml. VII guns in December 1909. All were mounted in existing HP emplacements - after enlargement alterations. The last firing of Fort Nepean's 9.2 inch guns was carried out on January 13 1910, when thirteen of the gun crew were injured (2 severely) by the premature explosion of a charge. 'Great regret' was

expressed that Field Marshall Lord Kitchener's visit to Fort Queenscliff had been marred by the event, which appears to have acted as a catalyst to final decommissioning.

The *Colonial Conferences* (1887-1997) and the *Committee of Imperial Defence and the British-Dominion Relations*, (1904–1911) had gradually established the broad parameters of an Imperial defence relationship. Following Federation, Australian eyes focused upon controlling coastal waters through the acquisition of warships for an Australian Navy. The squadron was to consist of: - one armoured battle-cruiser of the 'Indomitable'-class (*HMAS Australia 1)*; three unarmoured cruisers of the 'Bristol'-class; two submarines; six destroyers. These thirteen warships involved a total outlay of £3,750,000. The first two destroyers to arrive - *Parramatta* and *Yarra* - entered Port Phillip Heads on 12 December 1910.

At Fort Nepean, a new Electrical engine house was constructed in early 1910. Rearmament of Fort Nepean commenced in August-September with the two guns in emplacements No.5 and No.6 and another two 6-inch QF guns battery were positioned at the eastern end of the land neck (Fort Pierce). (Map 9) All new works were completed between 1910 and 1912.[50] During Easter 1913 the Nepean batteries and three destroyers carried out combined exercises involving mock night attacks. A year later the assassination of Archduke Franz Ferdinand of Austria (28 June 1914), and subsequent *'Clouds of War'* led to mobilization of Australian coast defences. For several months the German East Asia Squadron posed a potentially serious threat to international shipping lanes and Australian ports.



At the conclusion of WW1, R.A.G.A. garrison duties and firing exercises at both Fort Queenscliff and Fort Nepean were resumed on a regular yearly basis. By 1936 it had become clear that coast defence emplacements were vulnerable to attack by aircraft. Japanese air attacks supporting the invasions of Hong Kong, Malaya and Singapore from November 1941 until February 1942 led to the urgent transfer of ordnance from Fort Pearce to camouflaged emplacements at Cheviot Hill.[51] Emplacements F1 and F2 were critical to defending the Heads Entry and large iron and concrete protective canopies were constructed. By 1944 the danger of an attack had passed and at the cessation of WW2 the Nepean coast defence fortifications were decommissioned.

CURRENT CONDITION OF WORKS

As a restricted military zone, post-war isolation of land westward of the Quarantine Station had the dual effect of restricting vandalism and exposure of the remnant military structures to the vagaries of Bass Strait weather. The inclusion of magazines, tunnels, remnant batteries, and subsidiary fortification structures at Fort Nepean, Fort Pearce, and Eagle's Nest, within the current

conservation zone of Point Nepean National Park has provided considerable protection and opportunities for conservation.

The use of mass concrete without iron re-enforcement prior to 1900 assisted in preservation of the earliest military structures for over 120-years. The same cannot be said for structures added after 1900. Many of these are now in a poor state of preservation within a largely unsympathetic salt-ridden environment. The most intact structures are those within the central battery precinct that forms the heart of Fort Nepean. Recent additions to improve tour access and enhancement of portions of the works to relay the historical narrative are sympathetic to the site.



TABLES / MAPS / PLANS

TABLE 1

DATE	FORT NEPEAN			
	1	2	3	4
1878	80 lb RML	80 lb RML	80 lb RML	80 lb RML

Emplacement & Gun Tables

Nepean Forts

TABLE 2

DATE	FORT NEPEAN					
	1	2	3	4	5	6
1882-85	80 lb RML	80 lb RML	80 lb RML	80 lb RML	80 lb RML	300 lb RML

TABLE 3

DATE	FORT NEPEAN								EAGLES NEST	FORT FRANKLIN		
	1	2a	3a	4a	5a	6a	7	8	1	1	2	3
1888-1910	6" BL Hp	Armourer Store	6"BL Cp	6" BL Hp	9·2" BL Hp No.1	9·2" BL Hp No.2	4·7" QF	14 lb QF	10" BL Hp	10" BL Cp	5" BL Hp	5" BL Hp

TABLE 4

DATE	FORT NEPEAN			FORT PEARCE	
	F2	F1	9	H1	H2
1910-1939	6" mark VII	6" mark VII	14 lb QF	6" mark VII	6" mark VII

TABLE 5

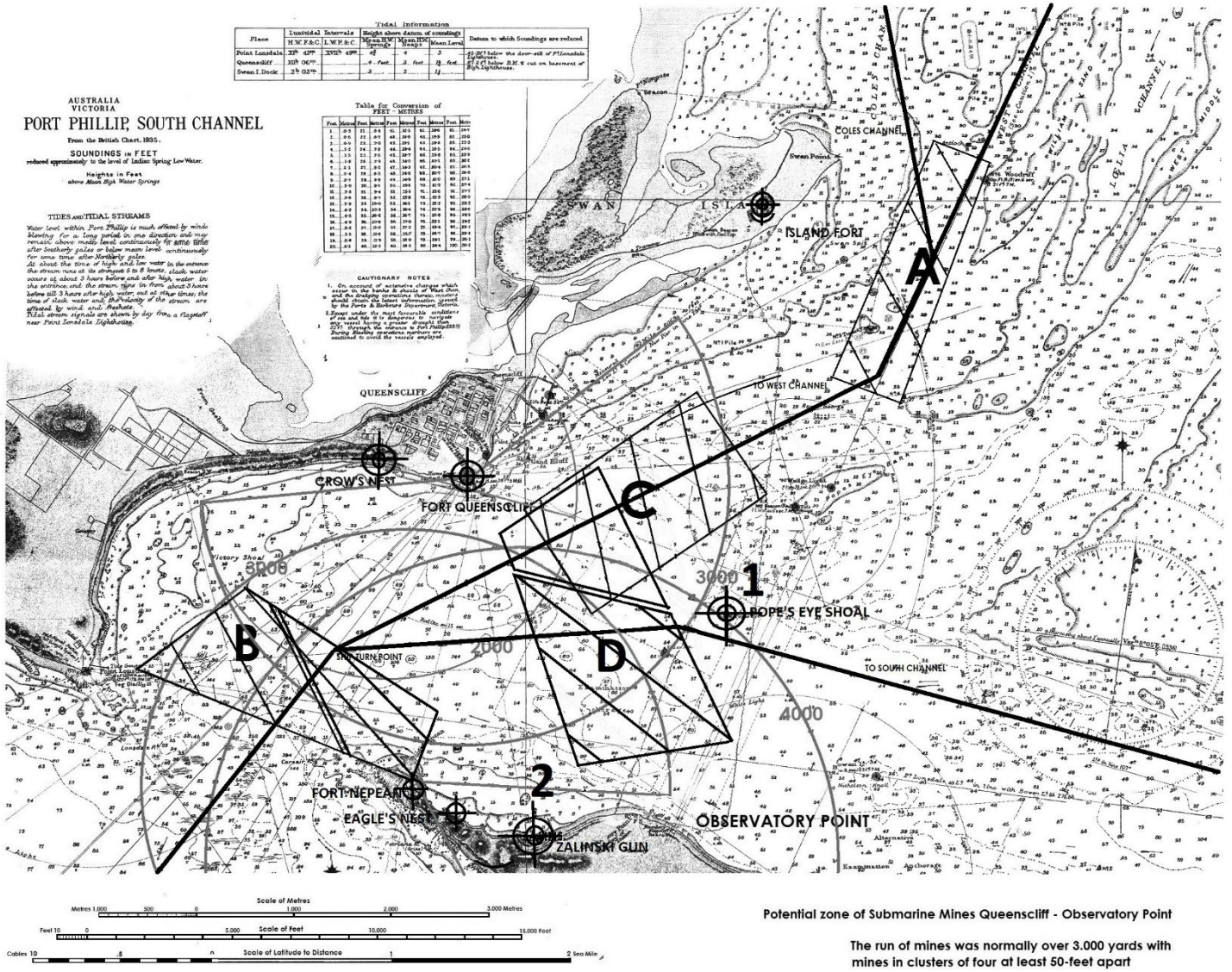
DATE	FORT NEPEAN			CHEVIOT HILL	
	F2	F1	9	1	2
1942-1945	6" mark VII	6" mark VII		6" mark VII	6" mark VII

*Author's Note

Emplacement numbers in Table 1 and Table 2 are those used in NAA battery plans dated 1882.

Emplacement numbers in Table 3 which include the added letter 'a' relate to numbers used in NAA plans after 1887. Most do not correlate with those in Table 1 and Table 2.

Table 4 and Table 5 use emplacement numbers after 1912



Potential zone of Submarine Mines Queenscliff - Observatory Point

The run of mines was normally over 3.000 yards with mines in clusters of four at least 50-feet apart

1

PORT PHILLIP HEADS FORWARD DEFENCE ZONE AND MINEFIELDS

MAP KEY

FORT / BATTERY

1 POPE'S EYE SHOAL

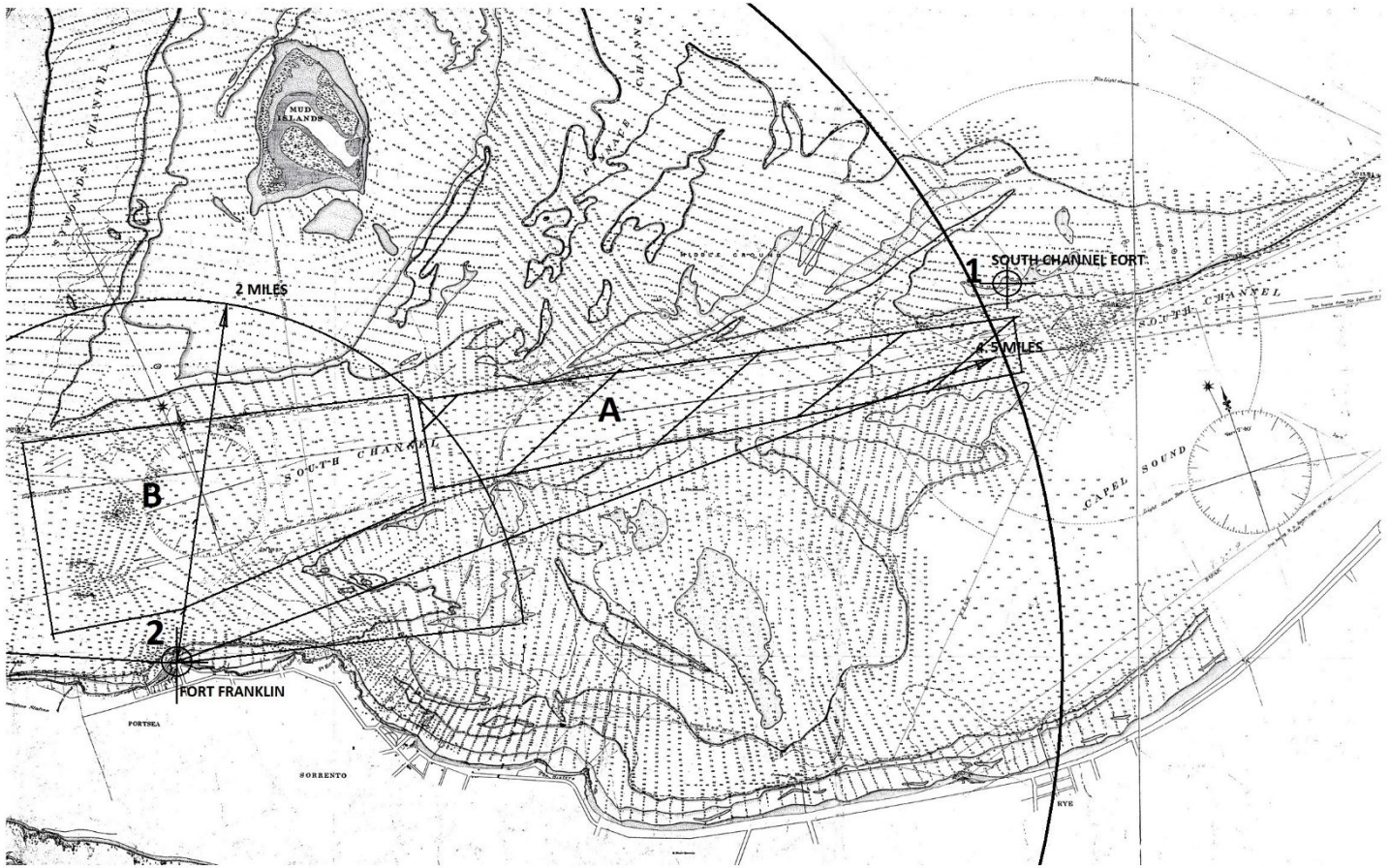
2 ZALINSKI GUN SITE

A WEST CHANNEL & SYMONDS CHANNEL MINE FIELD 1885

B MINE TEST - POINT NEPEAN TO POINT LONSDALE 1886

C PROPOSED MINE DEFENCE & POPE'S EYE FORT 1887

D PROPOSED MINE DEFENCE & OBSERVATORY POINT FORT 1891



2

FORT FRANKLIN DEFENCE ZONE

&

SOUTH CHANNEL CONTACT MINES

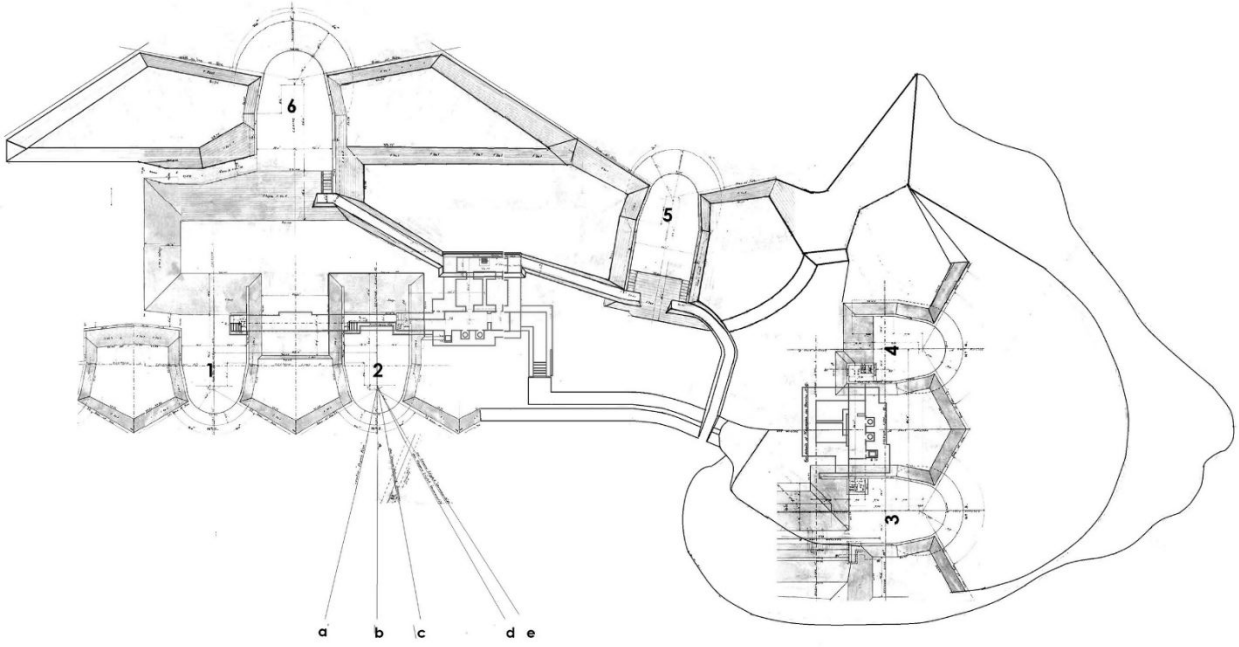
KEY

(1) SOUTH CHANNEL FORT

(2) FORT FRANKLIN

(A) SOUTH CHANNEL MINES

(B) SOUTH CHANNEL PROTECTED AREA



3

FORT NEPEAN

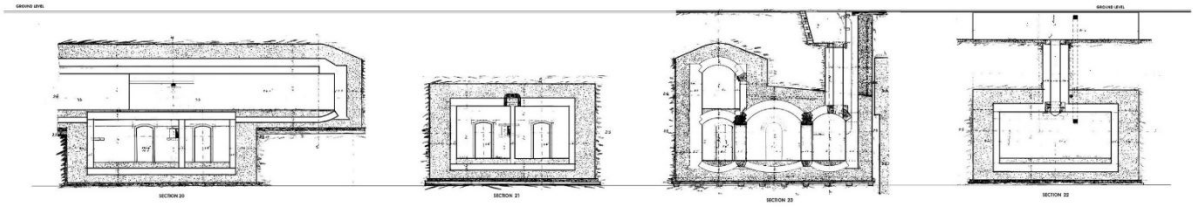
Guns

1878

1 80 Pdr
2 80 Pdr
3 80 Pdr
4 80 Pdr

1885

5 80 Pdr
6 300 Pdr

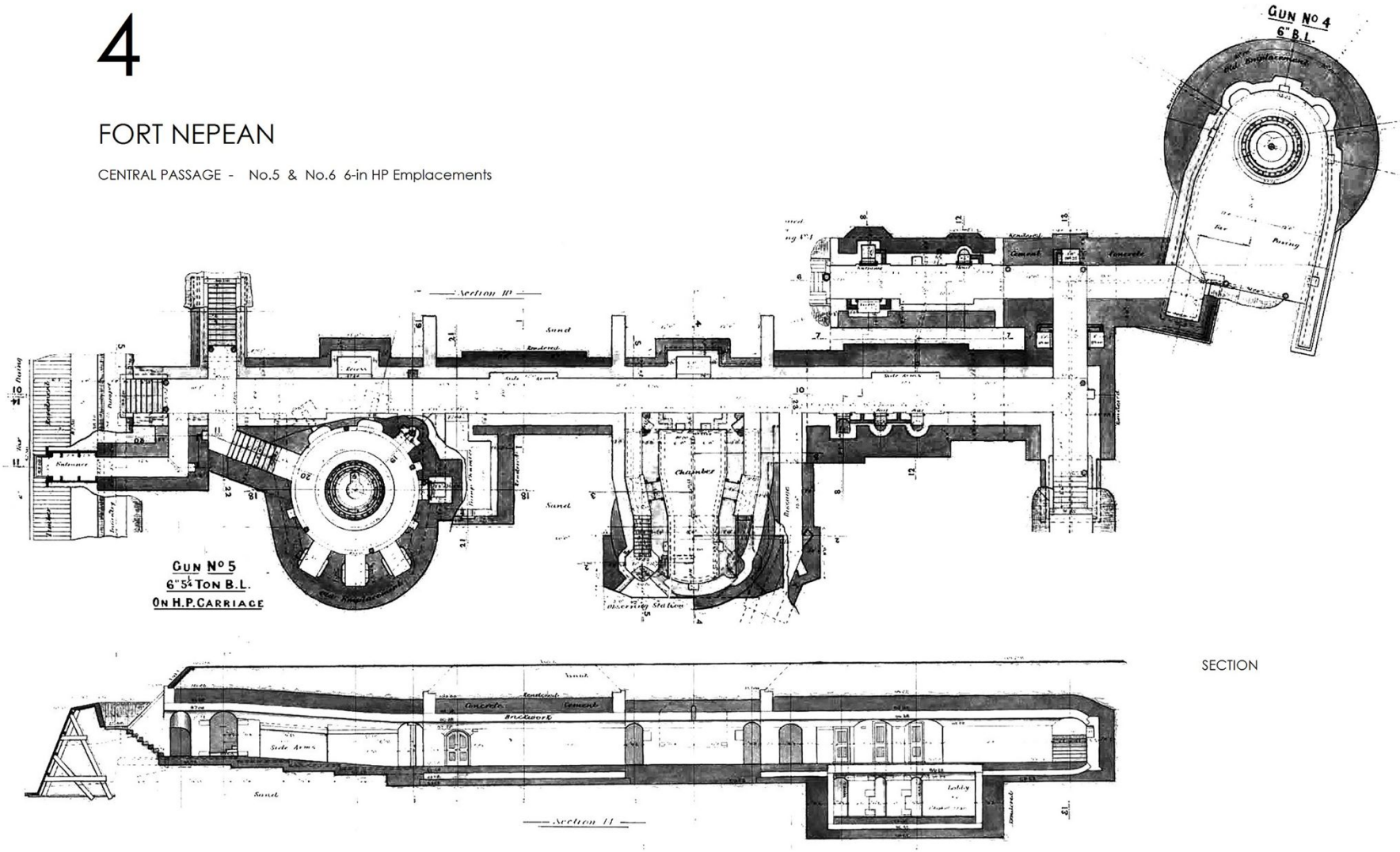


Magazine Sections

4

FORT NEPEAN

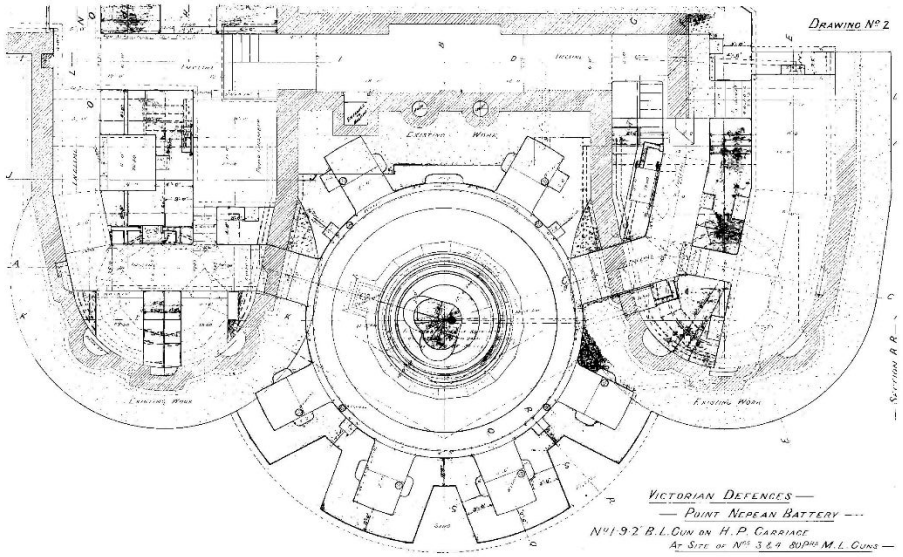
CENTRAL PASSAGE - No.5 & No.6 6-in HP Emplacements



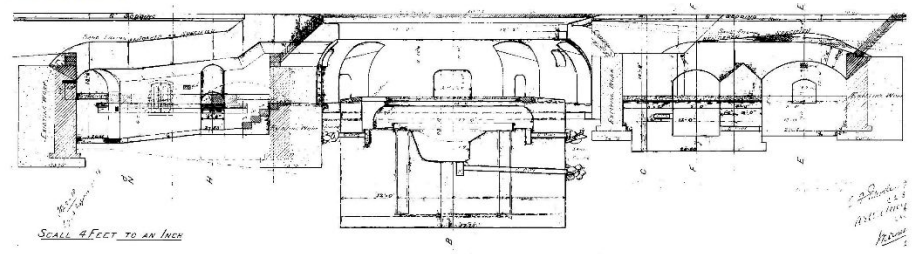
SECTION

5 FORT NEPEAN

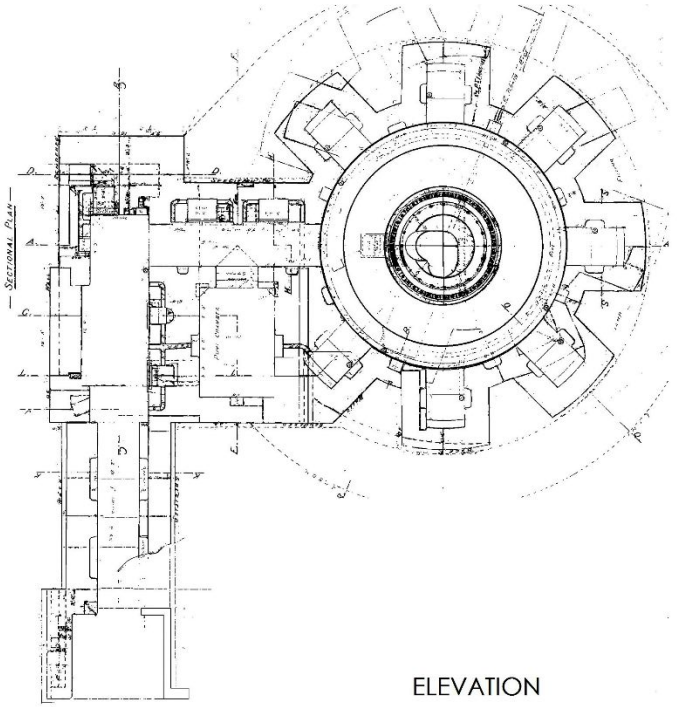
No. 2 9.2-in Gun - Emplacement 5



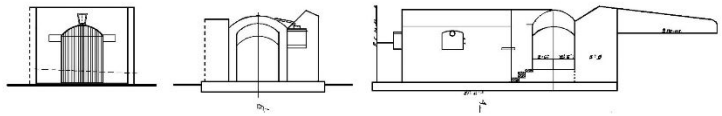
ELEVATION



No 1 9.2-in Gun - Emplacement 6



ELEVATION





6

FORT NEPEAN 1895

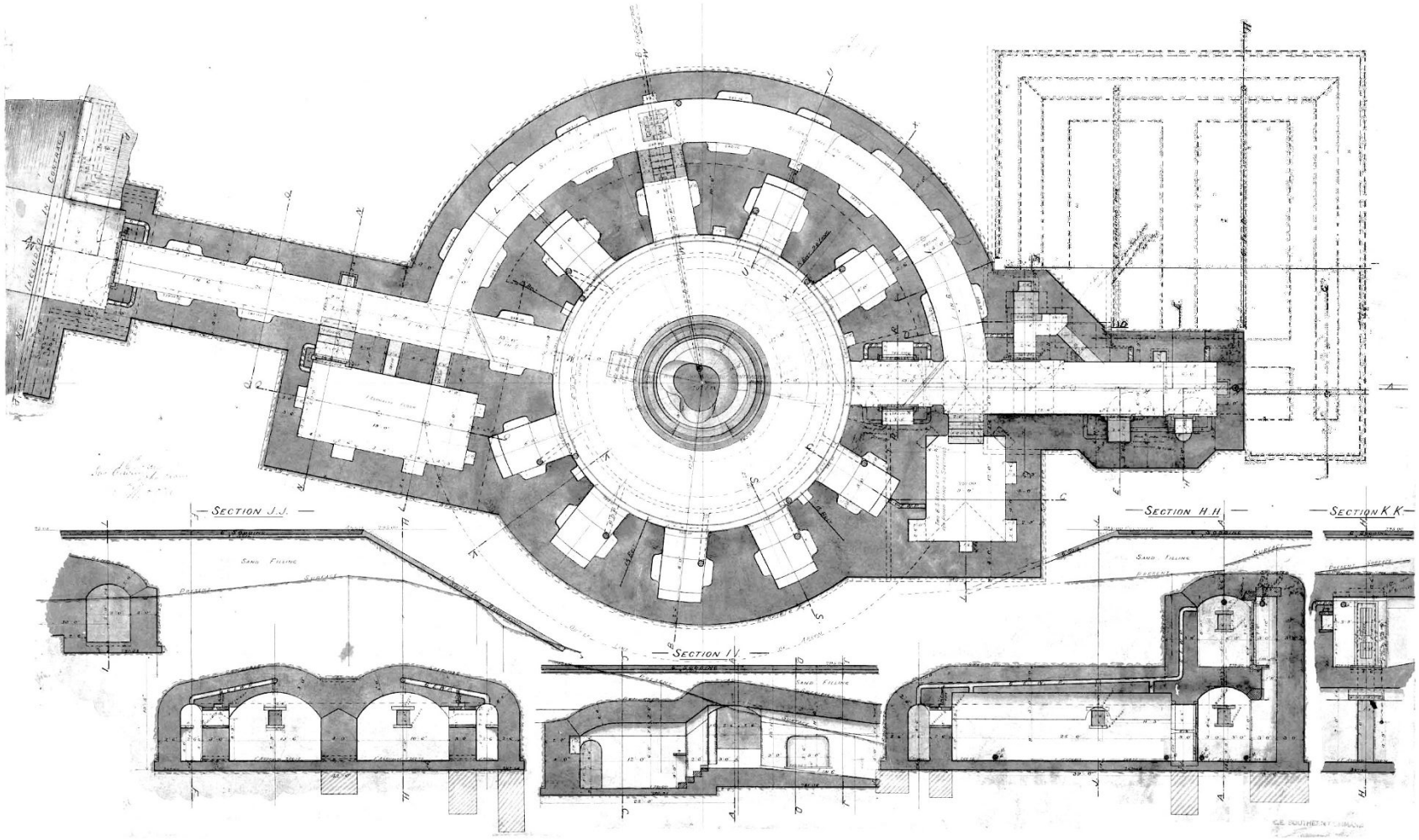
Guns

1	6 inch HP
2	Armourer
3	6 inch CP
4	6 inch HP
5	9.2 inch HP
6	9.2 inch HP
7	4.7 inch QF
8	14 Pdr

Guns

1 10 inch HP

EAGLES NEST BATTERY 7

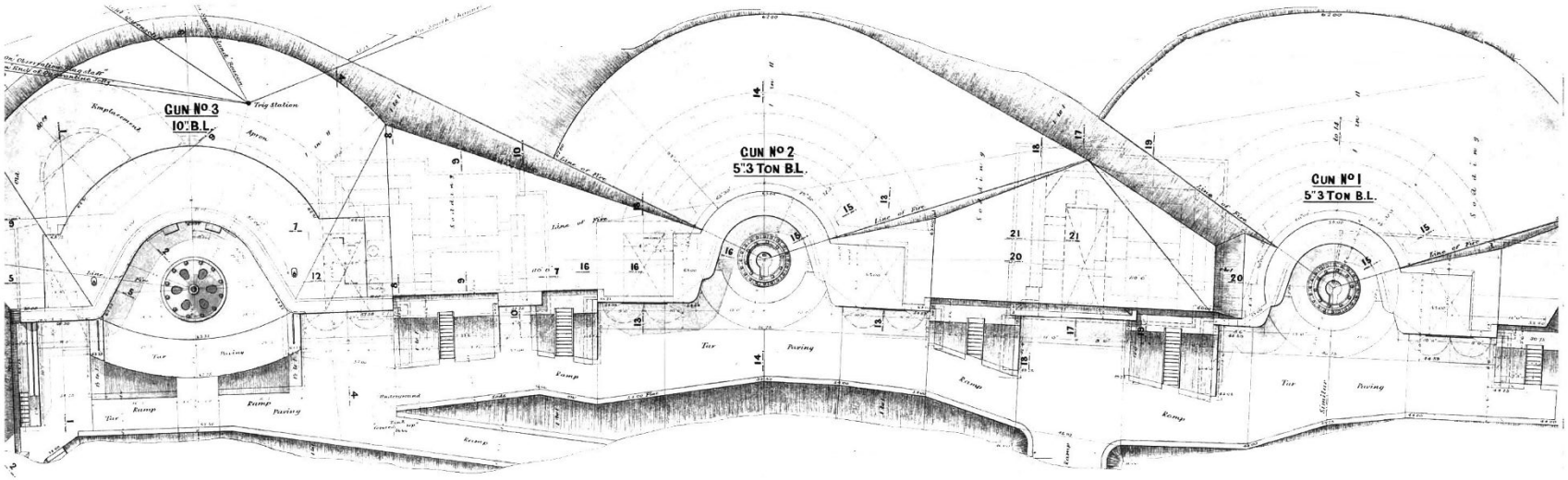


Guns

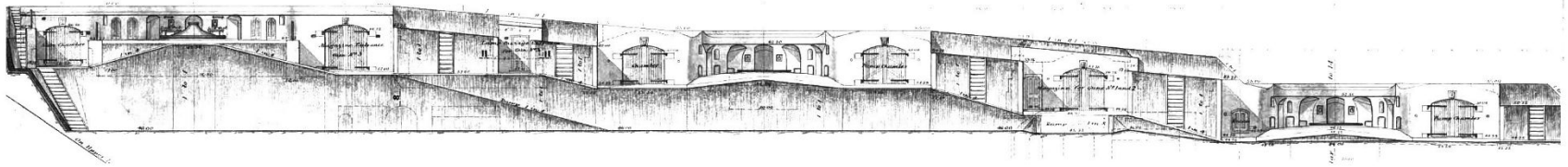
1 10 inch CP
2 5 inch HP
3 5 inch HP

8

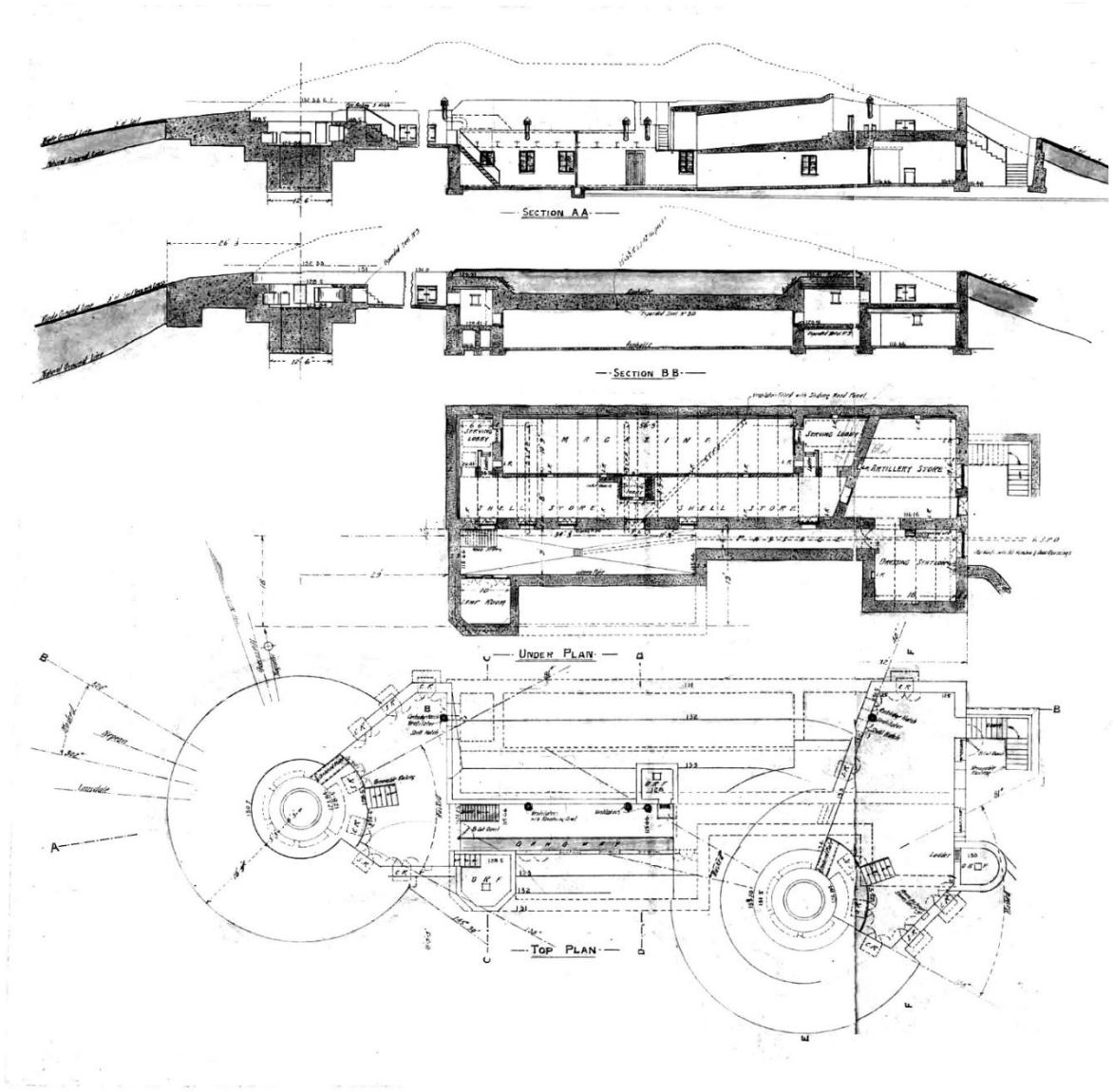
FORT FRANKLIN 1890



PLAN



REAR ELEVATION



FORT PEARCE 1912

Guns

1 6 inch Mk.VII QF

2 6 inch Mk.VII QF

END NOTES

[1] Quinton Keith; Slaney, Rafe; Hose, Siranne. *Stop the Pfalz – The First British Empire Action of WW1* Fort Queenscliff Museum Blurb Books USA, 2012

[2] Australian News for Home Readers. 19 April 1865. *Commodore Wiseman Defence Report.* Page 3

[3] See biography of Capt. Thomas Mandeville R.N. – HMVS Cerberus website http://www.cerberus.com.au/muster_dadabik/index.php?table_name=crew&function=details&where_field=ID&where_value=75

[4] *Argus*, 17 June 1878. *Cerberus to test the Heads Guns.* Page 5

[5] *Bendigo Advertiser,* 30 April 1878*. Defence at the Heads*. Page2

[6] *Australasian,* 4 May 1878. *The Defence of the Heads.* page 21

[7] *Argus*. 24 September 1878. *The New Batteries at Point Nepean*. Page 7

No 1, battery, '… known as the Channel Battery - for its defence of the channel and fairway - was located inside the Heads…. placed about midway of the cove, just inside the Point, and mounts two 80 pounder Armstrong guns, which are placed 60-ft apart, at an elevation of 100-ft above low water mark.' The guns covered a range of 120 deg., from the flagstaff at the quarantine ground to the cove between Point Lonsdale and Queenscliff. The whole battery was sunk to a depth of 4ft 3in, so gun muzzles just appeared at the ground line. Sand parapets carried up about 7' 3" in height, with each gun firing through a sand-bagged embrasure. A magazine for filling projectiles of great strength was located between the guns. It made of blue gum timber sunk 4-ft below the ground line, with 8-ft of earth on top and 10-ft in front. The forward parapet had a lookout for the officer in charge of the battery to observe the effects of the fire from the guns without exposure. Other parapets protected the flanks and rear, with entry gained by ramps from each end and steps at the rear. The ground in front had been sloped to command the beach, and a flagstaff erected for signalling Queenscliff.

No. 2 battery was nearer to, and across, the Point - at right angles with the direction of the land. This also mounted two 80 pounder Armstrong guns, and was similar to the other work, except the parapets fully encircled the battery. The guns ranged 150-deg - from the Barwon Heads to South Channel and could also be fired seaward - to protect the rear of No 1 battery. As No. 2 site was more exposed the only entrance was through a deep cutting. Over 1,000 yards of sand had to be removed, as originally the site was a sand ridge 4-ft in width. The glacis and battery interior were covered with limestone brought up from the beach and then faced with scrub and grasses under the direction of Baron Von Mueller.

Both works were solidly lined with tarred sand-bags about 2-ft thick holding back the sand parapets. Each of the four guns was mounted on a wooden platform made up from red gum blocks over a foundation of kauri timber - 2-ft thick. Mr Barrett, (Head Public Works Department Engineer) had been entrusted by the Government '….to erect the defences in accordance with Colonel Scratchley's plans.' General supervision of the work site, the mounting the guns, and transport of stores, were carried out by Captain Snee with the rank and file superintended by Sergeant-major Morton - formerly of the Royal Engineers.

[8] National Archives of Australia: *Victorian Defences. Nepean 1882* – Mp338/1 Barcode No.'s: 1842444, 1843167, 1843173, 1843182, 1843192

[9] Statistical Register of Victoria. Blue Book. 1882. Page 52. Public Works.
John Blackbourn - Assistant Engineer Defence Works - 16 March 1882. Salary £390
Major General Scratchley R.E. Supervision of Defence Works, appointed 1 March 1878. Salary £2000

[10] *S.A. Advertiser*. 18 March, 1885. Page 5. *Defence Works at Melbourne Heads* .Mr Steel - Inspector General of Public Works; Mr Bell - Overseer of Defence Works; Mr Blackbourn – Defence Surveyor. Blackbourn appealed his P.W.D. placement in 1885 and was subsequently appointed Victorian Defence Engineer.

[11] Library of Congress. Historical documents/letters related to Fort Point
Letter: Humphreys to Stewart. Feb. 26 1875. NA, NG 77, Ltrs. Sent. Chief Engineer

Library of Congress. Historical documents/letters related to Fort Point
Letter: Stewart to Humphreys. March 8 1875. . NA, NG 77, Ltrs. Sent. Chief Engineer

[12] Freemasons Journal 19 January 1911 *Masonic Obituary John Blackbourn* Page 9

[13] National Archives Australia. *Battery - Point Nepean Drawing No. 7 1882.* MP 338/1 Barcode No. - 1843192

[14] Victorian Defences 1885. *Memorandum Defence Port Phillip* NAA No.85/1796
1885, Victoria - Report of the Council of Defence. Page 5

[15] Victorian Defences 1884. *Memorandum Defence Port Phillip* NAA No.83/12

[16] This was a hand written addition from the War Office, London, to the Victorian Minister of Defence - dated 16 July 1884. NAA No.84/783

[17] Ibid

[18] 1885, Victoria - Report of the Council of Defence. Page 5

[19] Victorian Defences 1885 *Telegraphic Memorandum to Victorian Premier from Agent General, London. NAA No. 85/3141*

[20] *Argus*. 23 July 1885. *Victorian Parliament Budget Speech 1885-1886.* Page 9

[21] *Argus*. 23 July 1885. *Victorian Parliament Budget Speech 1885-1886. Mr Service reply to Colonel Smith.* Page 9

[22] *Argus*. 23 July 1885. *Victorian Parliament Budget Speech 1885-1886. War materials received and ordered* Page 9

[23] *Argus*. 10 January, 1885. *The defence of the Colony – Inspection of Fortifications* Page 10

[24] *Argus*. 21 July 1886. *Mr Gillies Budget speech for 1886-1887. Page 9*

[25] The hydro pneumatic carriages were already being adapted in the UK to mount 5-inch BL guns for 80 pounder shells.

[26] *Argus*. 2 February 1886. *Defences. 6 inch Guns.* Page 5

[27] 1886, Victoria - Report of the Council of Defence. Page 5

[28] 1887, Victoria - Report of the Council of Defence. Page 6
Unfortunately the location of searchlight positions are not indicated on the Victorian Defence plans so that the exact position of the emplacement and bomb proof shelter remain uncertain. It is possible the latter may have been located at the same site as the current bombproof electrical engine house.

[29] *Argus*. 4 June 1886. Page 5

[30] *Argus*. 27 November 1886. Page 9

[31] *Age*. 31 May 1887. *General Schaw's Report on the Fortifications.* Page 5

[32] Correspondence to Victorian Minister of Defence. *Steward; Memorandum relating to support of the First Line of Defences (fixed) of Port Phillip* NAA 'Zalinski Gun File' 19/19/1887 correspondence No. 87/2988

[33] *Berry to Minister of Defence on instructions to Umphelby to attend demonstrations at Magdeburg.* NAA No 90/ 3825
Two rare Gruson folio catalogues signed by Umphelby are held at AAHU, Fort Queenscliff

[34] [34] Correspondence to Victorian Minister of Defence. *Steward; Memorandum relating to support of the First Line of Defences (fixed) of Port Phillip 19/10/1887.* NAA 'Zalinski Gun File' correspondence No. 87/2988

[35] Kitson, Michael. *Brennan torpedo, monorail and helicopter: a study of innovative activity in the process of forming three related military weapons*. *Chapter 4. Factors in the problem of the defence of Port Phillip Heads 1877-1910.* pp 167-186. Doctoral Thesis, Deakin University – 1999.

[36] Major General Tulloch was appointed Commandant of Victorian Military Forces in 1889 following retirement of Colonel Brownrigg who had been far more amenable to acquiring both Brennan and Zalinski weapons.

[37] Ibid - Page 179

[38] Letter from the Under Secretary of State – War Office to Victorian Defence Minister 7 March 1890. NAA Brennan Folio B3756 1890/1654, barcode: 334714

[39] Text Book of Gunnery 1887 London. Printed His Majesty's Stationary Office by Harrison & Sons

[40] History of the Guns. 1890. Report from Inspector Ordnance Machinery to Commanding Officer of Artillery, Ordnance Stores, St Kilda Road - 21 July, 1890

[41] *Age*. 4 July 1888 *At the Heads* Page 5

[42] *Geelong Advertiser*. 15 September 1888. *Victorian Garrison Artillery.* Page 2

[43] Plans for 10 inch BL gun at Eagles Nest. NAA MP 3381/1 barcodes: 1842454; 1842463; 1842864; 1843197; 1843202. Contracts signed by James and John Cairns 16 July 1888

[44] *Age*. 12 August 1890. *Trial of the new gun at Point Nepean.* Page 5

[45] History of the Guns. 1890. Report from Inspector Ordnance Machinery to Commanding Officer of Artillery, Ordnance Stores, St Kilda Road - 21 July, 1890

[46] *Herald*. 5 May 1908. *Battle Firing – Fine Big Gun Practice – Some Record Scoring.* Page 3

[47] Fort Nepean, two 9.2-inch guns, (360-lb projectile); Fort Queenscliff, two 9.2 inch guns (360-lb projectile); Eagles Nest, one 10-inch gun, (500-lb projectile); Fort Franklin, one 10-inch gun, (500-lb projectile); Crow's Nest one 8-inch gun (180-lb projectile); South Channel Fort (180-lb projectile).

[48] San Francisco Call, Volume 87, Number 24, 24 December 1899
Lyddite: A high explosive thus called, from the name of the small Kentish, town and gunnery centre, where the experiments with it were made. It consisted of picric acid brought into a dense state by fusion. Picric

add is a bright yellow substance freely used in peaceful Industries for dyeing purposes. It was obtained by the action of nitric acid on phenol or carbolic acid. It burns very violently, and owing to the tremendous blast produced by the explosion, the destructive effect of a bursting shell was some eleven times greater than that of a shell filled with powder.
The destructive effect of the new Lyddite projectiles on unarmoured cruisers was evidenced at the Battle of Cocos - fought between HMAS Sydney (6-inch guns) and the German light Cruiser SMS Emden (4.1 inch guns) off Cocos Island on 9 November 1914. In less than two hours the German vessels superstructure was completely torn asunder. Rescue boarding parties remarked the tell-tale bright yellow stain of Lyddite had covered much of what remained.

[49] Against modern armour 6-inch Mk. VII QF gun penetration was 3.5 inch at 6,000 yds.; 3.8 inch at 5,000 yds.; 4.4 inch at 4,000 yds.; 5 inch at 3,000 yds.; 5.7 inch at 2,000 yds.; 6.6 inch at 1,000 yds. Japanese cruisers were armoured 3½-inch bow and stern, and 7-inch to 8-inch amidships; and German cruisers varied from 4-inch at the stern, to 8-inch and even more amidships.

[50] Age (Melbourne, 2 December 1909, page 8 & Geelong Advertiser 31 August 1910, page 4

[51] Two guns at Fort Queenscliff were also relocated in 1942 - to camouflaged emplacements in coastal sand dunes around 500 metres west of Point Lonsdale Lighthouse.

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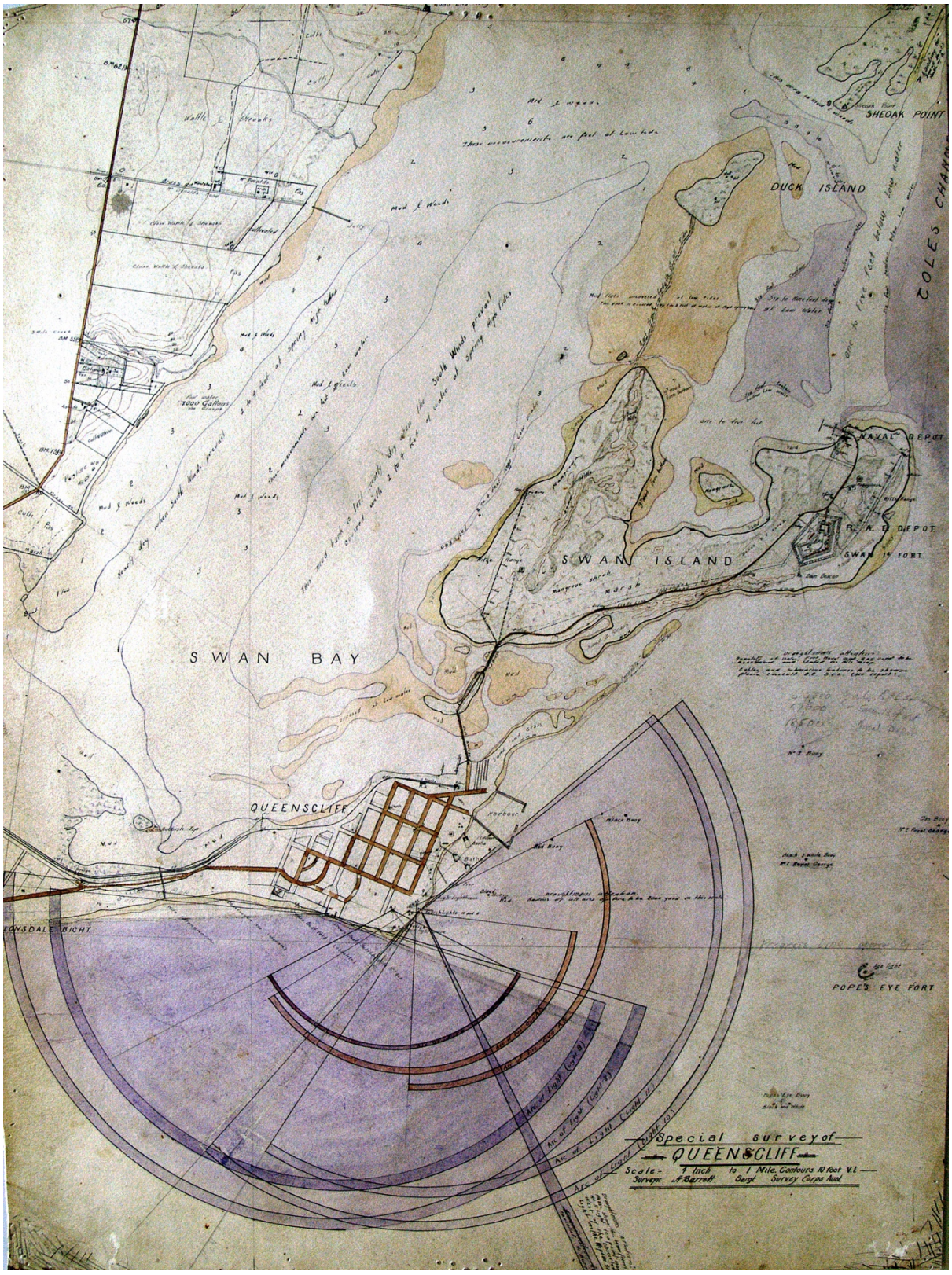
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1886. Victoria - Report of the Council of Defence
1887. Victoria - Report of the Council of Defence
1888. Victoria - Report of the Council of Defence

FORT QUEENSCLIFF



1915 Barrett Survey Map. 'Special Survey of Queenscliff'. Gun 'Arc of fire' in red. Searchlight arc in blue.

FORT QUEENSCLIFF

Fort Queenscliff is on the **Commonwealth Heritage List** where its significance is stated as follows:

Fort Queenscliff, developed from 1860 onwards, is historically significant for its association with Victoria's, and Australia's, military history. The Fort was begun as a result of fears of foreign aggression and was further developed in the latter part of the nineteenth century amid renewed concerns about attack. The Fort was the first and the primary defence site for Port Phillip Bay and played a command role in relation to the other fortifications around the heads of the bay. Fort Queenscliff was a key element in making the bay the most heavily defended British port in the southern hemisphere at the time. During the twentieth century, as the strategic importance of coastal defences was revised, the Fort became a central instructional college for army officers. The Fort continues to play a defence role, after more than 140 years of operation. The Fort also has strong associations with the early maritime history of Melbourne and Port Phillip Bay. Its role as a navigational aid and signalling post are significant, especially as the earliest such structures around the bay were constructed on this site. The Telegraph Station is the second oldest such building in Victoria. (Criteria A.4 and B.2) (Themes: 7.7 Defending Australia, 7.7.1 Providing for the common defence, 3.8.1 Shipping to and from Australian ports, 3.8.3 Developing harbour facilities. 3.7 Establishing communications.)

The seaward and landward defences, together with the other elements of the site, all help to illustrate the evolution of military technology during the latter nineteenth and early twentieth centuries. The magazines, gun emplacements, earthworks, sea wall and Fort wall, seaward ditch/dry moat, keep, offices, barracks, parade ground and other features, and the spatial relationships between all these elements all help to convey the changing requirements of the defence forces over time, and simultaneously combine to represent a very valuable example of a coastal fort developed over the period. (Criteria B.2 and D.2)

The landward defences of the wall and the now-filled ditch are among the last uses of such centuries-old ideas in Australia. The wall and the keep have no equivalent in Victoria and are among the most substantial of any Scratchley-inspired fort in Australia. The wall is an outstanding example of masonry construction, and the keep is especially notable for its very distinctive character. The mass unreinforced concrete and exposed and rendered brick vaulting of the seaward defences are on a scale rarely seen elsewhere. (Criteria B.2 and F.1)

Fort Queenscliff is significant for its associations with leading military thinkers of the late nineteenth century. Lieutenant Colonel Peter Scratchley and Major General Sir William Jervois advised on Queenscliff's design and travelled the Australian colonies assisting with fortifications elsewhere. (Criterion H.1)

The town of Queenscliff has developed with the fort and the complex is of considerable social value to the local community. Further, as the Australian Staff College for more than fifty years, the place is of strong social significance to numerous army officers who trained at the college. (Criterion G.1)

Fort Queenscliff possesses notable aesthetic qualities. It is prominently located on the coast and is a major element of the townscape, featuring a number of landmarks such as the lighthouse and the landward wall and keep. The wall and keep also provide a clear division between the military and civilian precincts of the town. (Criterion E.1)

FORT QUEENSCLIFF (1860 – 1945)

Keith Quinton - AAHU Researcher - Fort Queenscliff Museum

SIGNIFICANCE

Shortland's Bluff Battery indicated the intent of Captain Peter Scratchley R.E. in developing a Harbour Defence strategy for Victoria in 1860. Constructed between 1878 and 1936, Fort Queenscliff was part of a grouping of Victorian fortifications linked with electrical discharge minefields. The five major Port Phillip Heads fortifications remain largely intact. When linked with the Victorian Naval Squadron they provide an outstanding historical understanding of late 19th Century military technology. As Command and Garrison Headquarters - 1860-1945, Fort Queenscliff is an essential element to any overview.

DESCRIPTION

Fort Queenscliff is a polygonal fortress covering 6.768ha. It stands on the extremity of the Queenscliff Peninsula, located around 2 km inside Port Phillip Heads. The site commands the ship turn circle and the entrance zone leading to the navigable South and West Channels, which carry shipping to the ports of Melbourne and Geelong. Lower and Upper battery revetments are situated on the South and East face respectively. The Northern face & Western face were enclosed by a brick rifle embrasured land wall and an outer dry defence ditch. The site included in the Commonwealth Heritage listing that includes all surviving aspect of the defence works from 1860-1945. An area on the southern side of the Commonwealth reserve land encompasses the fort earth scarp and three shoreline searchlight positions. (An open see-saw searchlight emplacement -1893 and two roofed concrete emplacements - 1942) The Heritage overlay of the Military/maritime zone has recently been listed by Heritage Victoria as having cultural and heritage significance.

VHR Number VHR H2367 Provisional VHR Hermes Number 200972 Existing Heritage Overlay Borough of Queenscliffe HO58 Shortland's Bluff, White Lighthouse HO59 Shortland's Bluff, Precinct and Archaeological Site. Listed 2 February 2019.

HISTORY

Shortland's Bluff Battery 1860 – 1878

A defence sea wall (of Point King sandstone) was constructed in mid-1860 although construction of the battery did not commence until 1863.[1] Scratchley envisaged a four gun battery facing west from the heights and a second more substantial eight gun earthwork battery facing south towards the Rip. In February 1861 two 'long' 32-pounder S.B. guns were mounted on wooden platforms a half mile west of the lower lighthouse for the Queenscliff Artillery Company.[2] In September 1862, the guns were relocated slightly west of the lower lighthouse '… within a few yards of the battery which will at some time or other be erected for the defence of the Heads.'[3] In mid-1863 Scratchley '…. decided upon placing three 68-pounders at Queenscliff…. These guns will be mounted so as to bear upon the entrance to the west channel, and the anchorage off the Queenscliff Jetty. A small expense magazine and shell-room will be constructed.'[4] On 27 October 1863, C. S. Baillie was contracted to construct the battery for £1426. 11. 3., with supplementary payments in 1864 of £360. 8. 6; £292. 9. 4.; & £319. 0. 0.; for extra work on the open battery & earthworks.[5]



Shortland's Bluff Battery & Queenscliff Volunteer Artillery - c. 1866. The inner face of Shortland's Bluff Battery with two ready-use magazines and three 68-pdr ML guns. The first defence structure at Port Phillip Heads. Photographer: (Attributed to Lionel Omerod). *Argus* Newspaper Collection of photographs, State Library of Victoria Photo Collection H98.105/3530

Chevron shaped, the earthwork was sandstone faced on the interior face. The three 68 pounders mounted 'en barbette' on central pivot carriages covered a 145-degrees arc towards the West

Channel and Queenscliff anchorage.[6] A magazine was located underground at the southern end of the earthwork - 2 vaulted chambers & vestibule. Two Pilot's Row cottages were relocated as Orderly Rooms - around 100 metres west. During the 1870's Victoria unsuccessfully requested a senior Royal Engineer be sent to provide further advice and Shortland's Bluff Battery remained the only defence work at Port Phillip Heads until 1878.

Fort Queenscliff - Phase 1. (1878 – 1887) Rifled Muzzle Loading Ordnance (RML)

In 1877 the Jervois-Scratchley plan envisioned Fort Queenscliff and Fort Nepean being armed with six 9-inch 12-ton M.L.R. guns and three 11-inch M.L.R. guns - made secure by means of ditches and defensible barracks. Rejection of the 1878 Forts and Armaments Bill prevented immediate implementation and Scratchley devised a temporary sandbag battery facing directly towards Port Phillip Heads from Shortland's Bluff. Three 9 inch, 300-pdr RML Armstrong guns were transported from Williamstown to Geelong by train, and wagon to Shortland's Bluff.[7] In April 1878 the Victorian Permanent Artillery and Engineers commenced construction of an embrasured sandbag works on the site selected for the permanent Lower Battery, with the sandbags filled from the forward defensive ditch.[8] 'A' pivot racers (lateral range 70-degrees) already to hand were used, rather than waiting for 'C' pivot racers (360-degrees) being imported from England. The 1863 works received four 80-pounder guns as the Upper Battery - mounted 'en barbette' on 68-pounder platforms (lateral range 130 degrees) and its magazine remained the shell store. Neither work was enclosed.[9]

In April 1878 the *Argus* reported:

> The first line of defence will be strengthened by the erection of a three-gun battery at Point Nepean. A cross fire will then be obtained, which, with the Cerberus in mid-channel, will, it is hoped, render the passage of the Heads too hazardous a task to be risked by an enemy. The second line of defence is at the shallows at the entrance of the inside channels, and consists of the torpedoes which are being made, protected by the *Cerberus* from outside, and covered from boat attacks by the *Nelson* in the inside waters.[10]

A railway line from Geelong to Queenscliff was completed in April 1879 facilitating rapid movement of men and military materiel.[11] In December sappers stripped the batteries of guns and in January 1880, Scratchley, Colonel W.A.D. Anderson (Commandant Victorian Forces), Captain Snee V.A., and Mr. Barrett R.E. (P.W.D.) surveyed and marked out Fort Queenscliff's 8-gun trace. James H. C.

Sutherland gained the contract for the Lower Battery and John Horne the Upper Battery.[12] [13] When Jervois became Lieut.-Governor of South Australia and Scratchley's assumed the role of Defence Advisor to the Australian Colonies, Snee remained at Queenscliff supervising the Upper Battery works as four 80-pdr Lower Battery guns were mounted in October 1880. A proposed 10-inch 400-pdr RML gun awaited confirmation of manufacture and two of the 9-inch guns could not be emplaced until iron carriages arrived from England.



Sandbag Battery Queenscliff –May 1878. Members of the Victorian Permanent Artillery and Engineers constructing a temporary sandbag battery of three 9-inch ML guns – Queenscliff. Photographer: Fred Kruger. State Library of Victoria Picture Collection H41139/121. (This Kruger photo was used to produce the newspaper wood engraving 'The Defence of Port Phillip Heads.' *Australasian Sketcher*, May 11, 1878

The *Argus* published a full description of the Jervois-Scratchley works in January 1882 – stating, 'Fort Queenscliff was ready for action,' although significant sections remained incomplete.[14] John Horne obtained the contract to construct a Land Wall and work progressed slowly due to Horne's inability to obtain sufficient bricks.[15] By early 1884 the land wall and its distinctive Keep (NAA barcode 30477380) were complete and the missing 9-inch guns emplaced.

On Jervois and Scratchley advice, Victoria replaced the volunteer movement with a Militia, and established a Military Staff of five British Officers in December 1883 - Lieutenant Colonel Thomas Robert Disney, R.A. (Colonel Commandant); Major Henry Studholme Brownrigg (Lieutenant Colonel and Assistant Adjutant-General); Major Arthur Greenwood Walker, R.A. (Lieutenant Colonel and

Deputy Assistant Adjutant-General, Artillery); Captain Peregrine Henry Thomas Fellowes (Major and Deputy Assistant Adjutant-General, Infantry); Lieutenant Frederick William Ind, R. A. (Captain Commanding Victorian Artillery). Volunteer Companies were disbanded in January 1884 and Militia enlistment commenced. This included a Permanent Artillery Corps of 120 Artillerymen and NCO's.



Panoramic view of Fort Queenscliff – October 1885. A view from the Upper (black) lighthouse showing Fort Queenscliff Upper Battery and the Lower (white) lighthouse & obelisk. A 9-inch RBL gun is mounted in emplacement No. 9 in the left foreground. Photographer: Fred Kruger. State Library of Victoria Picture Collection H94.106/4, (This Frederick Kruger photo forms the left half of the wood engraving 'Panoramic view of the Queenscliff battery' published in the *Australasian Sketcher*, October 21, 1885.

British tests conducted at Shoeburyness on Sir William Armstrong's Elswick Ordnance Company (EOC) 8-inch BL gun confirmed barrel lengths of more than 20 calibres improved shell velocity, to potentially doubled gun range and penetration power.[16] The War Office then directed the choice of all types of breech-loading guns, carriages, and platforms for both land and sea service be revised by 31 March 1879.[17] Jervois and Scratchley were kept informed of developments through the War Office Fortification Branch, the Ordnance Select Committee, and several 'expert' Royal Engineers and Naval officers.[18] While in the UK on leave in 1883, Scratchley viewed hydro-pneumatic carriage experiments with Lieut. Colonel William V. Legge - gunnery instructor at Portsmouth, where Legge was tasked with mounting BL guns.[19] Scratchley immediately advised RBL guns mounted upon HP carriages were ideal for harbour defence and Victoria should request Sir William Armstrong produce H.P. mounts for its 80-pounder guns.[20] On his return when invited on a tour of inspection of Fort Queenscliff and other Heads defences, Scratchley praised '…. the efficient state of the defences …'

in spite of ongoing indecision over ordnance requirements.[21] The Russian-Afghanistan Crisis of April 1885 provided inducement to commence the submarine minefields works in South and West Channels; although these remained incomplete when the *Ballarat Star* recorded:

> If war be declared the West Channel will be at once closed, lights obscured, buoys removed, and vessels only permitted to enter the port in daylight, in charge of pilots. The fleet will be kept in the south channel to command it, the gunboats relieving each other in cruising outside. A temporary fort (South Channel) will be ready in about a fortnight.[22]

A 10-ft deep dry moat was added to Fort Queenscliff's land face - with extracted soils used for traverses at the rear of the emplacements and the sea cliff was scarped down fifteen feet to prevent enemy forces scaling the works.[23] [24] Two electrical engine sheds were erected (NAA Barcode 30477373) containing twin dynamos driven by 8 h.p. vertical steam engines to power two Siemens electric arc-lights of 16,000 candle power, one below the bluff and the other near the eastern corner.[25] Completion of the drill hall (1882-1885) and three wooden barracks (1887) for 60 men and NCO's saw the Artillery permanently garrison Fort Queenscliff under the command of Captain Ind R.A.[26]

Fort Queenscliff - Phase 2. (1888 – 1906) Rifled Breech Loading Ordnance

In the UK a gun trial utilizing *HMS Hercules* demonstrated RML guns mounted on hydro-pneumatic disappearing carriages were invulnerable to naval bombardment and the Ordnance Board recommended adoption into Imperial service.[27] In May 1885 successful trials with three HP mounted Armstrong 8-inch BL guns constructed for Victoria was attended by Major-General Steward and officers representing the Director of Artillery.[28] Through the late 1880's and early 1890's BL guns gradually came to Fort Queenscliff - commencing with a 6-inch 5-ton BL gun on HP carriage in emplacement No.3 (NAA barcode 1845746) - test fired 16 January 1886.[29] Armstrong Hydro Pneumatic carriages had been ordered for the colony's twelve 80-pdr guns and an open pit (No. 11) was constructed in October 1886 for one HP 80-pounder. (NAA barcode 30477361) The remaining eleven carriages were altered to carry 5-inch BL 3-ton guns. Fort Queenscliff's ability to engage enemy cruisers entering the Heads was strengthened in December 1886 with an 8-inch 12-ton BL gun on HP carriage - 'externally' mounted at Crow's Nest, a sand dune 800 metres west of the fort.[30] [31] [32]



Fort Queenscliff, c. 1895. The gun visible on the left of this photograph is the 6-inch BL Vavasseur mounted gun in emplacement No 4. This gun was involved in an accidental explosion in 1891 killing two gun crew. Note the small target of the barely exposed gun, the lack of a visible parapet and total invisibility of HP mounted ordnance. Photographer unknown. Fort Queenscliff Museum Collection

Captain Frederick Rainsford-Hannay R.E. published a significant paper - 'The Milford Haven Experiments' in 1886 which examined naval trials at Milford Haven combining searchlights, submarine electrical minefields, torpedo boats, land batteries, and Watkin position finders- formulating a clear methodology for defending channels against enemy ingress.[33] Hannay stated:

> …. the general idea drawn up by the operations committee was that the operations should take the form of an attack by a fully equipped squadron, reaching the English Coast from abroad, upon a military port defended in the manner proposed for actual service, viz., by submarine mines and by guard boats acting in co-operation with a naval flotilla. The defence will be restricted to a portion of the main channel, 3,000 yards in length and 700 yards wide.'[34]

Almost immediately the plan was adopted at Port Phillip and the *Argus* reported the Tasmanian Steamship Company complained of Fort Queenscliff searchlights blinding ships' officers attempting to enter the port. The lights were being used in experiments with a position-finder. The experiments were to ascertain if an enemy ship could be kept under fire for as long as it was within range. This was demonstrated to a distance of 3,500 yards in September 1887, by guns fired electrically from the fort's position-finder (Asset No.36; NAA barcode 1845508), as were observation torpedoes. Two

guns were aimed by telescope and quadrant and discharged without either gun crew being exposed.[35] In October the permanent 'bombproof' engine house was completed by Garnsworthy & Smith (NAA barcode 1846139), containing larger engines to power the dynamos and the barracks gas lighting was replaced by electric lighting. A 40-ft shaft was dropped from here to a tunnel leading to a sea-level searchlight emplacement and sally-porte.

Scratchley's death in 1885 left Victoria devoid of a principal advisor. The task to finalize ordnance, defence structures and updated information on weapons development was transferred to Major-General Harding Steward at the fortifications branch of the War Office, although the contract plans were produced by John Blackbourn C.E. - appointed as Scratchley's assistant in 1882 and P.W.D Defence Engineer in 1885.[36]

When twin telegraphic cables connecting Australia to Europe were severed near Java on 30 June 1888, it precipitated panic and Victoria's Naval Brigade and Artillery were prepared for action within 48 hours, although it was impossible to lay down the minefields.[37] With concern, the *Age* preached that for months the only communication available between Fort Queenscliff and outlying military stations were heliograph and boat, as the local undersea telegraph and telephonic cable had also failed.[38] The 'scare' paralleled the introduction of Watkin Position Finders to Port Phillip. Multiple Position Finder observation became essential to plotting ship position, co-ordinating battery fire, electrical ranging, discharge of guns, and controlling channel minefields, although the absence of cable communication severely limited Fort Queenscliff's role as command fortress. Colonel Rainsford-Hannay was appointed Commanding Victorian Engineer at Fort Queenscliff in 1889, and a new cable was layed from Queenscliff to the batteries at Nepean, Swan Island, Pope's Eye, South Channel and Portsea, in September 1889. Hannay also oversaw completion of the works at South Channel Fort and Fort Nepean and was largely responsible for improvements in maintaining the H.P. carriages.

In 1891 Captain Charles Umphelby was promoted to Major in Command of the Victorian Artillery following his return from officer training in the UK and placed in command of Fort Queenscliff - the first Australian born Commandant. Extensive restructuring of the Fort Queenscliff Lower and Upper batteries had been carried out between 1889 and 1891.[39] Commencing with two 6-inch BL guns at No. 4 (Vavasseur) & No. 5 (HP) emplacements, followed by two 9.2-inch guns (No. 6-HP and No. 8-Vavasseur) and a Nordenfeldt 14-pdr QF gun. (No.7) The 9.2-inch guns were first tested in August-October 1890.[40] Superior performance of Vavasseur and C.P. carriages increasingly highlighted

deficiencies with HP carriages, while the diversity of gun calibres requiring individual magazines was recognized as a significant defect. The two remaining 80-pdr guns (No.'s 1 & 2) were replaced by 9-inch RML guns in 1891 (NAA barcode 1845725); followed by Mk.1, 6-inch BL guns on Vavasseur slides with naval shields in 1896.[41] Choice of ordnance and gun position adhered to the formalisation of UK published coastal defence Treatise – that included substantive papers on fortifications and gunnery. There was ongoing debate over an advanced minefield defence line from Queenscliff to Point Nepean into the early 1890's - including fortifications at Pope's Eye Annulus and Observatory Point. Severe cuts to Victoria's defence budget saw all such plans abandoned. Colonial Defence Conferences across the 1890's led to Imperial co-ordination of the naval and military defence of ports and coaling stations.

Following Australian Federation in 1901 the decision was to dispose of all 19th Century ordnance at Port Phillip - replacing them with 6-inch QF Vickers Mk.VII guns. In 1908 three Mk VII guns were mounted at Fort Queenscliff in emplacements No.3, No.7 and No. 9.[42] The new guns were co-ordinated from each fort's command post working with individual 'fighting lights'. At Queenscliff they were located along the sand dunes to the west of the Lower battery. As part of a national upgrade of defence facilities in 1936, substantial new brick barrack buildings were constructed for both R.A.E. and R.A.A. units, (NAA Barcodes 30477262 & 30477291) followed in 1939 by the A.A. Gunshop & Workshop. (NAA Barcode 30477304).

Elements of the Victorian Garrison Artillery served with Imperial Forces in the Boer War (1900-1902) where Lieut. Colonel Umphelby was shot dead by a sniper at Driefontein. After the German East Asia Squadron was sunk off the Falkland Islands, R.A.A. members were permitted to enlist for overseas service. They formed the 2nd Siege Artillery Brigade in 1915 and served in the Middle East and on the Western Front for the duration of WW1. During the interwar years the Fort Queenscliff garrison continued to train as a heavy field brigade in addition to their role in manning the coastal Fortress guns. A 6-inch field gun and a 6-inch howitzer were maintained within the fort and the Bellarine Peninsula and a gun range at Swan Bay were used for training purposes. By 1932 it was clear that coastal forts would be vulnerable to air attack and AA machine guns were introduced to the armament. Two substantial brick barracks were constructed inside the fort walls and the searchlight barrack at Crow's Nest was expanded as a barrack for training reservists in coast defence.



Fort Queenscliff, c.1950. Aerial view of Fort Queenscliff Staff and Command College, circa 1950 - looking south-west towards Point Lonsdale and Port Phillip Heads. Note there are no guns mounted, or on display. Photographer: unknown. Fort Queenscliff Museum Collection

Fort Queenscliff remained an active fort until 1942, when the two remaining Mk. VII guns were moved to camouflaged emplacements at Point Lonsdale - due to a justified fear of exposure to Japanese air-attack. The threat of a Japanese invasion in the north of Australia led to many permanent gun crew were transferred to new battery locations in the Northern Territory and Queensland. Two 4.7 inch gun emplacements were established in camouflaged positions on the dunes close to Crow's Nest barracks. As the immediate threat of invasion receded, Victoria's coast defence batteries were largely manned by reservists, as the nation joined American efforts to island-hop against Japanese garrison forces across the Pacific region. With the closure of Australian coast defences in 1945, Fort Queenscliff became the Australian Staff College (1946) under the command of Brigadier A. R. Garret. It remains a Commonwealth Military establishment.

CURRENT CONDITION OF WORKS

Allom & Lovell's '*Conservation Management Plan for the Command & Staff College Fort Queenscliff'* is the principal Commonwealth overlay for preservation of Fort Queenscliff. The barracks buildings remain under Department of Defence occupation. Civilian access to the fort precinct is by tour guide. The 1850's telegraph station and lighthouse quarters are slowly deteriorating, with the upper level recently closed to access. A number of military timber and iron structures remain, some in use, others unoccupied. Most require some external maintenance work.

Additional to the fort's enclosed precinct, elements of 1878 earthwork, berm, dry moat, and scarp, are in open access between the gun emplacements and southern shore-line (Recently acknowledged for classification by Heritage Victoria – November, 2018). The berm is maintained by the Commonwealth as a lawned grass strip between the battery revetments and the remaining southern section of the fort moat. Small elements of the 1878 dry-stone retaining wall are located within the moat (largely collapsed due to water erosion). The landscape precinct facing Port Phillip Heads is an essential interpretive feature that should be preserved.

Maintaining integrity of the berm and exterior scarp of the Lower Battery towards the Lower (White) Lighthouse precinct, car park and southern shoreline is also essential. In this precinct there are five searchlight emplacements; the oldest - a see-saw searchlight emplacement (partially buried in drift sand) dates to 1893 and is the only Australian example - one of four worldwide. Two other emplacements are fighting lights from 1942. Directly below Shortland's Bluff is the earliest Port Phillip searchlight emplacement (1887) and a fixed sentry-light (1914). Two other elements of Shortland's Bluff Battery remain - both historically significant. The 1860 Shortland's Bluff defence sea wall is the earliest surviving examples of a Port Phillip Heads defence structures. (Allom & Lovell S9).[43] The 1863 gun powder & shot Magazine (Allom & Lovell; Asset 14) was established by research undertaken in 2011.[44] Its barrel-vault chambers are substantially damaged by mineral salt penetration on inner brick walls and ceilings.

Stonework of the outer magazine wall and external basalt stairs are Indicative examples of fine 19th Century workmanship.

Fort Queenscliff's gun emplacements, magazines and open spaces utilized for public tour purposes are well maintained and a selective range of past ordnance is successfully displayed inside and outside the fort. However, a number of underground magazines are closed to access - with electrical power cut-off due to varying degrees of water penetration.

N.B.

National Archives of Australia Barcodes

Barcodes cited in this paper have been referenced using the Key words ***Victorian Defences Queenscliff.***
*Most are referenced under Serial No. MP 338/1****.***
Barcode No's provide a direct N.A.A. link to online map images.

Map Appendix

The asset key and five maps use Asset Numbers developed for the 'Conservation Management Plan for the Command & Staff College Fort Queenscliff'. Report Vol.'s 1 & 2; Allom Lovell & Associates Pty. Ltd. 1982

Gun List *List of Gun Emplacement No.'s / Guns/ Gun Calibres*

APPENDIX 1

FORT Q ASSETS - MAPS KEY

1 Change Room

2 Drafting *R*oom

3 Store

4 Magazine

5 Store

6 Gun 4

7 Magazine

8 Gun 5

11 Magazine, Store

12 Gun 6

13 Syndicate Room

14 Magazine, Store

15 Magazine, Store

16 Magazine, Store

17 Director Station Fire Control

18 Tennis Court

19 Syndicate Room

20 Offices

21 Offices

22 Engine House

23 Guard House

24 Cells

26 Q Store, Sergeants Mess

27 RAE Barracks

28 Garages

29 Carpenters Store

30 Toilets

31 Offices

32A Lighthouse Quarters

32C Telegraph Station

ALLOM LOVELL & ASSOCIATES PTY. LTD.

34 Dry Canteen

36 Store

37 Gun 11

38 Store

39 Monash Hall

40 Officers Mess

41 RAA Barracks - A Block

42 RAA Barracks - B Block

43 Blamey Hall

44 RAA Barracks - C Block

45 Keep

S12 Lighthouse

S15 EL Emplacement - c. 1887

S16 EL Emplacement - c. 1893

S17 EL Emplacement - c. 1914

S18 EL Emplacement - c. 1941

Gun Emplacements

G1 G2 G3 G5 G6 G7 G8 G10 G11

Demolished R.E. Barracks

D26 D34 D35 D37 D38 D39 D40 D41 D42

D43 D44 D45

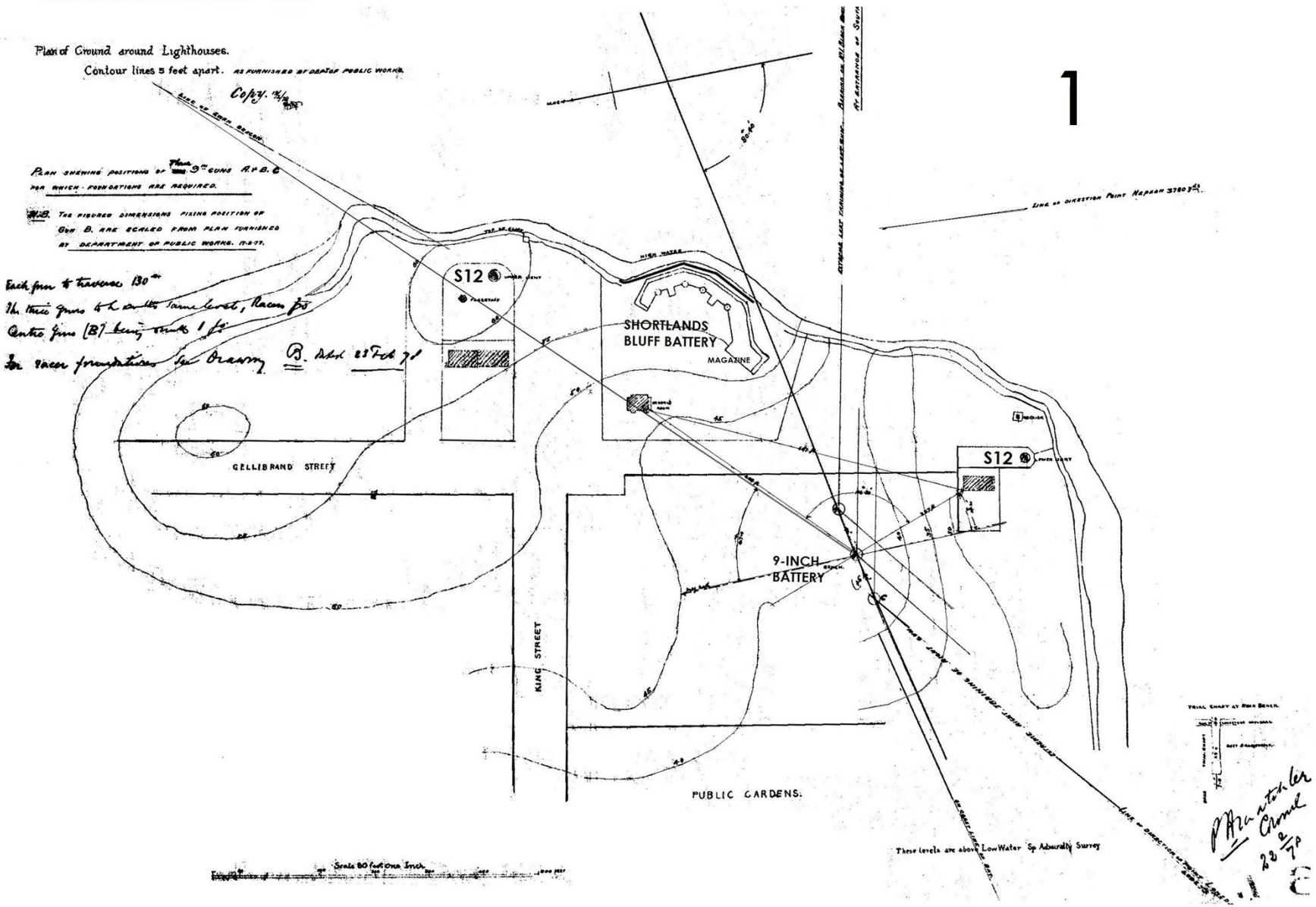
Demolished V.P.A. Barracks

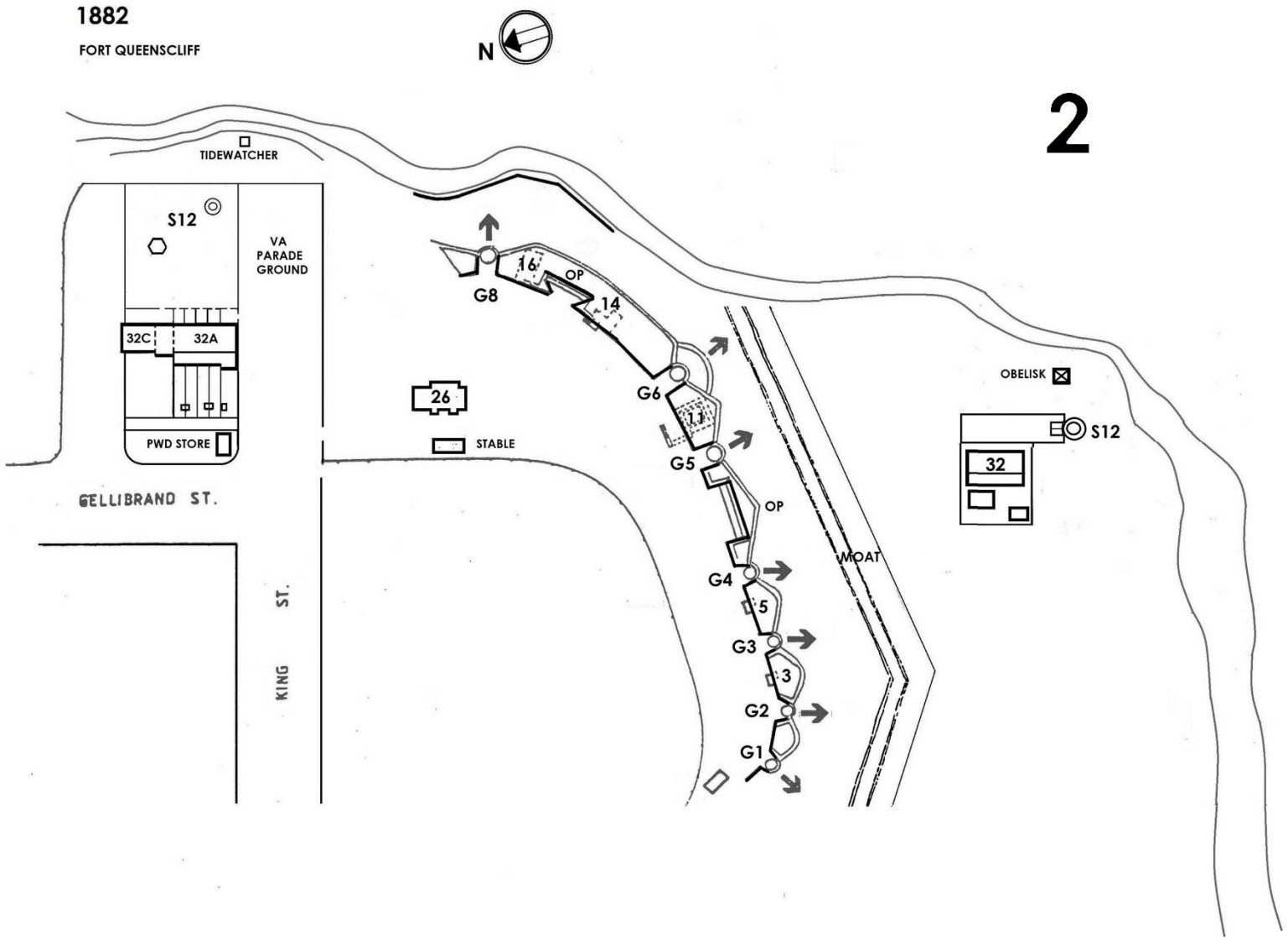
D12 D20 D22 D23 D24 D30

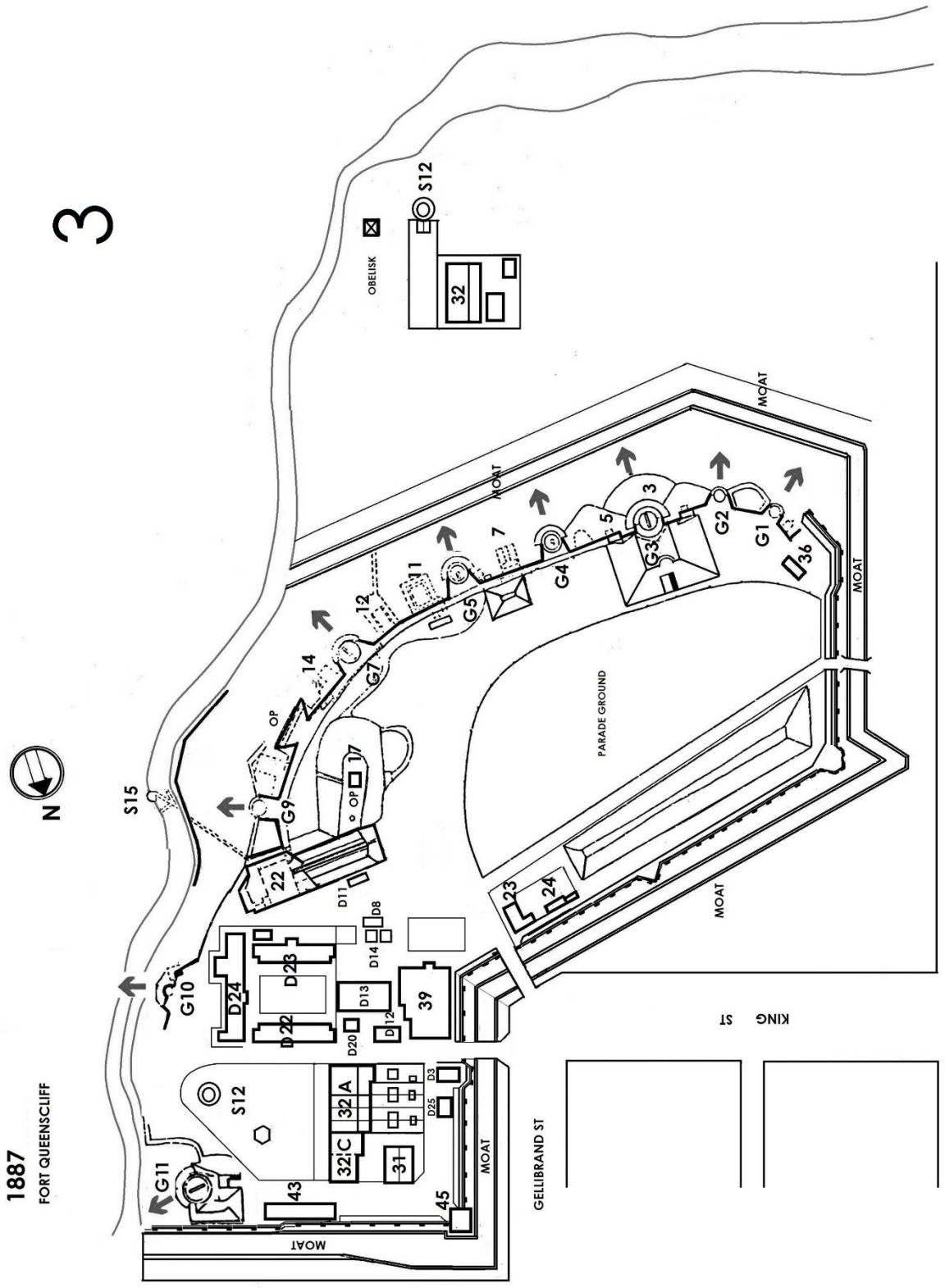
Other Demolished Buildings

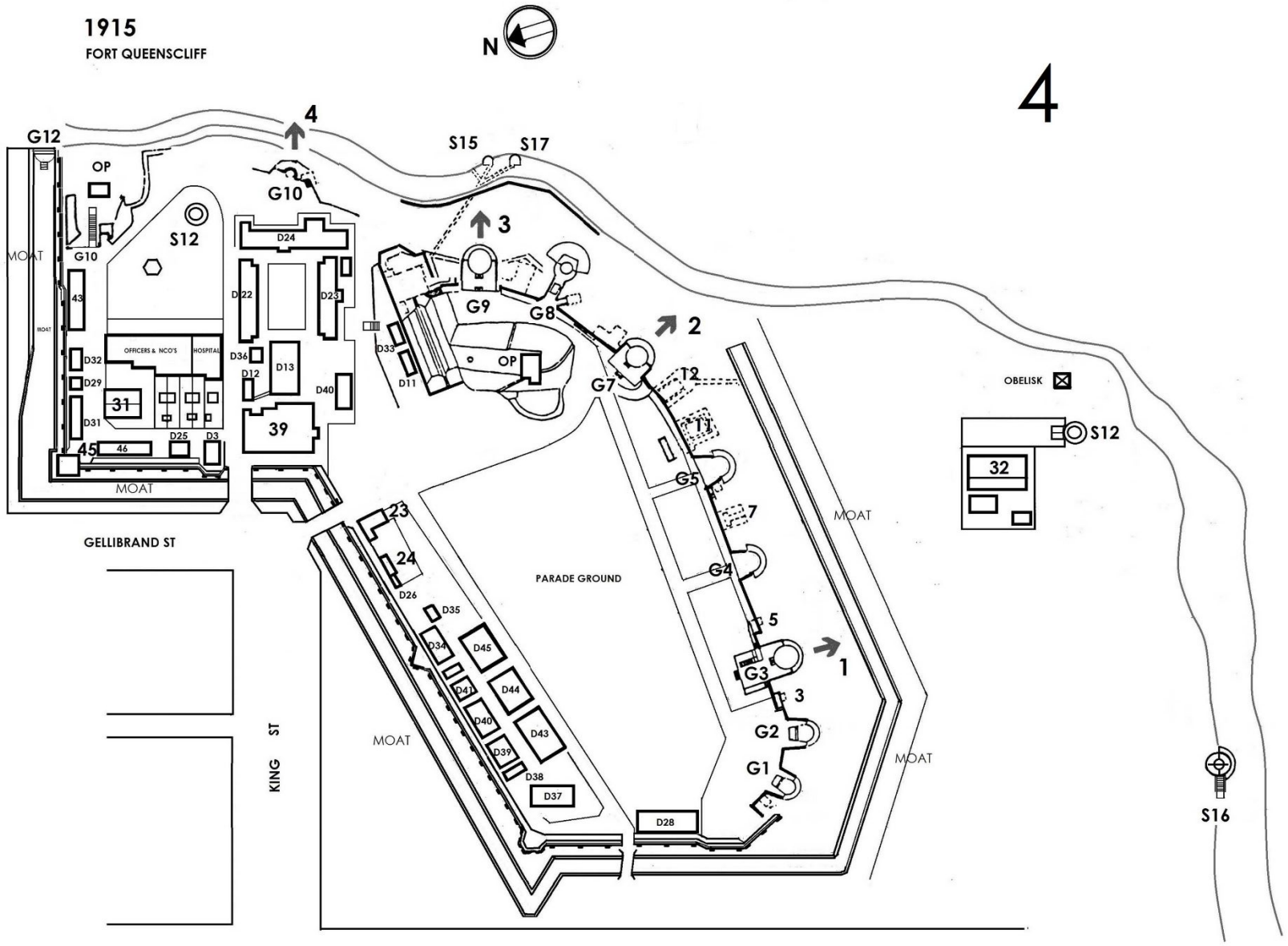
D3 D11 D25 D29 D31 D32 D33

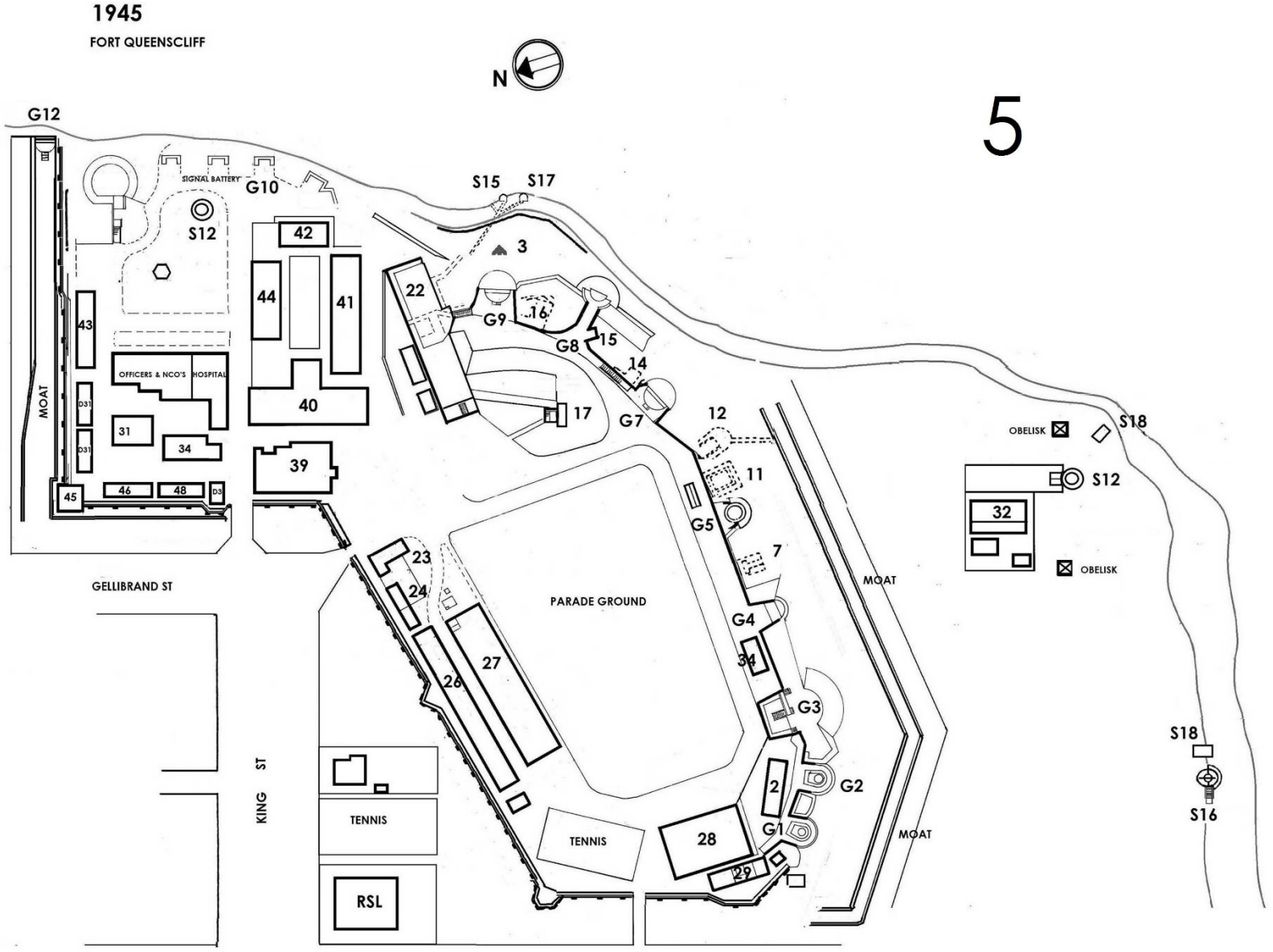
QUEENSCLIFF BATTERIES 1878




1882
FORT QUEENSCLIFF
N
2
TIDEWATCHER
S12
VA
PARADE
GROUND
32C
32A
PWD STORE
GELLIBRAND ST.
KING ST.
26
STABLE
G8
16
OP
14
G6
11
G5
OP
G4
5
G3
3
G2
G1
MOAT
OBELISK
S12
32


3
1887
FORT QUEENSCLIFF
N
S15
G11
S12
43
32A
32C
31
D3
D25
MOAT
45
GELLIBRAND ST
KING ST
G10
D24
D23
D22
D20
D13
D12
D14
D8
D11
39
22
G9
OP
17
OP
14
G7
12
11
G5
7
G4
5
3
G3
G2
G1
36
MOAT
PARADE GROUND
23
24
MOAT
MOAT
OBELISK
S12
32


1915
FORT QUEENSCLIFF
N
4
G12
OP
G10
S12
MOAT
43
D32
D29
31
D31
45
46
D25
D3
OFFICERS & NCO'S
HOSPITAL
D24
D22
D23
D36
D12
D13
D40
39
MOAT
GELLIBRAND ST
4
S15
S17
3
G9
G8
2
D33
D11
OP
G7
T2
T1
G5
7
G4
5
G3
3
1
G2
G1
MOAT
MOAT
MOAT
23
24
D26
D35
D34
D45
D41
D44
D40
D43
D39
D38
D37
D28
PARADE GROUND
KING ST
OBELISK
S12
32
S16


1945
FORT QUEENSCLIFF
N
5
G12
SIGNAL BATTERY
G10
S12
42
44
41
43
OFFICERS & NCO'S
HOSPITAL
MOAT
D31
D31
31
34
40
39
45
46
48
D3
GELLIBRAND ST
S15
S17
3
22
G9
16
G8
15
14
17
G7
12
11
G5
7
23
24
PARADE GROUND
MOAT
G4
34
27
26
G3
2
G2
G1
28
29
TENNIS
TENNIS
RSL
KING ST
MOAT
OBELISK
S18
S12
32
OBELISK
S18
S16

GUN HISTORY FORT QUEENSCLIFF

DATE	GUNS & EMPLACEMENTS
1859	Two 32-pdr ML Guns placed on wooden platforms near Maytone (Practice battery)
1862	Two 32-pdr ML Guns moved to north-east of Lower Lighthouse (Practice battery)
1863	Three 68-pdr ML Guns mounted en barbette Shortland's Bluff Battery
1878	Four 80-pdr RML Guns mounted en barbette Shortland's Bluff Battery
1878	Three 300-pdr 9-inch RML Guns in a sandbag battery - Future site of Emplacements No.3, No.4, No.5 Lower Battery

	G1	G2	G3	G3A	G4	G5	G6	G7	G8	G9	G10	G11	G12
1882	80-pr RML	80-pr RML	80-pr RML	80-pr RML						9" RML			
1885	80-pr RML	80-pr RML	6"BL/HP	80-pr RML		9" RML	9" RML			9" RML			
1887	80-pr RML	80-pr RML	6"BL/HP	80-pr RML		9" RML	9" RML			9" RML		80-pr /HP	
1889	80-pr RML	80-pr RML	6"BL/HP		6" BL/V	6"BL/HP	MAGAZINE			9" RML	6-pr NBP	80-pr /HP	
1890	80-pr RML	80-pr RML	6"BL/HP		6" BL/V	6"BL/HP	MAGAZINE		14-pr QF	9" RML	6-pr NBP	80-pr /HP	
1891	9" RML	9" RML	6"BL/HP		6" BL/V	6"BL/HP	MAGAZINE	9.2" BL/HP	14-pr QF	9.2" BL/V	6-pr NBP	80-pr /HP	14-pr QF
1896	6"BL/V	6"BL/V	6"BL/HP		6" BL/V	6"BL/HP	MAGAZINE	9.2" BL/HP	14-pr QF	9.2" BL/V	6-pr NBP	80-pr /HP	14-pr QF
1899	6"BL/V	6"BL/V	6"BL/HP		6" BL/V	6"BL/HP	MAGAZINE	9.2" BL/HP	14-pr QF	9.2" BL/V	14-pr QF	80-pd /HP	14-pr QF
1908	6"BL/V	6"BL/V	6" MK VII		6" BL/V	6"BL/HP	MAGAZINE	6" MK VII	14-pr QF	6" MK VII	14-pr QF	OP	
1909			6" MK VII				STORE	6" MK VII		6" MK VII	14-pr QF	OP	
1933			6" MK VII				STORE	6" MK VII		6" MK VII		OP	
1941			6" MK VII				STORE	6" MK VII		6" MK VII		STORE	
1945							STORE					STORE	
2019	32-pdr ML	64-pdr RML	MK VII ✲S		80-pr RML	8"BL/HP	DISPLAY	FLAG	6-pdr NBP	MK VII ✲R	2-pr QF Bty	STORE	

Appendix to Table

Gun	Calibre	Weight of Gun	Weight of Projectile
64-pdr RML	6.30"	2.90 tons	64.00 lb
80-pr RML	10.00"	4.35 tons	88.31 lb
9" RML	9.00"	12.00 tons	256.00 lb
6"BL/HP	6.00"	5.00 tons	100.00 lb
6"BL/V	6.00"	5.00 tons	100.00 lb
6" MK VII	6.00"	5.00 tons	100.00 lb
9.2" BL/HP	9.20"	22.00 tons	380.00 lb
9.2" BL/V	9.20"	22.00 tons	380.00 lb
6-pr NBP	2.24"	0.40 tons	6.00 lb
14-pr QF	3.00"	0.73 tons	14.00 lb

KEY
- pr - pounder (guns may have a calibre or weight designation)
- ML - smooth bore muzzle loading gun
- RML - rifled muzzle loading gun
- BL/HP - breech loading gun / hydro pneumatic mount
- BL/V - breech loading gun / vavasseur mount
- QF - quick firing gun QFN - quick firing Nordenfelt gun
- MK VII - Vickers made 6-inch rapid fire gun - Mark 7
- NBP - Nordenfelt balanced pillar
- ✲R - replica gun
- ✲S - gun shield
- OP - observation post

Endnotes

[1] Argus. 4 July 1860. Page 5

[2] Argus. 26 February 1861. Page 4

[3] Argus. 30 September 1862. Page 4

[4] Star (Ballarat). 10 July 1863. Page 2

[5] Victorian Government Gazette No. 109, 27 October 1863. Page 2409, Contract 1108.
Victorian Government Gazette No. 38, 12 April 1864. Page 862, Contracts 757, 758.
Victorian Government Gazette No. 49, 17 May 1864. Page 1075, Contract 796.

[6] Argus. 22 July 1863. Page 3

[7] Bannister & Walker carriers

[8] Argus 9 September 1878. Page 5

[9] Leader. (Melbourne) 2 March 1878. Page 19

[10] Argus. 8 April 1878. Page 5

[11] Geelong Advertiser. 28 April 1879. Page 2.

[12] Victorian Government Gazette No. 50, 14 May 1880. Page 1105, Contract 1984.Construction of the Lower Battery, Queenscliff - £1973. 13. 10.

[13] Victorian Government Gazette No. 55, 4 June 1880. Page 1261, Contract 2081.Construction of the Upper Battery, Queenscliff - £10,673. 17. 11.

[14] Argus. 9 January 1882. Page 10.

'No 1 gun on the extreme right has a range from Point Nepean to Point Lonsdale, and can be further trained inland, so as to fire at an enemy who might land and attack the battery on the flank. No. 2 gun trains from Lonsdale bight almost to the quarantine station. Underneath the embankment, between these two guns, is an expense magazine for ammunition required for immediate use. It is divided into two compartments, one being for shell and the other for cartridges. The door is some 10-ft below the surface, and is approached by a stair, the lower portion of which and the lobby are covered over with heavy slabs of stone, supported with iron girders. Lifts are provided at each side of the door for raising the shell and cartridges. No. 3 gun points from Point Lonsdale on the one side to the white cliff, opposite Sorrento on the other. Then comes another "expense" magazine and No 4 gun, which trains from Point Lonsdale to well up the bay. All these 80 pounder, or 4 ton, guns are mounted and ready for action. The upper battery is for much heavier artillery, and the work is consequently much more substantial. Here are to be mounted three 12-ton guns (280-pdr 9-inch) all of which are lying in readiness, and one monster piece of artillery which has yet to be imported. The 12-ton guns are to be mounted on wrought iron carriages and platforms, the beds of which are of solid stone and concrete and in the form of a horseshoe. Each emplacement is large enough to allow room for a tramway, on which the

projectiles will be conveyed to the muzzle of the gun. In loading these large weapons, too, muzzle derricks have to be employed. No 1 gun in this battery can be trained from Point Lonsdale to a considerable distance up the South Channel. Under the next embankment is the main magazine, situated over 20-ft below the level of the parade ground. There are three compartments, one for projectiles, one for cartridges, and one for powder, and an arched gallery encircles the whole…. This magazine is provided with windlasses and lifts for raising the ammunition to the upper level. No 2 gun covers the entrance to the bay, and trains still further round northwards than No 1. To its left is an underground artillery store, for side arms & etc. Then comes the emplacement intended for the monster gun, and it in the meantime is to be used as an officers' lookout. There is another expense magazine, and then the last gun, which points from Nepean to the Swan spit. On the left of all is an iron building, corresponding in size and appearance to the artillery store. On the extreme right is erected a laboratory in which projects and cartridges will be prepared.'

[15] Victorian Government Gazette No. 53, 12 May 1882. Page 1094, Contract 2704. For £1,945. 0. 0.,

[16] Elswick Ordnance Company (1859) was the armament branch of Sir W. G. Armstrong & Co. In the 1860's the British Government abandoned Armstrong guns for weapons supplied by its own works - the Royal Gun Factory, Woolwich Arsenal. This forced Armstrong to seek buyers outside the War Office, leading to Armstrong seeking international export customers, including Colonial Governments, who purchased EOC weapons rather than experience considerable delays if supplied via the RGF. By the 1880's Armstrong RBL guns and carriages were again being supplied directly to the War Office.

[17] *Supervising a Revolution: British Ordnance Committees, Private Inventors and Military Technology in the Victorian Era.* Doctoral Dissertation, University of Huston, 2015. pp 272-274. LeClair. Daniel D. https://uh-ir.tdl.org/uh-ir/bitstream/handle/10657/1254/LECLAIR-DISSERTATION-2015.pdf?sequence=1&isAllowed=y

[18] Beyond the UK Military Staff appointed to Officer the Victorian Forces, the breadth of UK expertise who advised Jervois and Scratchley was enormous - some had direct past links to the Victorian colony.
Sir William Armstrong - Elswick Ordnance Company
Major General Sir Andrew Clarke R.E.; Inspector General of Fortifications 1882-1886 (Who was familiar with Victoria, having been appointed Surveyor General of Victoria in 1853, a Member of the Legislative Council in 1853-54, and an elected as a Member of Legislative Assembly in 1856-58.)
Major General E Harding Steward R.E. (ret.); the most experienced UK royal engineer officer on submarine mine defences.
Admiral Astley Cooper Keys R.N.; First Sea Lord of the Admiralty (1879-1885)
Hugh Culling Eardley Childers; Chancellor of the Exchequer (1882-85)

[19] William Vincent Legge (1841-1898) was offered the Command of Tasmanian Forces in 1883 on the recommendation of Scratchley. Upon his appointment Legge ordered two of the 6-inch HP guns for the defence at Hobart - the first to be ordered by an Australian colony. http://adb.anu.edu.au/biography/legge-william-vincent-4009

[20] Leader. 8 September 1883. Page 39

[21] Argus. 6 January 1885. Page 6

[22] Star (Ballarat) 30 March 1885. Page 3

[23] Geelong Advertiser 21 May 1885 Page 3. 'It is also intended to dig a moat round this battery, a section of which has already been sunk, and stands well to the banks, being very firm. It is 30-ft wide and 6-ft deep in the centre. When this work is completed the battery will be impregnable from a shore attack, as the ditch will always

contain 6-ft of water, and the battery be connected by draw-bridges, so that an attacking force will have to damp their powder in crossing.'

[24] Geelong Advertiser 15 May 1885. Page 3

[25] Argus. 15 May 1885. Page 7

[26] *Conservation Management Plan for the Command & Staff College Fort Queenscliff*: Vol's 1 & 2. Allom Lovell & Associates Pty. Ltd. 1982 (No.'s - S22, S23, S24)

[27] A pit was constructed on the tip of Portland Bill - off Weymouth - where a dummy 6-inch gun was placed on a disappearing carriage and *HMS Hercules* allowed *carte blanche* to do whatever damage it could. Mechanisms raised the gun every two minutes to firing position when, after 20 seconds exposure, there was a puff of smoke and the gun was returned into the pit. The trial opened with machine guns firing hundreds of rounds - without a single bullet striking the target gun, or falling within the pit. The ship then began firing 10-inch RML in broadside, followed by independent gunfire, and its 6-pdr Quick Firing (QF) guns engaged whenever the target appeared. No hits were achieved on the target gun, carriage, or emplacement. *Coast Defences of England & Wales. 1856-1956.* Hogg, Ian V. Page 77. David & Charles Holding Ltd, South Devon House, Newton Abbot, Devon

[28] Age. 19 May 1885. Page 6

[29] Australasian. 23 January 1886. Page 29 (The pit was fully enclosed in October 1887)

[30] NAA item B3756/0 1885/1933, {contract dated 20.4.85} lists the purchase of three 8" RBL guns of 26 calibres [two guns for South Channel Fort and one for Crow's Nest.]

[31] Several Crow's Nest Battery 'contract plans' in the Australian National Archive are dated 4 September 1886.

[32] As mid-1880 cruisers carried their main armament within central armoured citadels - rather than turrets - almost all heavy guns were broadside. Crow's Nest battery could therefore oppose a cruiser as it was directly bow-on while passing through the Rip entrance and fully engaged by the guns of Fort Nepean.

[33] *Professional Papers of the Corps of Royal Engineers 1886. Vol. XII; Paper IV - The Milford Haven Experiments – 1886 by Captain F Rainsford Hannay R.E. 1886 - Royal Engineer Institute, Chatham*

[34] Ibid

[35] Age. 2 September 1887. Page 7 (Emplacements No. 7. 9-inch RML gun & No. 5. 6-inch BL HP gun)

[36] John Blackbourn C.E. (1842-1911)
Blackbourn was appointed P.W.D. Military Draftsman & Surveyor assisting Major-General Scratchley in March 1882. In 1884-5 he acted as surveyor on works at Fort Queenscliff, Crow's Nest, Fort Nepean, Eagle's Nest, and Swan Island. He was promoted to Victorian P.W.D. Engineer of Defence Construction in 1885 - a post he held until 1901, when he was appointed Commonwealth Defence Engineer for Victoria (1901-1906). A British civil engineer trained in canal and railway construction, Blackbourne had been employed from June 1874 until November 1875, as a Resident-Engineer of the US Corps of Engineers by Colonel Seaforth Stewart during construction of the East & West Batteries, Fort Point, California.

[37] Leader. 7 July 1888. Page 24.

[38] Age. 4 July 1888. Page 7. The Torpedo & Signal Corps had laid multiple telegraphic & telephonic cables connecting various Heads Forts circa 1886/7. The failure of these undersea linkages left the forts reliant upon normal landline connections via the Melbourne exchange.

[39] The range of new 1891 emplacements No.'s 5, 6, 7, 8, 10 & 11 and related shell magazines are shown on N.A.A. plans - Barcode1846001 (No.'s 5 & 6), 1845683 (No.'s 7 & 8) & 1845996 (No.'s 10 & 11)

[40] Geelong Advertiser. 26 August 1890. Page 4. Geelong Advertiser. 23 October 1890. Page 4

[41]. Mk.1, 6" Elswick Ordnance Company (EOC) guns on naval mountings. Report of the Military Committee 1901. 17/10/2015 Frank Garrie email correspondence with Keith Quinton.

[42] Herald. 25 June 1908. Page 1

[43] *Conservation Management Plan for the Command & Staff College Fort Queenscliff*: Vol's 1 & 2. Allom Lovell & Associates Pty. Ltd. 1982

[44] *Shortland's Bluff Battery – Queenscliff 1863-1879.* Quinton K, Slaney R. & Hose S.; Blurb Books, 2011.

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SOUTH CHANNEL FORT



EXISTING SIGNIFICANCE STATEMENTS

South Channel Fort is listed on the Victorian Heritage Database which describes its significance as follows:

What is significant?
South Channel Fort, constructed between 1879 and 1888, was designed by Colonel Peter Scratchley of the Royal Engineers using the 'Twydall Redoubt' principles of sand parapets to be the key fort in the network of the outer defences of Port Phillip protecting it from anticipated naval attacks in the late nineteenth century. The fort was intended to play a key role in holding enemy ships in a triangle of fire between Queenscliff, Point Nepean (or Point Franklin) and its own guns; and to lay, control and test the minefield in the South Channel.

The fort is an artificial island built up on 14,000 tonnes of bluestone boulders and concrete with sand overburden. It is 121.9 metres long, 76.2 metres wide and 6.4 metres high above sea level. The fortifications comprise a concrete and red-gum military dugout bunker system which is mainly underground with some areas breaking the surface as gun emplacements facing south and as a service yard facing north. The system includes ammunition magazines, kitchen, officer's quarters, storage areas and power room connected by a network of tunnels. The heavy gun battery originally consisted of five guns, of which only a 6 inch gun in the centre and an 8 inch 'disappearing gun' on either side of the island have survived.

The sandy soil supports a shrubland of coast saltbush (*Atriplex cinerea*), seaberry saltbush (*Rhagodia candolleana*), bower spinach (*Tetragonia implexicoma*) and taupata (*Coprosma repens*). The understorey includes great brome (*Bromus diandrus*) and buffalo grass (*Stenotaphrum secundatum*).

How is it significant?
South Channel Fort is of historical and architectural significance

Why is it significant?
South Channel Fort is historically significant for its association with the defence of the Port of Melbourne, protection of the entrance to Port Phillip and the main shipping channel. The fort is the only known place where the Twydall principles for a defence layout were applied to an island fortification.

South Channel Fort is architecturally significant for its revolutionary design using camouflage and new methods of protection against bombardment, for its armament, and for its relative intactness. The disappearing or hydro-pneumatic guns are of particular significance for their early date and rarity of the 8 inch guns.

The fort is also of interest for its range of vegetation which includes prickly shrubs used as a deterrent to attack.

SOUTH CHANNEL FORT

Keith Quinton - AAHU Researcher - Fort Queenscliff Museum

DESCRIPTION

Total Area: 7082 m2 Location: 5.6 km off shore from Sorrento

A man-made island incorporating six concrete emplacements for Hydro-Pneumatic and Balanced-Pillar mounted guns. The islands earth revetments cover a concrete and red gum military bunker system with exposed areas at the rear. The Victorian Government established the fort to protect South Channel minefield - part of a comprehensive defence infrastructure utilizing the network of 'Great Sands' to prevent enemy warships entering Port Phillip. Following Federation the island was transferred to Commonwealth control. It was not used for defence beyond WW1 (1919) and remained derelict - occasionally used by the Ports & Harbours Dept. to store explosives for deepening the Rip entrance.

SIGNIFICANCE

As the principal Port Phillip channel fortification in the late 19th Century defence of Melbourne, South Channel Fort plays a key role in understanding Victorian Military & Naval history. Constructed on the Great Sands between 1885 and 1891, the fort was a six gun mixed-calibre battery, tasked with protecting an electrical minefield by engaging attacking warships and illuminating the eastern portion of South Channel with arc-searchlights during 'counter-mine' night-attacks. It is a significant asset of world-wide significance - as an outstanding example of late 19th Century purpose-built military fortification utilizing advanced engineering and ordnance technology.[1]

HISTORY

South Channel Fort 1870 – 1882

Lieut.-Colonel Peter Scratchley produced the 'Defence of Victoria Report - 1879'[2] which detailed plans premised upon information Sir William Jervois had gathered at the War Office in 1878 while on leave in the UK.[3] The report recommended establishing defences at Queenscliff, Point Nepean and Swan Island - with a suggestion that a pair of sea forts should be constructed on the shoals in Southern Port Phillip. Jervois also informed Scratchley torpedo minefields were viewed by the War Office as essential to any Harbour defence.

Scratchley subsequently proposed a sea-fort at South Channel:

> …. for five powerful muzzle-loading rifled guns to seaward and three 80-pounders bearing on the shoal waters in flank and rear. The borings indicate that at the site between the West Channel and Symonds Channel there is a depth of almost ten feet, and at the site near No. 5 buoy, about twenty feet of sand resting upon sandstone. In either case a good foundation may be formed by enclosing the requisite space by piding of practically impermeable material - shod with iron and placing a thick layer of concrete, up to a level of about eighteen inches above low water on the space thus enclosed. A ring of rubble stone should be thrown in round the foundation, to protect it against injury that might otherwise occur from the action of the sea at the level where the piling enters the sand. On the foundation thus formed, a basement of masonry and concrete may be built, which will contain the requisite torpedo and store rooms, the tanks, and magazines for the work, and upon this basement will be placed the battery and the accommodation for the artillerymen to man the guns. The five seaward guns will be in casemates; protected by an iron front, and the three other pieces will be in open battery, each gun having a wide sweep. Considering the length of the ranges, both at the entrance and upon the anchorage, it is proposed that the heavy Rifled Muzzle Loading pieces (RML) at the two forts on the shoals, as well as at Point Nepean shall be 11-inch RML 25 ton guns. [4]

Each fort would cost an estimated £200,000 - £300,000.

A construction contract (£8,996) for a rubble annulus on the Great Sand was commenced by Messrs. Noonan Bros. near the No.5 buoy on 4 August, 1879, and completed on 12 May 1880. A second annulus fort remained under dispute, with Jervois preferring a location inside West Channel, and Scratchley favouring Pope's Eye shoal.[5] The decision on position remained open in spite of an 'overabundance' of Defence Inquiries and Committee Reports.[6]

Captain Ellery,[7] commandant of the Williamstown-based Torpedo Corps, ordered one hundred 100-lb mine cases in 1879 and used a small steamer and two picket boats to practice laying mines stored aboard the hulk *Deborah* at Williamstown. During Easter the Corps practiced transporting the mines 30 miles by barge, '…. for laying down in the narrow portion near the little fishing village of Rosebud, just beyond Dromana.'[8] Jervois specified that a torpedo depot should be located at Swan Island - behind a traverse to cover the buildings from view.[9]

In 1880, Sir Thomas Bent (Commissioner of Public Works) told Parliament tests conducted at the Royal Artillery Shoeburyness range against an iron facsimile target of Plymouth Breakwater Fort, indicated fortifications at sea level should be stone and concrete vaulted casemates with guns protected behind armour plate. [10] As Imperial demands for armour-plate could not be met it was unlikely colonial requests would be supplied. [11] A recommendation from Victoria's Chief Harbour

Master (C.B. Payne) to dredge the 'dog-leg' Symond's Channel as the sole entry to Hobson's Bay failed to gain acceptance, but, temporarily placed doubt on the need for South Channel Fort. [12]

In early 1882 Scratchley quoted Jervois as proposing '…. the use of smaller calibre guns of improved range, although, the precise pattern to be adopted should be determined after communication with artillery authorities in England.' [13] Jervois thought:

> …. the superstructure, the massiveness of the work and the thickness of the iron front of the casemate should be such as to meet …. the increased power of artillery, bearing in mind that the powerful guns which it is proposed to adopt in the defence will be capable of preventing any armoured vessel likely to appear in Australian waters from engaging the fort, except at a very distant range. [14]

The *Argus* newspaper reported the structure would be a two-level sea-fort, costing about £80,000 and mounting two 10-inch 25-ton guns in cupolas (turrets) with several small side guns for the protection of the torpedo defences. Instead, the government expended £150,000 on a flotilla of gunboats and torpedo boats, while arming the batteries at Swan Island, Queenscliff, and Point Nepean. [15]

Russian moves against the Ottoman Empire (1881) and the British-French naval bombardment of the Egyptian port at Alexandria (1882) acted as catalysts to resolve the outstanding issues. Victoria's Acting Agent-General in London, Charles Pasley, set about acquiring ordnance for the land batteries. [16] Two unarmoured Rendel 'flatiron' gunboats were also purchased from Armstrong Mitchell & Company, with three torpedo boats ordered from Thornycroft. [17] [18]

Delays during 1883 were attributed to Sir Frederick Sargood (Defence Minister) and James Service (Premier) interacting with Robert Murray Smith (newly appointed Agent-General in London), who reported Sir Andrew Clarke (Inspector General of Fortifications 1882-1886) and Captain G. S. Clarke R.E. were suggesting radical changes to the whole Jervois scheme at Port Phillip. Clarke held that '…. if ground mines could be laid across the Heads, either between Point Nepean and Queenscliff, or Point Lonsdale, the natural line of defence would leave nothing to be desired.'[19] Both Scratchley and Jervois believed the War Office Fortifications Committee - mandated to approve all colonial fortification plans - had been overly influenced by General Clarke and Captain Clarke.[20]

Although the term ‘War Office’ implies a significant military organization, it occupied a single room of Cumberland House in Pall Mall.[21] The ongoing evaluation of advances in ordnance and armour plate almost certainly delayed decisions essential to finalizing South Channel Fort.[22] Based on a detailed analysis of gunnery implications from the Royal Navy bombardment at Alexandria, Sir Andrew Clarke recommended a broad sweep of ‘necessary changes’ to British fortification structures and ordnance types.[23] His case was unambiguous - the huge expense of constructing ironclad forts and iron-shield casemate batteries was completely unnecessary, shown by the Egyptian earth or sand parapets that had rarely been struck. The attacking ironclads had found it necessary to anchor well within enemy gun range to achieve any degree of accurate fire. Close range fire from anchored warships was dismally ineffective and Clarke emphasised breech loading guns mounted on Hydro-pneumatic carriages appeared ideal for coast defence batteries - as they amply shielded guns from direct fire.

When Sir Peter Scratchley left Melbourne to retire from military service, he continued to provide advice on Port Phillip’s defences. Scratchley concluded an order for Hydro-Pneumatic ordnance at South Channel Fort in 1884, following recommendations from Major-General (ret.) E. Harding Steward R.E., who had gained the full approval of Sir Andrew Clarke and the War Office. [24] The design of South Channel fort was:

> …. before Sir Andrew Clarke, and a copy is going by the mail to Sir W. Jervois. The latest ideas on the construction of forts in the water have been adopted. The armament decided on is: - one 10-inch RBL of 27 tons in a cupola, with all-round fire; two 8-inch RBL of 11 ½ tons on hydro-pneumatic carriages in pits (one on each side of the 27 ton gun), with overhead steel shields …, [and] …. adding quick-firing guns to the armament has been adopted because it was found that to attempt to place all the guns on the fort itself would have increased its area so greatly as to augment the cost unnecessarily. By January I hope to have the most important of Sir John Coode's and General Steward's drawings ready for transmission to Melbourne, and I see no reason why a contract for the fort should not be entered into about July, or August, 1884.[25]

Three UK ordnance manufactures were developing hydro-pneumatic gun mounts. Moncrieff’s ‘Easton & Anderson Company’ (E& A); Armstrong’s ‘Elswick Ordnance Company’ (E.O.C.); and the ‘Woolwich Royal Carriage Department’ (R.C.D.). Each forwarded a design to be tested by the Director of Artillery - 8-inch at Elswick; 9.2 inch at Grain; 10-inch at Landguard and Shoeburyness.[26] Harding Steward indicated he had accompanied Colonel Moncrieff to Elswick in January 1885, to observe progress with three 8-inch HP guns being manufactured for Victoria. One gun and HP carriage were complete and ready to be proofed, two were half built, and, the massive 10-inch BL

gun and HP carriage for Eagle's Nest Battery was ready for consignment in 1886. Plans to mount heavy calibre ordnance in cupolas at forts Queenscliff, Nepean and South Channel, had been abandoned at a meeting held at Melbourne on 18 July 1884, to brief the newly arrived Governor of Victoria, Sir Henry Loch. Those present included Admiral Tryon, Colonel Disney (Commandant) Major Ellery (Commanding Submarine Miners), Jervois and Scratchley. [27] The meeting accepted the need for a fort at Pope's Eye shoal, changes to the ordnance order, and reconsideration of the existing fortifications design. [28] [29] They opted for '…. an extension of the stone annulus (South Channel) …. to form a harbour in which the torpedo boats could be stationed and sheltered by the fort, …. the specifications will be prepared and tenders called for the main work, which will be built on a foundation of cement concrete cylinders a class of work not yet undertaken in Victoria and which will require great care in executing to hold the heavy superstructure'. [30]

The UK House of Commons had been extremely reluctant to fund hydro-pneumatic gun carriage tests in the 1885 Estimates.[31] Instead, the War Office requested one of Victoria's Armstrong 8-inch HP guns undergo testing at Shoeburyness, to fully evaluate the Hydro-Pneumatic carriage system before delivery of the gun to Victoria. War Office gratitude was conveyed to Victoria's Premier, James Service, via Harding Steward - as a series of mechanical faults were found, corrected, and applied to subsequent hydro-pneumatic carriages. [32] On assembling the three 8-inch HP carriages in Victoria slight variations were found - preventing the interchange of parts. In October 1885, a Parliamentary inspection found three guns at South Channel Fort – one 9-inch RML 300-pdr gun, one 8-inch BL gun (unproofed) on H.P. carriage, and one Vavasseur mounted 6-inch BL gun. In December the government ordered HP carriages being constructed for its 80-pdr guns, to be adapted for 5-inch BL guns – ordering fifteen guns - two designated for South Channel Fort.[33]

In February 1885, F.T. Sargood (Minister of Defence) had forwarded a memo to Victorian Military Commandant, Colonel Disney, stating, '…. the original design for the South Channel Fort had been considerably modified owing to recent improvements in gunnery, and that during the construction of the fort the main defence must be by torpedoes covered by the guns of our warships, supplemented by the guns in the temporary emplacements on shore.'[34] Palpable fear of invasion during the 'Afghanistan Panjdeh War Scare' in March 1885[35] placed the government under extreme pressure to complete the Heads defences. A pair of 9-inch 300-pdr RML gun were temporarily

transferred from Swan Island and mounted on piles in 5-8 feet of water inside South Channel annulus.[36] The piles were sheeted and the inside space filled with concrete surmounted by two 40-ft x 40-ft red gum platforms with protective sand bag walls. [37] Three lines of electrical contact (EC) torpedo mines were then layed along South Channel.

> The very important branch of the work, that of laying the submarine mines, was commenced today, and it is said that in the next two days no fewer than 150 mines will be placed in position, but it would of course frustrate the objects of the Government to indicate the positions they are to occupy. Every precaution will, however, be taken to prevent danger to merchantmen. The mines are to be connected by means of electricity with a telegraphic station on shore, so that the moment a vessel comes in contact with one its number will be instantly indicated to the operator, who may at once explode the mine.[38]

The July 1886 Defence Report stated, '…. the two 9 inch muzzle-loading guns mounted temporarily last year have been replaced by the far more powerful 8-inch breech-loading guns, and the fort, although not yet complete as regards the interior, has now become a strong element in our defences.' Mr Dacres (representing Sir William Armstrong and Co.) tested the first 8-inch gun and HP carriage in January 1886, with Colonel Walker expressing pleasure at the prospect of having all new breech loading guns similarly mounted. Maximum range with a 100-lb powder charge for the 8-inch 180-lb studded projectiles was 9,000 yards, and at 3,500 yards they could penetrate 12-inches of wrought iron. [39] The second gun arrived aboard *S.S. Midlothian* in May 1886. Shortly after, on the night of 21 July 1886, *Guichen*, (a French war-sloop armed with four 62-pdr BL guns) passed through the Heads unsanctioned and unchallenged, and next morning calmly lay at anchor off Williamstown seeking to renew coal supplies before taking up station at New Caledonia. This failure to challenge entry of a foreign warship highlighted the inadequately manned Heads defences.

In January 1887 the *Argus* reported:

> ... two 8-in breech loading Armstrong guns are mounted on hydro pneumatic disappearing carriages, and one 6-inch breech-loader is on a Vavasseur carriage. The magazines for the supply of these guns are nearly complete, as is also the torpedo cable. The test room and quarters are nearly ready for the fittings. The whole of this latter work has been constructed of redgum and bluestone concrete. The sand filling from the annulus to the emplacement wall of the guns already mounted is complete. They are now preparing the foundations for a 5-inch breech loading gun, with the necessary magazines, to be mounted on the north-west angle of the fort.[40]

A *Geelong Advertiser* correspondent joined Captain Ind, Lieutenants Umphelby and Wallace, the Victorian Armourer, Mr Harting, and drill instructor Mr. Fryer, to fire the South Channel 8-inch guns on 22 January 1887, firing three shots towards a floating Hong Kong target at a range of 6,000 yards.

Ind aimed the two guns without sights and each shots fell within sufficient range and line to be deemed 'creditable'.[41] Landing piers were erected behind a breakwater beyond the wing wall at the western end of the fort and by mid-year the right flank 5-inch HP emplacement was complete, with the left emplacement under construction. An electrical switch-room was fitted out and a generator installed, although neither were utilized. In early 1888 the 6-inch Vavasseur gun was replaced by a 4.7-inch QF gun. The ordnance configuration was finalized by adding two 6-pdr QF guns mounted on 'hydraulic balanced-pillars and Gatling machine guns located on the revetment. [42] [43] B. A. Pickersgill was presented with a gold watch and chain to mark the completion of work at South Channel on 23 October 1889.

In early 1887 the *Weekly Times* published a series of six articles describing a hypothetical naval attack on Melbourne with a combined squadron of the five largest Russian and French armoured cruisers serving in the Pacific region, accompanied by three transport ships carrying a landing force of 5,000 troops.[44] The listed warships mounted 62 guns - of calibres from 240 mm to 140 mm. This was sufficient, the anonymous author believed, to overwhelm the fortress guns at the Heads within two days. Port Phillip's defence would then rely upon South Channel Fort, the electrical minefield, and the Victorian harbour defence squadron, to hold off attempts to open a counter-mine channel into the open waters of central Port Phillip. This analysis was clear evidence of the perceived significance of South Channel Fort to Victoria's defence plans.

It is probable the guns at Point Nepean and Queenscliff were less susceptible than suggested in the 1887 articles, although, HP carriages in the Heads batteries became defective due to exposure to harsh sand and salt conditions, or, faulty seals on the hydraulic rams. Gun sights and elevation gear also proved extremely difficult to maintain. The solution was Robert Harding, a railway apprentice-artificer from the Williamstown Railway workshops. Harding resolved multiple failures and maintenance problems with HP carriages over the next half decade. He was given a grant of £150 for his improvements to percussion locks on BL guns and appointed as 'Inspector of Ordnance Machinery'.[45]

During Easter 1889 the *Age* reported:

> …. in addition to the two electric lights at Queenscliff, and the similar one at Point Nepean, there has been this year another powerful illuminant used at the South Channel fort. The generator at that outpost had only been once previously utilised, and that was an

> experimental trial (during a night attack which was made upon the fleet last Easter. On this occasion it was found to work in a very satisfactory manner, and was more especially useful during the torpedo operations of last Saturday evening. The light is a fixed beam of 20,000 candle power, the same intensity as those at the Heads. It is merely intended to illuminate the waters in that part of the South Channel where the submarine mines are laid. When the construction and fitting of the battery is completed a revolving electric light will be placed there, which may be used for searching purposes in all directions. [46]

Finally complete, the fort's mix of 8-inch and 5-inch BL guns, supported by QF guns and machine guns, would have mounted a powerful defence against any attempt to counter mine the South Channel minefield zone, which extended for 3,000 yards westward towards Port Phillip Heads. Defence of the western end of South Channel was supported from Fort Franklin, Portsea, where a massive 10-inch BL gun from *HMVS Victoria* had been emplaced in 1888. South Channel Fort required a garrison of 100 - 120 officers, artillerymen and engineers to man the guns and work the contact submarine mines. Rarely operated by a full garrison - beyond annual Easter manoeuvres - the guns were normally serviced by small groups of visiting artificers, while the electrical switch room and engine room were maintained by engineers and the submarine mining corps from Swan Island. Parliamentary disinterest in maintaining a garrison was largely due to the failure of Victoria's 'Land Banks' causing a financial depression during which funding for defence was slashed (1889-1893).

In 1906 South Channel Fort was declared redundant following a decision to rely upon 6-inch MK VII guns being emplaced at Fort Queenscliff, Fort Nepean, and a new battery – Fort Pearce. However, a small contingent of R.A.G.A. and R.A.E. were sent to South Channel fort following the declaration of war in August 1914, although no mine field were layed in South Channel.

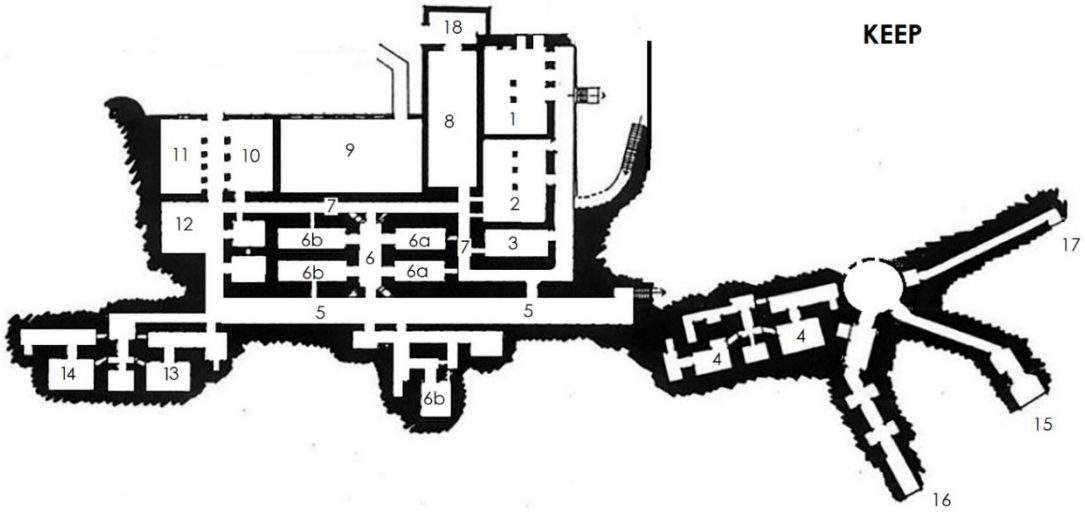
STATEMENT OF CONDITION / INTEGRITY

Where mass concrete is fully exposed to the elements there are signs of deterioration. Across the site exposed metalwork is also in poor repair, due to extensive & unresolved salt corrosion. The fortification was declared redundant in 1906 as major changes to modernize other fortifications commenced during the extensive Commonwealth defence review – leading to the scrapping of most 19th Century ordnance Mk.'s.

Rarely visited, other than by the Victorian Ports & Harbours Department (who for a time utilized parts of the Keep as an explosives magazine) South Channel Fort remained structurally intact.
There is one badly corroded HP mount. No guns remain.

South Channel Fort is listed on the Register of the National Estate for historic significance and conservation importance as a breeding site for the White-faced Storm-petrel. Parks Victoria has an effective *Conservation Management Plan – 2006*. There site features a range of signage explaining the history and key features. Visitation is open, although entry to the Keep remains restricted.
Due to the island's isolated offshore location visitor numbers are low.

MAP APPENDICES



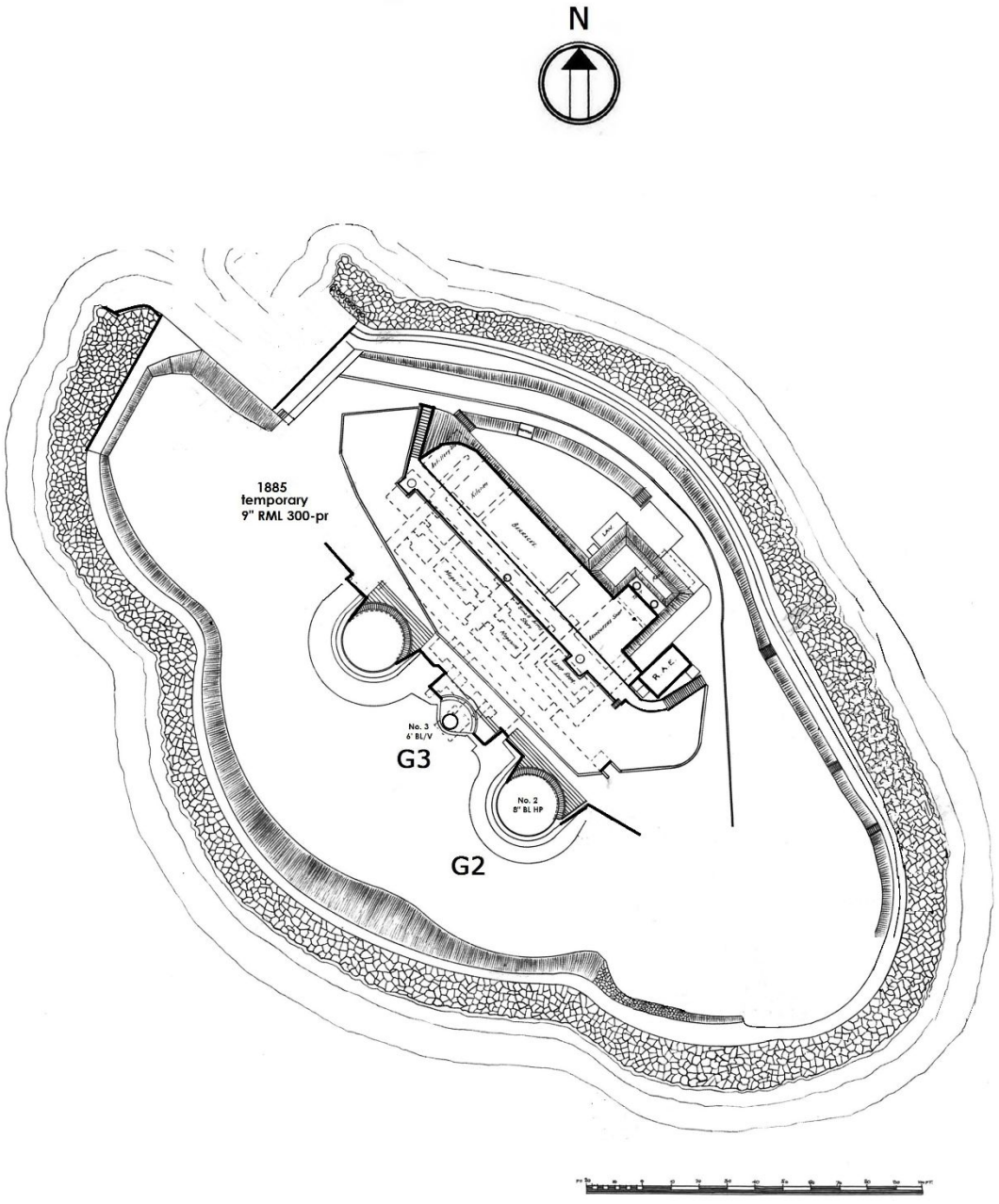
KEY TO KEEP

1	TEST ROOM
2	ARMOURERS STORE
3	LAMP ROOM
4	6-PDR QF MAGAZINES
5	MAIN PASSAGE
6	MAIN MAGAZINE PASSAGE
6a	POWDER MAGAZINE
6b	SHELL MAGAZINE
7	LAMP PASSAGE
8	ENGINE ROOM
9	BARRACK
10	KITCHEN
11	OFFICERS
12	EXAMING ROOM
13	6-PDR QF MAGAZINES
14	6-INCH GUN MAGAZINE
15	SEARCHLIGHT 1
16	SEARCHLIGHT 2
17	OBSERVATION POSITION
18	COAL STORAGE

1885

SOUTH CHANNEL FORT

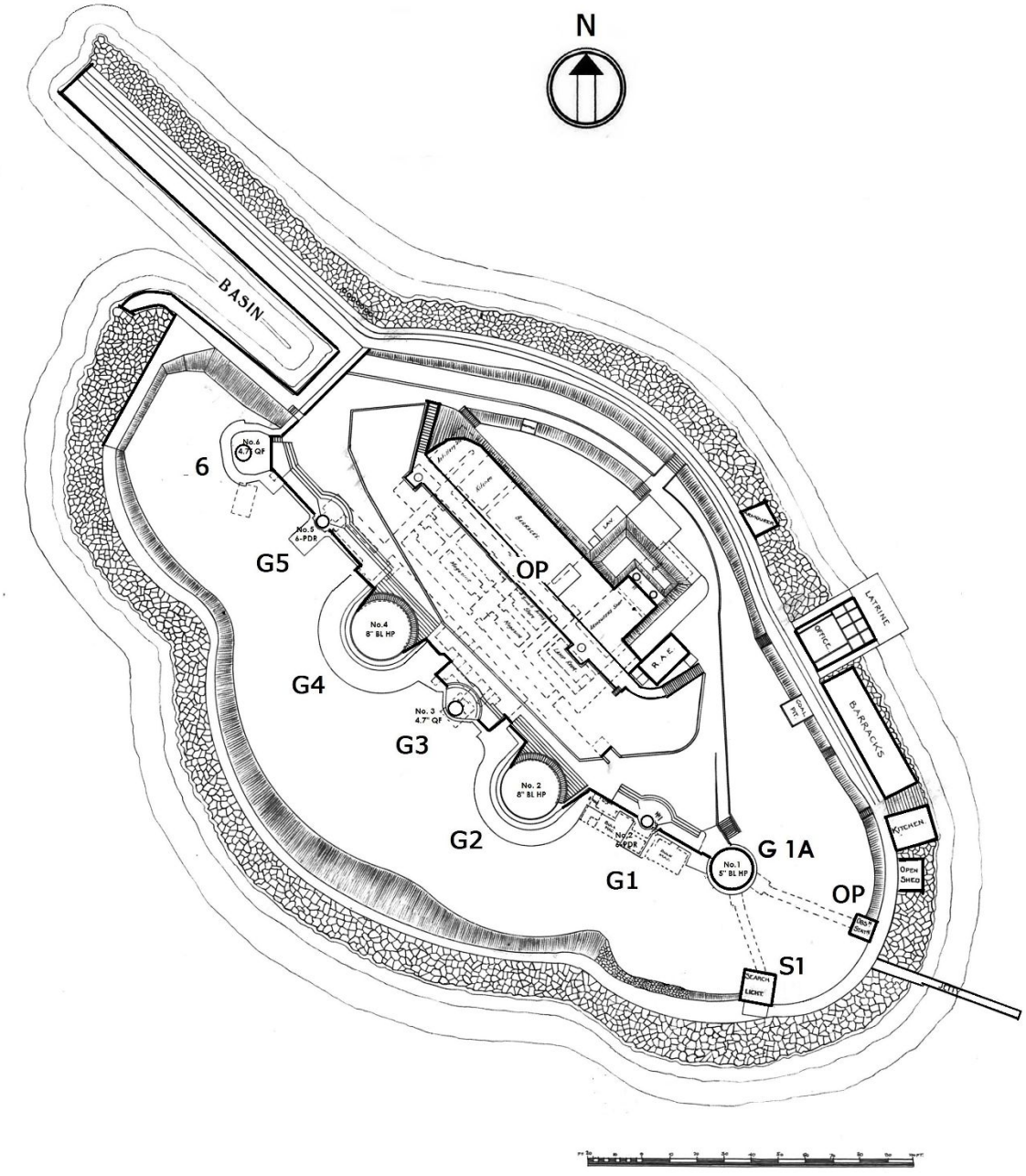
1



1891

SOUTH CHANNEL FORT

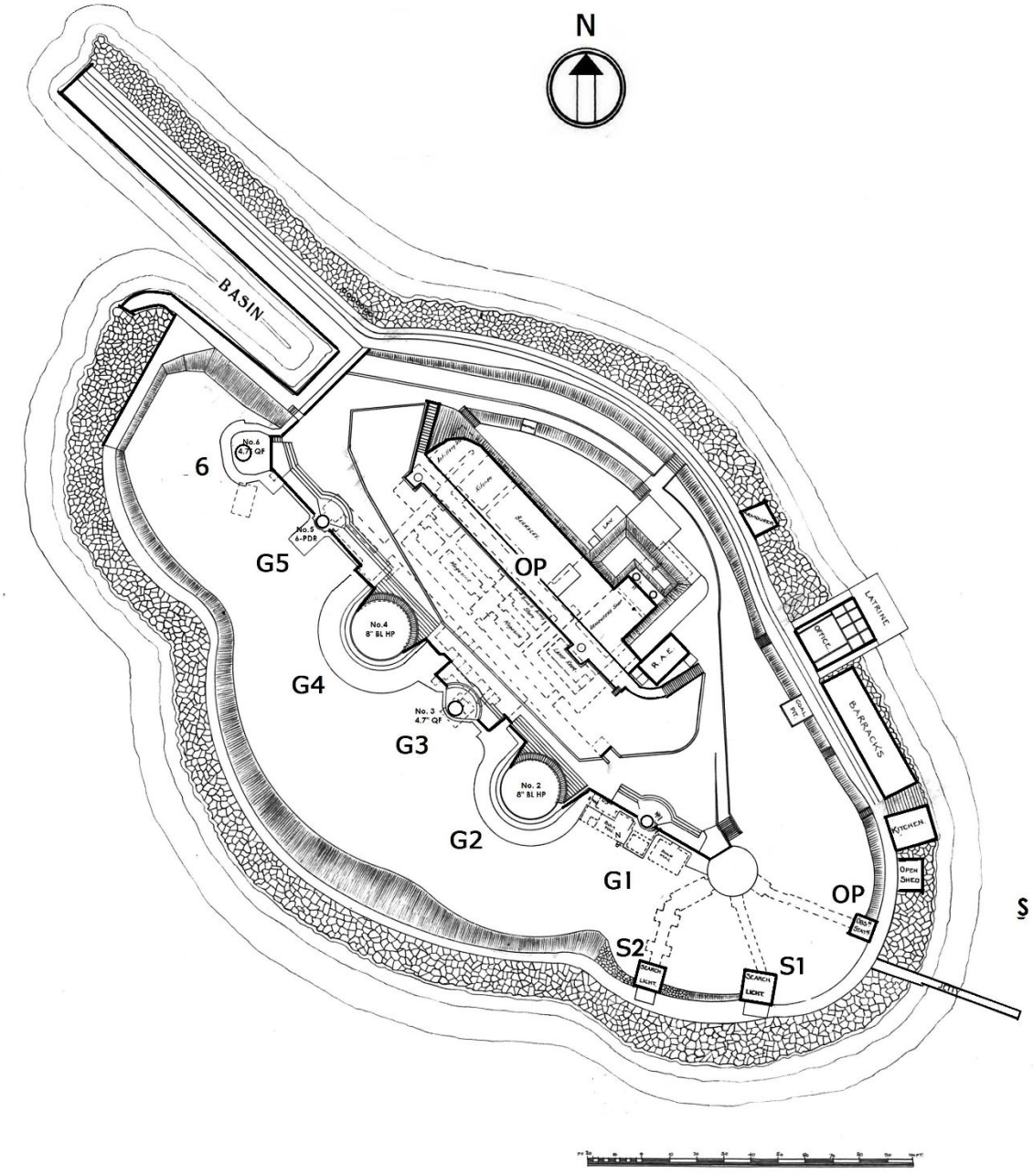
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1900

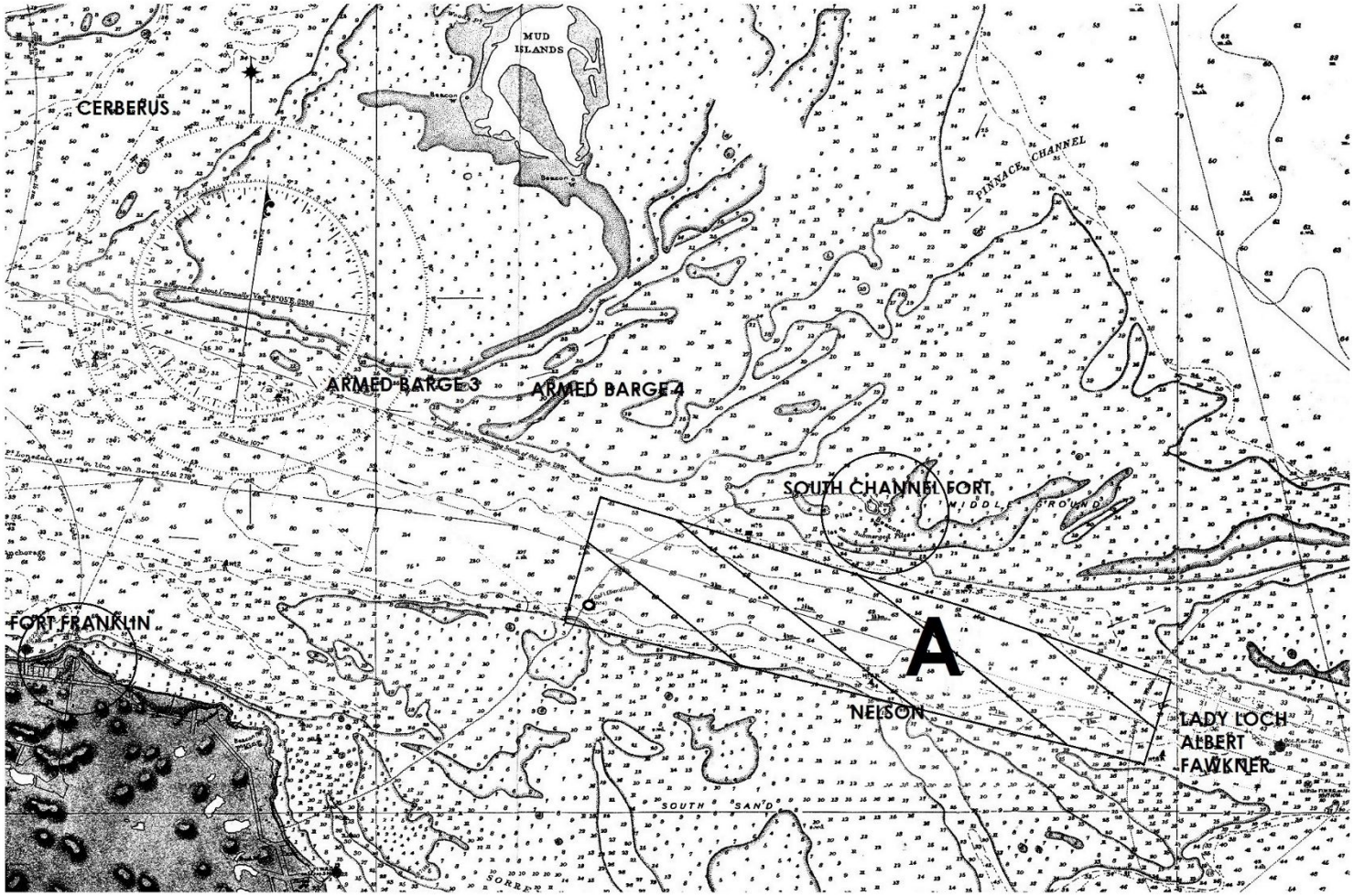
SOUTH CHANNEL FORT

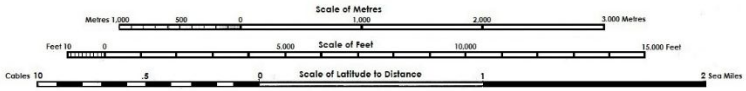
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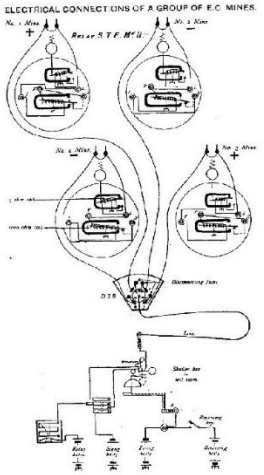
SOUTH CHANNEL FORT & VICTORIAN NAVY



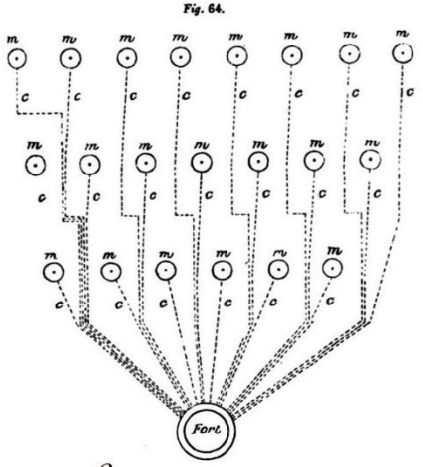


Potential Zone of Submarine Mines in South Channel
A run of mines was normally over 3.000 yards with mines in clusters of four - placed at least 50-feet apart

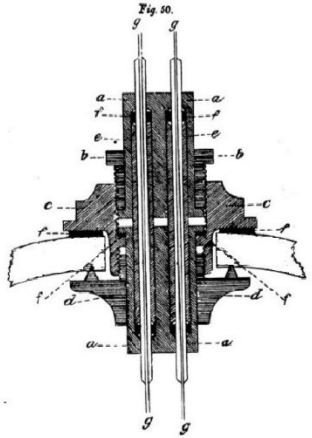
MAP KEY
A MINE ZONE



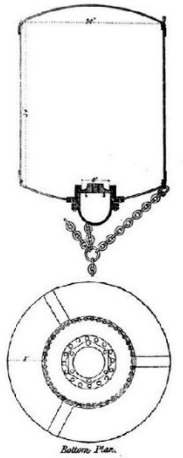
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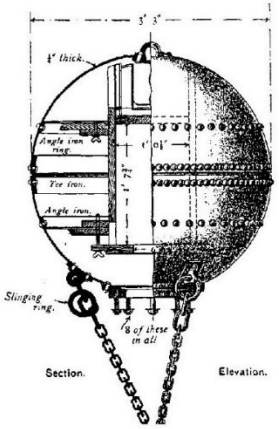
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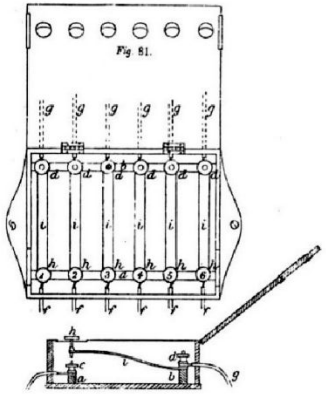
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4

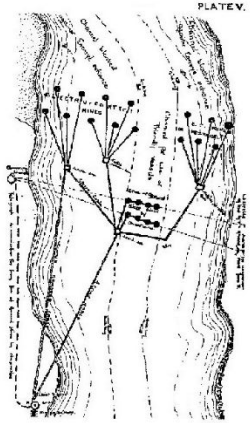


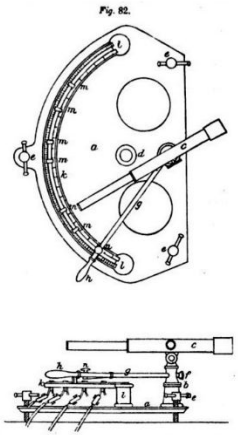
5



6

7





8

Images: Torpedoes, Ofensive & Defensive Major R. H. Stotherd R.E. 1872

1 *Testing circuit*
2 *Marked minefield plan*
3 *Watertight Connector*
4 *250-lb gun-cotton Mine*
5 *100-lb Mk.111 E.C. Mine*
6 *Boxed Firing-keys*
7 *Contact & Observation Mines*
8 *Telescope firing instrument*


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CLEARANCE
© Lester Hunt

Endnotes

[1] Refer to Parks Victoria - South Channel Fort Conservation Management Plan https://parkweb.vic.gov.au/__data/assets/pdf_file/0019/313435/South-Channel-Fort-Conservation-Management-Plan.pdf

[2] GP V 1879/80 no. 79 DEFENCES OF VICTORIA REPORT by His Excellency Colonel Sir W. F. Drummond Jervois

[3] S.A. Governor *Sir William F. Jervois* returned to the UK on leave - 13 February, 1878 - returning to S.A. - 14 August, 1878

[4] GP V 1877-78 No.46 Victoria – DEFENCES, Preliminary Report 1877 – Sir William F. Drummond Jervois.

[5] By 1890 there had been ten individual reports, two by Defence Commissions, and two from Select Committees of Inquiry.

[6] The Argus. 7 June, 1882 - page 10. *The Defences of Victoria. Report: Against: - Sir Andrew Clarke, RE, Major General Schaw. Reports In Favour – Lieut-General Sir William Jervois, Rear-Admiral Tryon, Major-General Scratchley, Major-General Stewart, Captain Thomas, Major-General Edwards, Admiral Lord Charles Scott, Major-General Tulloch.*

[7] Robert L. J. Ellery – was Victorian Government Astronomer at Williamstown and Capt. Commandant of the Torpedo & Signal Corps.

[8] Argus. 27 March 1878 - page 7. *The Torpedo defence of South Channel*
Leader. 25 May 1878 – page 20 *Our Torpedo Stores*
Sixty 100-lb mines were taken to Rosebud using the small steamer - 'Pilot' and two boats. They were layed at the eastern end of South Channel in two lines 'en echelon,' each mine about 50-ft apart. Ellery reported he would prefer three lines, with mines 200-ft apart, but had been restricted by the amount of available cable. Rough weather had caused considerable movement with cable running between the shore and South Channel. Three 100-lb mines were exploded as a demonstration on the last day.

[9] GP V 1879/80 no. 79 DEFENCES OF ***VICTORIA***. ***REPORT*** by His Excellency Colonel Sir W. F. Drummond Jervois

[10] The Argus; 10 April 1880 - page 8

[11] The Argus. 10 April, 1880 – page 4. *Harbour Defences*

[12] The Age; 7 August 1880 - page 6

[13] GP V 1882/83 No.34. REPORTS AND SUGGESTIONS RELEVANT TO THE DEFENCE OF VICTORIA – 1882, paragraphs 4-10

[14] Letter from Sir Wm. Jervois to the Governor of Victoria, Marquis of Normanby, outlining the *Second Jervois Report on the Defences of Victoria*

[15] Riverine Herald (Echuca) 6 November, 1885 – page 2

[16] Charles Pasley R.E. (1824-1890) Victoria's Acting Agent-General in London (1881-1882) He was appointed colonial engineer of Victoria in April 1853 and designed the first battery at Point Gellibrand, Williamstown.

[17] HMVS Victoria & HMVS Albert – Rendel designed Armstrong Alpha-beta gunboats

[18] Thornycroft 3rd -class torpedo boats - TB Lonsdale, TB Nepean and a 1st-class vessel - TB Childers

[19] Kitson, Michael. 1999. Brennan Torpedo, Monorail and Helicopter: A study of innovative activity in the process of forming three related military weapons. Page 151

[20] Kitson, Michael. 1999. Brennan Torpedo, Monorail and Helicopter: A study of innovative activity in the process of forming three related military weapons. Page 153

[21] A former London Palace of the Duke of Cumberland, purchased by the Board of Ordnance in 1806.

[22] Plans in the Australian National Archive of the 'Heads' forts and gun batteries were drawn at Melbourne, most under the supervision of John Blackbourn, C.E. - Victorian Defence Engineer (1884-1900). The location of related War Office drawings for Port Phillip remain unknown – with the exception of sketch plans by Major-General Harding Steward, c.1888, for a Zalinski gun battery at Observatory Point, Point Nepean.
[23] *The Protection of Heavy Guns for Coast Defence* (For the use of the Board of Fortifications or other Defences) 1884

[24] Major E. Harding Steward (Fortification plan section, War Office, 1872-1878) was also a member of a *'Special Committee Examining Heavy Guns in relation to Moncrieff Gun Carriages*' in 1870. In 1868 he published an extensive paper on *'Electrical torpedo mines as a means of defence.'* In 1864 he published a paper, *'Notes on Armour Plated Turrets- Commonly called Cupolas' - in 'Papers on subjects commonly connected with the Corps of Engineers.'* In mid-1884 Harding Steward forwarded the various War Office fortification drawings for South Channel Fort after replacing Major-General Scratchley as Victoria's Military Advisor.

[25] The Argus 1st January, 1884; page 3. *'Major General Scratchley in England*'

[26] Victorian Forts and Artillery. The Hydropneumatic Disappearing Mounting
https://www.victorianforts.co.uk/art/disappearing.htm

[27] The Argus 26 February, 1885; page 6 - *'Defence of the Colony.'*

[28] Three 9.2-inch BL guns with hydro-pneumatic EOC carriages ordered July 1885. Not delivered until 1888-89. Eight 6-inch BL guns on Vavasseur carriages for distribution around the forts. Four 5-inch BL guns with HP carriages (then being fitted to British cruisers) ordered July, 1885; but not delivered until July, 1887.

[29] S.A. Register, 27July, 1885; page 5 - *'Victorian Defences.'*

[30] The Argus. 7 February, 1885; page 8

[31] House of Commons Adjournment Debate. February 2, 1887 Mr Robert Webster. '*Arming of Coaling Stations''*
The Royal Commission on Naval and Military Departments. House of Lords Debate. 29 March 1889 vol. 334 cc 1125-39

[32] The Argus. 19 May, 1885. Page 6 - *New Gun Carriages for Victoria*

[33] The original order had been for twelve HP carriages to carry 80-pdr ML guns already in the colony, and included three 9.2-inch BL guns and HP carriages.

[34] South Australian Register 2 February 1885. Page 6

[35] The Panjdeh border incident between Russia and Afghanistan, March 1885, almost led to a declaration of War between Great Britain and Imperial Russia.

[36] Weekly Times. 28 March, 1885. Page 12. This work by the contractor Messrs. Thornton Brothers was overseen by Mr. W. H. Steel, Inspector-general of Public Works assisted by W. W. Gordon of the P.W.D.

[37] It is likely these platforms are part of the central underground 'red-gum' portion of the final fortress.

[38] Age. 1 April 1885 The Defence Works at the Heads. Page 6
One temporary firing station was placed at the South Channel annulus near the two guns, a second firing box was located at the leadlight marking the entrance to South Channel.

[39] GP V 1886 No.61. Report. The Council of Defence
Age 21 July 1886 page 6

[40] Argus. 22 January 1887. Page 10. *The Defence Works at the Heads*.

[41] Geelong Advertiser. 22 January 1887. Page 3. *The South Channel Fortifications.*

[42] Report of the Military Committee of Inquiry - 1901.

[43] Australian Star 5 June 1888. Page 5. *The South Channel Fort*

[44] Weekly Times. 12, 19, 26, February - 5, 12, 19, March - 1887 *An Attack on Melbourne, An episode of 1887, Parts I – VI* List of enemy ships - *An Attack on Melbourne, An episode of 1887. Parts 3.* Page 6

Vladimir Monomach (Russian) 5,796 tons, 7,800 h.p., 6in. of armour at the water line, carrying an armament of sixteen guns - four of 8-in, and twelve of 6-in. ***Turenne*** (French), 5,880 tons, 3 955 h p., 10-in of armour at the water line, carrying 12 guns - 4 of 240-mm, 2 of 180-mm, 6 of 140-mm, ***Triomphante*** (French), 4,600 tons, 2,400 h p., 6-in. of armour, carrying 6 guns of 24-mm., 1 of 180-mm, and 6 of 140-mm. ***Duquesne*** (French), unarmoured frigate, steaming seventeen knots, 5,700 tons, 8,000 h.p., carrying 21 guns — 14 of 140-mm, and 7 of 180-mm. ***Ilyin*** (Russian), steel torpedo cruiser, 600 tons, 3,500 h.p,, able to steam over twenty knots an hour, carrying seven I4-in. torpedo guns, 8 rapid-firing, 47-mm long range Hotchkiss guns, and six 37 millimetre revolving cannon, 21 guns in all.

[45] Victoria. Supplementary estimates 1890-91, page 4.

[46] Age. 23 April 1889 *Electric Lighting, Mining and Torpedo Operations*. Page 7

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SWAN ISLAND FORT



Aerial view of Queenscliff, Swan Island, West Channel & Point Nepean c.1950

1. Fort Queenscliff 2. Crow's Nest Battery 3. Swan island Fort 4. Naval Mine Depot 5. Pope's Eye annulus 6. Fort Nepean

(* Note the intricate spread of sandbars and shoals across the top of the image.)

Photographer: Francis Hodgson (1903-1982), State Library of Victoria - Accession No. H96.163/21

EXISTING SIGNIFICANCE STATEMENTS

The Swan Island Defence Precinct is on the **Commonwealth Heritage List**, where its significance is described as follows:

Summary Statement of Significance

Swan Island is significant as a cultural landscape containing a rich collection of historic elements including fortification earthworks, battery emplacements, underground command centre and tunnel network, jetties and buildings relating to the early and important theme of coastal defence in south-eastern Australia. The island fort was developed from 1877 in response to fears of Russian invasion of Britain's colonies in the late nineteenth century. (Criteria A.3 and A.4)

Swan Island is significant as an outstanding and intact example of the fortifications designed as part of the Victorian Colonial Coastal Defence System, which contributed to making Port Phillip Bay reputedly the most heavily defended harbour in the Southern Hemisphere in the late nineteenth and early twentieth centuries (Criteria A.4 and D.2).

The fort is significant as an example of late nineteenth century British military fortification design, including a distinctive V-shaped battery sited low and close to the sea, a rear garrison or keep, and extensive use of concrete, parapets and bursting layers of sand and concrete (Criterion D.2).
The island is a rare example in Australia of a fort designed to contain the facilities for laying, preparing, storing and transporting submarine mines. (Criterion B.2)

The fortifications and military structures on the island are significant for their association with the development of coastal defence methods and the rapid advances in artillery, mining and shipping technology during the late nineteenth and early twentieth centuries (Criterion F.1).

The fort and former submarine mining complex is significant for its ability to demonstrate the continuity of occupation of the island for military activities, from the 1870s to the present day. In particular, the variety of design and construction methods of the structures are important in illustrating the sequence and changing uses of the fort over time, from an army battery and naval mining depot to a military training facility (Criterion D.2).

The former garrison or keep is significant as an important and rare example of Colonial military architecture associated with coastal defence in Victoria (Criterion B.2).

The residences on the island are significant as representative examples of late nineteenth century military housing, illustrating architectural design standards and living conditions in that period. (Criterion D.2)

The design of the Swan Island Fort is significant for its association with Colonel Peter Scratchley, influential in the development of the Australian Defence Forces, and Colonel Drummond Jervois of the Royal Engineers and Deputy Inspector of General Fortifications in Great Britain. Scratchley and Jervois were responsible for the design of the Port Phillip fortifications system as part of Australia's coastal defence strategy (Criterion H.1).

The island is significant for its association between 1879 and 1921 with the Victoria Military Forces, the Royal Australian Engineers and the Royal Australian Artillery, encompassing an important period in the formation of the Australian Defence Forces (Criterion A.4).

The jetty structures are significant as examples of the fort's submarine mining activities in the harbour prior to the introduction of propelled torpedoes after World War One (Criteria A.4 and D.2).

The beach preservation works, including groins and seawalls built between c 1940 and 1972, are important for their association with earlier attempts to control sand movement and protect military structures on the island's eastern foreshore from the effects of beach erosion (Criteria A.4 and D.2).

The island contains significant specimens of mature cypress trees associated with the earliest period of occupation of the fort (Criterion D.2).

The wrecks of the 'Countess of Hopetown' and J-3 Submarine are significant for their association with the Royal Australian Navy's (RAN) coastal defence system, the 'Countess of Hopetown' serving as the principal harbour defence vessel during World War One. The J-3 Submarine is also significant for its use as a source of power to supply the military facilities on Swan Island.

The island also contains places of potential Aboriginal cultural significance and maritime archaeological relics still to be identified and assessed.

Official Values

Criterion A Processes

Swan Island is significant as a cultural landscape containing a rich collection of historic elements including fortification earthworks, battery emplacements, underground command centre and tunnel network, jetties and buildings relating to the early and important theme of coastal defence in south-eastern Australia. The island fort was developed from 1877 in response to fears of Russian invasion of Britain's colonies in the late nineteenth century and it reputedly became the most heavily defended harbour in the Southern Hemisphere in the late nineteenth and early twentieth centuries.

The island is significant for its association between 1879 and 1921 with the Victoria Military Forces, the Royal Australian Engineers and the Royal Australian Artillery, encompassing an important period in the formation of the Australian Defence Forces.

The beach preservation works, including groins and seawalls built between c 1940 and 1972, are important for their association with earlier attempts to control sand movement and protect military structures on the island's eastern foreshore from the effects of beach erosion.

Attributes
All of the constructed elements in their landscape setting that relate to the island's defence role.

Criterion B Rarity

The island is a rare example in Australia of a fort designed to contain the facilities for laying, preparing, storing and transporting submarine mines. The former garrison or keep is significant as an important and rare example of Colonial military architecture associated with coastal defence in Victoria.

Attributes
The constructed elements associated with laying, preparing, storing and transporting submarine mines, plus the former garrison or keep.

Criterion D Characteristic values

Swan Island is significant as an outstanding and intact example of the fortifications designed as part of the Victorian Colonial Coastal Defence System.

The fort is significant as an example of late nineteenth century British military fortification design, including a distinctive V-shaped battery sited low and close to the sea, a rear garrison or keep, and extensive use of concrete, parapets and bursting layers of sand and concrete.

The fort and former submarine mining complex is significant for its ability to demonstrate the continuity of occupation of the island for military activities, from the 1870s to the present day. In particular, the variety of design and construction methods of the structures are important in illustrating the sequence and changing uses of the fort over time, from an army battery and naval mining depot to a military training facility.

The residences on the island are significant as representative examples of late nineteenth century military housing, illustrating architectural design standards and living conditions in that period.

The jetty structures are significant as examples of the fort's submarine mining activities in the harbour prior to the introduction of propelled torpedoes after World War One.

The beach preservation works, including groins and seawalls built between c 1940 and 1972, are important for their association with earlier attempts to control sand movement and protect military structures on the island's eastern foreshore from the effects of beach erosion.

The island contains significant specimens of mature cypress trees associated with the earliest period of occupation of the fort.

Attributes
All of the structures, layout and planning noted above that demonstrate the fort's defence role, plus sea walls and mature cypress trees.

Criterion F Technical achievement

The fortifications and military structures on the island are significant for their association with the development of coastal defence methods and the rapid advances in artillery, mining and shipping technology during the late nineteenth and early twentieth centuries.

Attributes
Fortifications and military structures that demonstrate technological advances in both the nineteenth and twentieth centuries.

Criterion H Significant people

The design of the Swan Island Fort is significant for its association with Colonel Peter Scratchley, influential in the development of the Australian Defence Forces, and Colonel Drummond Jervois of the Royal Engineers and Deputy Inspector of General Fortifications in Great Britain. Scratchley and Jervois were responsible for the design of the Port Phillip fortifications system as part of Australia's coastal defence strategy.

Attributes
Aspects of the fort's design that demonstrate the influence of Scratchley and Jervois.

The **Victorian Heritage Database** describes its significance as follows:

Physical Description 1

The Swan Island Fort was established as part of the Port Phillip Bay defence scheme in 1879. There had been concern about harbour defences in the colonies from 1858, and the Russo-Turkish war of 1876 heightened international tensions about conflict in the Pacific Ocean. In 1877 a scheme was designed by Colonel Dummond Jervois (Deputy-Inspector General of Fortifications in Britain) and Captain Peter Scratchley. It was designed to defend shipping in Port Phillip and Hobson's Bays, and envisioned a threat by a raider cruiser squadron. The scheme, involving massive expenditure, comprised a forward defence system of forts at Port Phillip heads dominated by Fort Queenscliff and South Channel Fort (artificial island), and a network of coastal batteries. Some development of fortification had occurred in the 1850s, but it was the impetus of the Jervois-Scratchley reports which led to major work being undertaken in the 1880s. The overall defence plan involved a combination of guns, mines (known as electric torpedos) and ships to defend the entrance to Port Phillip Bay. Swan Island Fort would be used to protect the minefields in the harbour, and to engage enemy shipping that managed to pass the primary defences of Forts Queenscliff and Nepean.

The fort is significant as an example of late nineteenth century British military fortification design, including a distinctive V-shaped battery sited low and close to the sea, a rear garrison or keep, and extensive use of concrete, parapets and bursting layers of sand and concrete.

Veterans Description for Public

The Swan Island Fort was established as part of the Port Phillip Bay defence scheme in 1879. There had been concern about harbour defences in the colonies from 1858, and the Russo-Turkish war of 1876 heightened international tensions about conflict in the Pacific Ocean. The fort is comprised of about 140 hectares and is located 3km north-east of Queenscliff. Between 1879 and 1921 the island was associated with the Victoria Military Forces, the Royal Australian Engineers and the Royal Australian Artillery, encompassing an important period in the formation of the Australian Defence Forces.

In 1877 a scheme was designed by Colonel Dummond Jervois (Deputy-Inspector General of Fortifications in Britain) and Captain Peter Scratchley. It was designed to defend shipping in Port Phillip and Hobson's Bays,

and envisioned a threat by a raider cruiser squadron. The scheme, involving massive expenditure, comprised a forward defence system of forts at Port Phillip heads dominated by Fort Queenscliff and South Channel Fort (artificial island), and a network of coastal batteries. Some development of fortification had occurred in the 1850s, but it was the impetus of the Jervois-Scratchley reports which led to major work being undertaken in the 1880s. The overall defence plan involved a combination of guns, mines (known as electric torpedos) and ships to defend the entrance to Port Phillip Bay. Swan Island Fort would be used to protect the minefields in the harbour, and to engage enemy shipping that managed to pass the primary defences of Forts Queenscliff and Nepean. As a result, Swan Island Fort was also designed as a submarine mining depot. New gun technology in the form of Armstrong's powerful chambered, long guns, meant the Fort could be sited at a greater distance from the channel. Jervois accordingly modified his plan for a West Channel shoal fort in favour of Swan Island.

The Swan Island Fort exemplifies late nineteenth century British military fortification design, including a distinctive V-shaped battery sited low and close to the sea, a rear garrison or keep, and extensive use of concrete, parapets and bursting layers of sand and concrete. The initial design of the battery included five heavy guns (three new type 10in Armstrong Rifled Muzzle and two 9in rml), plus two eighty pounder for defence of the flanks and rear. Mines were laid as part of an inner line of defence. Unemployed labourers constructed the basic earthwork faces, and ponds and swamps were created as a result of soil being dug from parts of the island. The design was amended in the early 1880s after a study of the Royal Navy's bombardment of coastal defences in Egypt, and the introduction of Armstrong's hydropneumatic gun carriage (5in hp guns). By 1887 construction was mostly completed, urged on by a war scare, and the establishment of a Victorian Department of Defence. In 1894 the final Fort design included gun positions, magazines, pump chambers for the 5in hp guns and lamp passages developed by RE officers at the London War Office.

By 1900, the Swan Island fortifications were inadequate for engaging modern warships, and the Fort was used primarily for instructional schools and field training, supporting the Countess of Hopetoun, (the principle harbour vessel, maintaining permanent submarine mining defences, and as a military camp. The Royal Australian Artillery Regiment assumed control in 1903, and the island continued as a training area duringthe First World War for Signals, Field and Fortress engineering schools. The transition of the island from an army establishment to a full naval facility was completed by 1922. In 1920 it became a Permanent Mines Depot for the RAN to store explosives, and the seventy six buildings on the island were adapted as part of the RAN's construction program for its mine defence scheme. The Army retained use of a jetty and the rifle range. The decommissioned J-3 submarine hull was brought to the island to provide emergency power to enable a mine preparation works program to be implemented, and it also provided a deep water jetty.

A road and firebreak system was established in 1939-40, replacing the 3ft gauge tramway that had serviced the Fort and connected the island with Queenscliff. With the Second World War came expansion of facilities (eleven new buildings and trolley lines), and the mobilisation of female personnel. The island depot stored, prepared and delivered mines and depth charges for laying off New Guinea. After the war it continued to function as RAN's mine depot, and bulk storage of explosives. The Mine Depot was finally closed in 1960, when Mk17 mines were no longer required in the Asian and Pacific region, and a new explosives jetty was built at Point Wilson. The redundant depot contained 119 structures (including forty three built by the RAN), sealed roads, bridges, three jetties, and sixteen groynes to prevent beach erosion. (Four buildings on the eastern shore were abandoned in 1959 due to threat by erosion). In addition, the island featured a golf course constructed by the Queenscliff community in 1919. The Army was granted long term permissive occupancy in 1960 to use the former defence facilities as a training area.

Between c 1940-72 a series of beach preservation works were constructed to prevent beach erosion and damage to army facilities caused by shifting sands on the shoreline. The degree of shoreline movement is

due to waves, tidal current, wind blown sand and the existence of man made structures on the foreshore. The groyne fields proved to be ineffective because of an irregular supply of sand, apparently caused by the Queenscliff boat harbour built in 1956 causing sand to be trapped by the training wall.

The Swan Island Fort still contains a series of eight gun emplacements (including two rapid gun fire emplacements, although the guns have since been removed) facing east and south-east set behind a mound extending along the eastern side of the V-shaped fort, and ranging from 12ft-20ft high. An eight foot high platform provides access to the gun emplacements. The embankment contains a network of underground tunnels, including the former command centre at the southern end. The 7,660 yards of 3in gauge tramline that once traversed the centre of the fort (north-south) was dug up for scrap in 1959 and no traces remain although the current main road on the island follows the original route. At the northern end of the fort are several buildings contained within the Barrack Square surrounded by a 12ft high mound. This area originally contained an office, library, commanding officer's office, store for West Channel Defences, store for South Channel Defences, general store, loaded mine store, and smith and carpenter building.

Heritage Victoria describes the significance of Swan Island as follows:

Swan Island is significant as a cultural landscape containing a rich collection of historic elements including fortification earthworks, battery emplacements, underground command centre and tunnel network, jetties and buildings relating to the early and important theme of coastal defence in south-eastern Australia. The island fort was developed from 1877 in response to fears of Russian invasion of Britain's colonies in the late nineteenth century. (Criteria A.3 and A.4).

Swan Island is significant as an outstanding and intact example of the fortifications designed as part of the Victorian Colonial Coastal Defence System, which contributed to making Port Phillip Bay reputedly the most heavily defended harbour in the Southern Hemisphere in the late nineteenth and early twentieth centuries (Criteria A.4 and D.2). The fort is significant as an example of late nineteenth century British military fortification design, including a distinctive V-shaped battery sited low and close to the sea, a rear garrison or keep, and extensive use of concrete, parapets and bursting layers of sand and concrete (Criterion D.2). The island is a rare example in Australia of a fort designed to contain the facilities for laying, preparing, storing and transporting submarine mines. (Criterion B.2) The fortifications and military structures on the island are significant for their association with the development of coastal defence methods and the rapid advances in artillery, mining and shipping technology during the late nineteenth and early twentieth centuries (Criterion F.1). The fort and former submarine mining complex is significant for its ability to demonstrate the continuity of occupation of the island for Report generated 21/03/19 military activities, from the 1870s to the present day. In particular, the variety of design and construction methods of the structures are important in illustrating the sequence and changing uses of the fort over time, from an army battery and naval mining depot to a military training facility (Criterion D.2). The former garrison or keep is significant as an important and rare example of Colonial military architecture associated with coastal defence in Victoria (Criterion B.2). The residences on the island are significant as representative examples of late nineteenth century military housing, illustrating architectural design standards and living conditions in that period. (Criterion D.2) The design of the Swan Island Fort is significant for its association with Colonel Peter Scratchley, influential in the development of the Australian Defence Forces, and Colonel Drummond Jervois of the Royal Engineers and Deputy Inspector of General Fortifications in Great Britain. Scratchley and Jervois were responsible for the design of the Port Phillip fortifications system as part of Australia's coastal defence strategy (Criterion H.1). The island is significant for its association between 1879 and 1921 with the Victoria Military Forces, the Royal Australian Engineers and the Royal Australian Artillery, encompassing an important period in the formation of the Australian Defence Forces (Criterion A.4).

The jetty structures are significant as examples of the fort's submarine mining activities in the harbour prior to the introduction of propelled torpedoes after World War One (Criteria A.4 and D.2). The beach

preservation works, including groins and seawalls built between c 1940 and 1972, are important for their association with earlier attempts to control sand movement and protect military structures on the island's eastern foreshore from the effects of beach erosion (Criteria A.4 and D.2). The island contains significant specimens of mature cypress trees associated with the earliest period of occupation of the fort (Criterion D.2). The wrecks of the 'Countess of Hopetown' and J-3 Submarine are significant for their association with the Royal Australian Navy's (RAN) coastal defence system, the 'Countess of Hopetown' serving as the principal harbour defence vessel during World War One. The J-3 Submarine is also significant for its use as a source of power to supply the military facilities on Swan Island. The island also contains places of potential Aboriginal cultural significance and maritime archaeological relics still to be identified and assessed.

Heritage Inventory Construction dates 1880, Hermes Number 126141

SWAN ISLAND FORT

Keith Quinton: AAHU Researcher - Fort Queenscliff Museum

Keith Quinton has been a volunteer researcher with the Australian Army History Unit (AAHU), Fort Queenscliff since 2007. As a child he spent many years visiting Swan Island Naval Depot and various other “Heads Fortifications”, which fostered a keen interest in various warships and fortifications that guarded Port Phillip during the nineteenth century, and into the early twentieth century. After studying at Melbourne University, Melbourne Teachers College, and RMIT School of Art, he pursued a 30 year teaching career in various Victorian Secondary Schools. Since 2002 Keith has self-published a number of books (via Blurb Books USA); including *Defending Port Phillip* (2009), *Port Phillip Forts* (2010) and, *Stop the Pfalz – 1914* (2012). He has also published articles on Port Phillip’s defences for the Military History and Heritage Victoria Inc., website. He is currently writing a biography of John Blackbourn C.E. – Victoria’s only Defence Engineer (1882-1907).

DESCRIPTION

Total Area: 800 Acres - approx. Location: 2.6 km north-east of Queenscliff

Swan Island is a sand barrier and salt marsh island at the western extremity of the 'Great Sands' that form a barrier across southern Port Phillip between Dromana and the Bellarine Peninsula. The island is bounded by Port Phillip Bay to the east and Swan Bay Port Phillip Heads Marine National Park, and an associated UNESCO Convention Ramsar Wetland, to the west. A single lane bridge and a causeway connect the island with the mainland via Queenscliff, which is separated from the island by a narrow man-made boat channel, historically referred to as 'The Cut'. Swan Island fortress is located midway along the eastern shore, amid low coastal dunes. The Victorian colonial government established the fort to protect a minefield in West Channel - part of a comprehensive defence utilizing the network shoals and channels to prevent entry of enemy warships to Port Phillip Bay. A small boat harbour was established on the northern tip of Swan Island for the Victorian Signal & Torpedo Mine Corps, who utilized a protected compound within Swan Island Fort as a base and storage facility. Swan Island became a Commonwealth facility following Australian Federation, controlled by both the Department of Navy and the Department of Army. During the Inter-war years (1919-1939) a major portion of the island was designated as Swan Island Naval Mine Depot – the principal storage facility for Australia's sea mines. Following closure of the depot in 1961, control has been administered by the Army as Army Detachment (SIAD) with its training activities classified. The island facilities are currently utilized by the Australian Secret Intelligence Service (ASIS) for training purposes.

SIGNIFICANCE

Because of continuous military use since the 1880's Swan Island fort and harbour areas retain significant elements of original naval and military structures that played a substantive role in Victoria's military & naval history. Construction commenced in 1880, and by 1885 the fort was a six gun 'mixed-calibre' enclosed battery, tasked with protecting an electrical channel minefield by engaging attacking warships attempting to pass through West Channel and attack the Port of Melbourne. It is a significant late 19th Century purpose-built earthwork military fortification, boat harbour, and mine depot, (all largely intact) combining the protection and use of electrical discharged sea mine technology. The northern harbour with attendant wood and corrugated-iron structures served as both a mine laying establishment and torpedo boat base. Although less significant than the fort, the harbour area remains largely intact and close to original form. Because

of current usage as an Intelligence training facility, internal alterations to original structures remain unrecorded, and unknown. Swan Island and Swan Bay form part of significant internationally recognized migratory and wetland bird sanctuary.

HISTORY

Swan Island Fort / Torpedo Boat Harbour 1880 – 2019

In July 1879 Sir William F. Jervois forwarded a 'Second Report on the Defence of Victoria' to the Marquis of Normanby, based upon observations made at Shoeburyness during the testing of new ordnance while on leave in London during the previous year.[1] The results led him to change the previous plan; as he considered '…. it desirable that the proposals made by me in my memo of 20th July, 1877, on defences of Victoria should be somewhat modified, so far as relates to the batteries and armaments for the defence of Port Phillip.' [2] The report promoted modification of the superstructure, the massiveness of the work, and the thickness of the iron front of the casemates, as the powerful guns he proposed for adoption in the defence were capable of preventing any armoured vessel likely to appear in Australian waters from engaging the forts, except at a very distant range. In respect of West Channel, and other adjacent passages, Jervois had previously recommended construction of a substantive 'iron' sea fort on the shoal between West Channel and Symonds Channel. In conjunction with torpedoes placed across the channels, the fort would prevent enemy vessels passaging through West Channel and also cover nearby Coles and Loelia Channels.

Jervois' instructions for design of Swan Island fort were precise;

> Examination of the chart will show that a ship navigating the West Channel must pass within about 1,800 yards of Swan Island, and with the new guns, a thoroughly effective fire mat be afforded at this distance. I therefore recommend that a work be constructed on that island, in lieu of the proposed fort on the shoal between the West and Symonds Channels In conjunction with the work electric torpedoes should be placed across the West Channel. Torpedoes which will be under the fire of the guns on Swan Island, should also be placed across the narrow entrance to Loelia Channel. The work on Swan Island should be enclosed and rendered secure against assault with barrack accommodation for the garrison placed in the rear, and arranged so as to form a keep. The battery should be designed for five powerful pieces of ordnance sweeping the channel and two lighter guns at the gorge bearing on the flanks and rear. Three of the heavy pieces should be 10-inch guns of the new pattern, the other two may be 9-inch guns of the present service pattern already in store in Melbourne. Two 80 pounders, of which nature of gun there is a considerable number in the colony, can be utilised for the positions in rear. All the guns should be arranged for the new plan of mechanical loading. The torpedo depot for the submarine defences of the channels should also be placed on Swan Island a traverse being erected to cover the buildings from the view of an enemy. [3]

By early 1880 chronic unemployment in the Australian colonies had led to a series of successful strikes by skilled tradesmen and 'navvy' workmen seeking to improve wages and working conditions. In Victoria, unrest escalated as successive governments failed to alleviate the situation. By April, deputations of unemployed were demanding government action. The principal form of government contracting, competitive tenders, was being blamed for worker exploitation and a lack of longer term employment. As part of the Service Government's attempts to placate public outrage, pick & shovel excavation and short term bricklaying work - up to two months - was offered at the fortifications on Swan Island to between 100 and 200 unemployed Melbourne men.[4] The earthwork contractor John Horne commenced work in early 1881. Materials and men were brought to a jetty constructed at the northern tip of the island as there was no road link with Queenscliff until 1883. Messrs. Garnsworth & Smith gained a series of contracts for structural work between 1882 and 1886. Both men won contracts for other fortification work around the Port Phillip Heads forts.[5] Commissioner of Public Works, Mr. Langridge, Colonel Scratchley, some military staff and a group of parliamentarians, arrived aboard the government steamer *Pharos* to inspect progress in September 1882.[6] Langridge was 'admirably' impressed with the manner in which the work was being carried out, and thought it desirable to continue until the battery was completed and fully equipped.[7] So that he could decrease his estimates of the proposed expenditure which he intended submitting to the Treasurer, Langridge arrived at the conclusion that it would be in the interests of the colony for work on the other forts to be slowed, or temporarily suspended. Two years later the massive Swan Island enclosed work was approaching completion, while permanent works at Fort Queenscliff had barely commenced, and Fort Nepean remained a small sandbag battery of four 80-pdr guns.

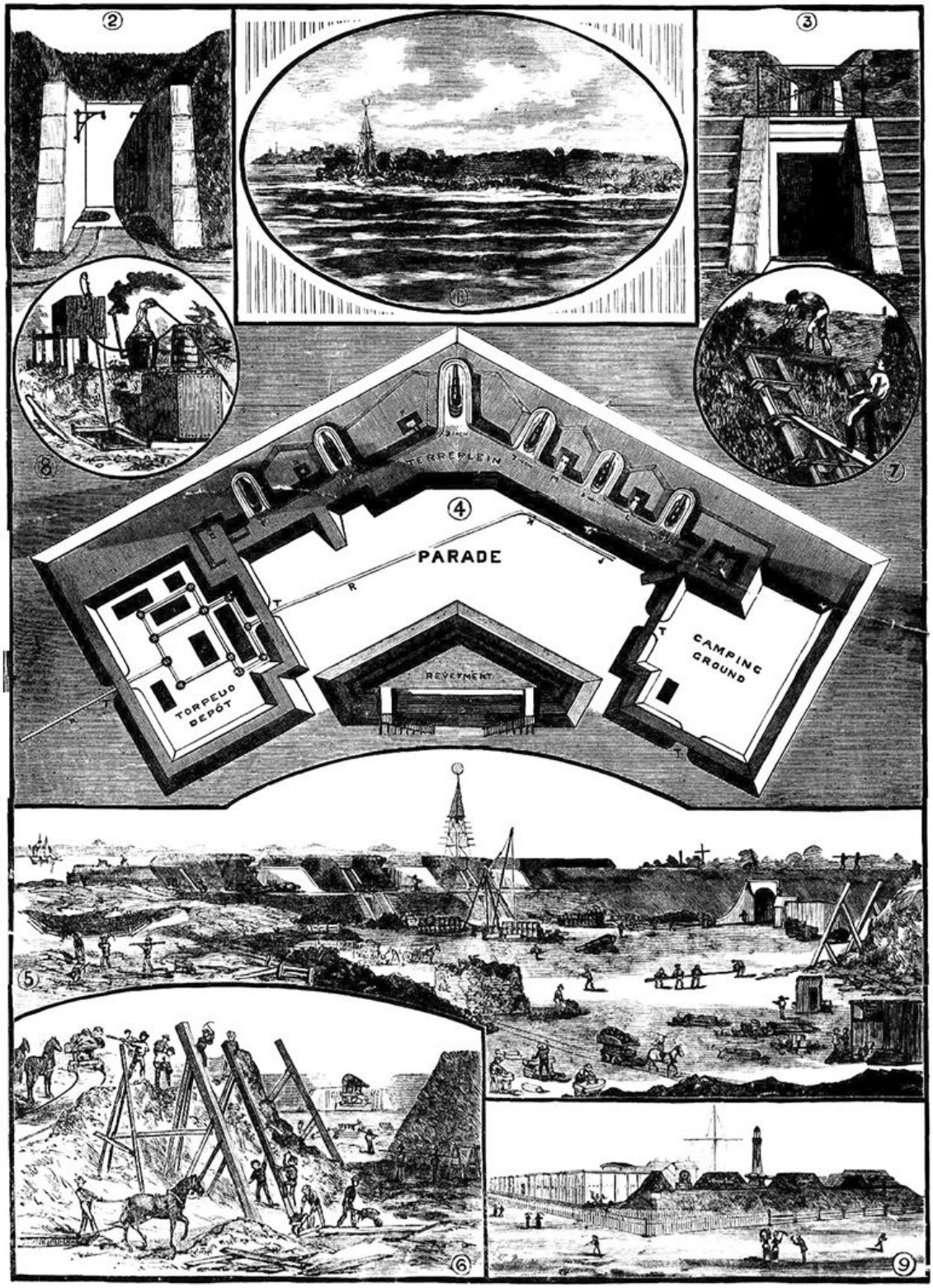
> The battery proper will be a five sided earthwork, with its base to the rear and its apex pointing directly to the east. The right face commands the entrance to the bay and its left the west channel The centre space is marked out as a parade ground, and has an extreme width of 420-ft, and a depth of 234-ft. On the flanks the earthworks is extended so as to enclose oblong square that on the right being 128-ft by 168-ft, and that on the left 208-ft by 110-ft. The right enclosure will be used as a camping ground and in one corner of it will be erected a laboratory. In the left one will be the store rooms, cable pond, carpenter shop and the smithy, and a torpedo depot. It was originally intended to build a keep in the front of the parade ground immediately behind the central gun and to carry musketry parapet round the flank and the embankments, for the purpose of guarding the battery from an assault. Colonel Scratchley, however, has altered this arrangement, and instead of the keep and musketry parapet, a blockhouse sort of work, triangular in form, with the rear rampart as its base, will be constructed. This stronghold will be about 22-ft in height, and will be sheathed for about 12-ft with red gum planking, strongly tied into the embankments, and laid at a slope of a quarter to one. Above the redgum sheathing to the top of the embankment will be sodding, with the usual slope of one to one. [8]

Armament was also close to being established - along the lines previously suggested by Major-General Jervois:

> …. with the right flank guns able to train round so as to bear on the lower light at Queenscliff, (to) command the anchorage inside the Heads and the entrance to both channels, and will on the other hand be able to follow with their fire an enemy up the West Channel. A third 9-in gun will occupy the central, or front emplacement, and will in addition to firing on the anchorage, sweep the West Channel in every direction, its line of fire not being circumscribed by an angle or projection of the embankments. Two 80 pounder guns will be placed on the left face of the battery, and will be able to fire on an enemy before he comes abreast of the central gun, to pursue him up the channel and to train round to 15-deg. east of the red cliff below St Leonards. The remaining two 80 pounders are to be mounted on the rear in the salient angles of the flank works. The Gatling guns are intended for use not only in the repelling of an assault but also for the protection of the lines of torpedoes which will be laid in the South Channel. Emplacements for them are to be made in the angle formed by the front and flank embankments.[9]

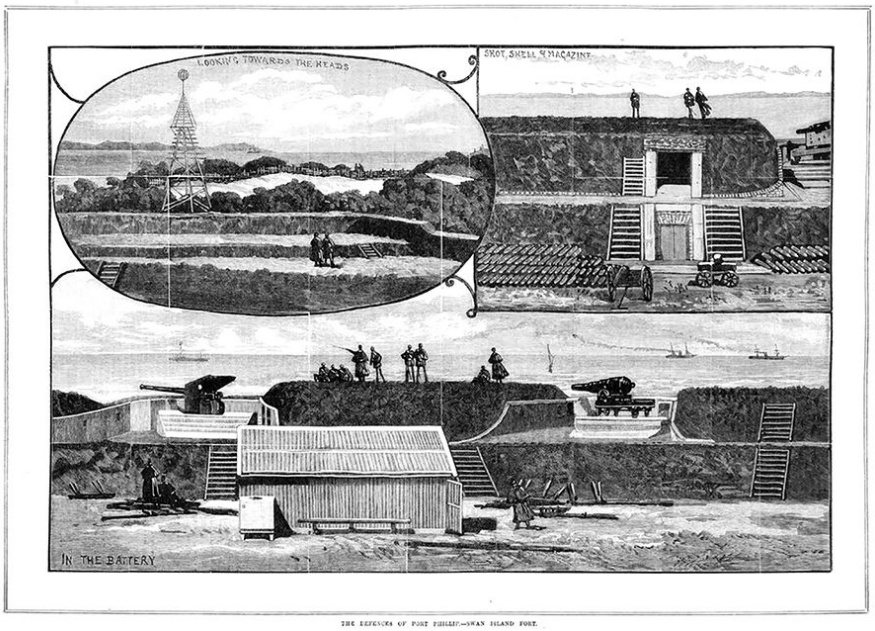
The War Scare of 1884 had been sufficient incentive for the government to push for completion of the Heads forts. In April 1884, 'The Argus' reported the barracks and Keep had been constructed and the fort was garrisoned. Four of the six Swan Island fort guns were mounted on carriages, when, for the first time, metropolitan units of the Victorian Militia Artillery used the guns for firing practice during the Easter manoeuvres.[10] During Easter of the following year over 400 Artillery Militia mustered at the Heads. The Williamstown and Warrnambool Artillery and the Torpedo Corps exercised at Swan Island, the North Melbourne at Point Nepean, and the South Grant and Drysdale at Point Franklin. On each occasion vessels of the Victorian naval squadron served as an enemy squadron. Firing practice was carried out during the day against a dozen casks surmounted with red flags - moored at ranges varying from 2,000 to 3,000 yards. At night the squadron made mock attacks on the various defences.[11] By late 1886 ordnance at Swan Island Fort's was; two 80-pdr RML (right flank), three 9-inch 300-pdr RML's (left flank); one 6-inch RBL gun with a naval shield on loan from Williamstown naval depot. However, as early as 1885 it had been decided to replace all eleven muzzle-loading 80-pdr guns in the Heads forts with breech loading Armstrong 5-inch 3-ton guns on hydro-pneumatic carriages. These began to arrive and be emplaced during 1887. One 6-pdr Nordenfeldt QF guns was mounted on hydraulic pillar in emplacement No. 2. The new HP emplacements and magazines cost £2000 each - four were constructed at Swan Island Fort prior to 1894.[12] In 1896 the assortment of guns on the left flank were replaced by a further

four HP mounted 5-inch guns – unifying the battery gun calibre and taking the total heavy ordnance to 8, supported by the QF gun and several Gatling and Nordenfeldt machine guns.



AUSTRALIAN DEFENCES.—FORTIFICATIONS AT SWAN ISLAND, VICTORIA.

View of Swan Island Battery from the Sea. 2. Emplacement for Hoisting Shells from Magazine. 3. Entrance to a Magazine. 4. Plan of Swan Island Battery 5. Present State of Swan Island Battery. 6. At Work on the Revetment. 7. Sodding an Embankment. 8. Condensing Apparatus for Drinking Water. 9. View of Queenscliff Battery.



The Defences of Port Phillip – Swan Island Fort. Australasian Sketcher, 11 April 1887 . Wood engraving - Fred Kruger photographs. State Library of Victoria A/S19/04/87/53

Difficulties related to closure of South Channel to shipping during firing practice from forts Nepean and Queenscliff increased over time. Because of the types of ML ordnance at Swan Island Fort, and the similarity of these guns to those emplaced at Warrnambool, Portland, Port Fairy, and Fort Gellibrand, the use of West Channel for firing practice gradually increased. Swan Island fort became the main training site for Victorian Artillery Militia forces.

TORPEDO MINES

The use of torpedo mines in the defence of Port Phillip began in 1870 and was described in the *Argus* newspaper as:

> …. the first really definite step towards putting the Heads, Port Phillip Bay, and Hobson's Bay into a defended condition has been practically taken. This consists of the formation of what may be called a 'Telegraph and Torpedo Corps,' the arrangements for which may be described as complete. The nature of this corps must be properly described before it can be properly understood. It is a 'staff' corps, and each man is supposed rather to directly superintend operations than to actually perform them. For instance, the labour may have to be supplied by boats' crews, parties of pick-and-shovel men, and so on, but to the corps will be entrusted the charge of the plant and property with which the members will have to deal, and whose movements they will supervise.[13]

Captain Couchman (Chief Mining Surveyor of Victoria) was nominated by the Colonel Commandant for the military command of the force, which was officered by two electricians, each having the rank

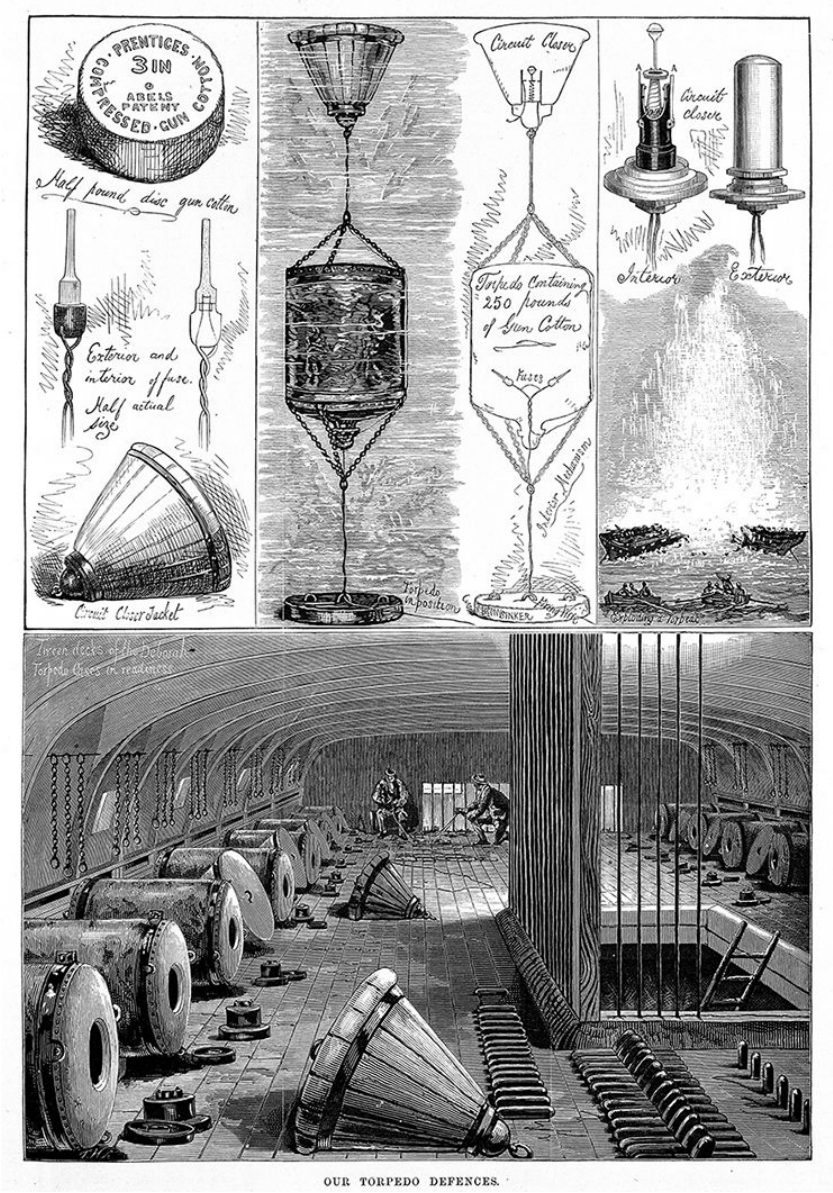
of captain - Mr, R. L. J. Ellery, Government Astronomer, and Mr. S. W. M'Gowan, of the Electric Telegraph Department. The body of the corps consisted of some 15 or 20 persons selected from the professional classes connected with civil engineering, &c., but included others whose scientific and other attainments were known to be of a superior order. They were to be called 'operators,' and were ranked according to 'circumstances and capacities'. Duties of the new corps consisted of the arrangement of torpedoes and their explosion, telegraphing, and signalling. They were given rudimentary drill to enable them to march about as men conversant with ordinary military movements and weapons.[14]

The initial work of the group involved educating themselves on the intricacies' of the electrical discharge of explosive devices. There first opportunity to show off their skills was during the 1874 Queen's Birthday Volunteer Review when they were attached to the Engineer Corps, who have several mines to blow up at a site near Elsternwick station. The explosions were to be effected by magnetic wires.[15] However, the government completely surprised the military forces in July 1878, when it ordered Captain Ellery to hand over all torpedo materiel to Captain Mandeville of the *Cerberus* and the Naval Department. The old convict prison hulk *Deborah* was moored off Williamstown, to provide the Military Torpedo Corps with a mine storage facility in 1878.

The *Geelong Advertiser* thought:

> Some difference of opinion appeals to exist as to whether the torpedoes should be worked by the Naval or the Military Department; but the Chief Secretary has found that by transferring them to the former a saving of about £1500 a year could be effected; and this, no doubt, has been one of the principal reasons of the change just made. Captain Ellery, and those who have acted in conjunction with him, will continue to exercise their function, so far as regards the scientific direction of the operations; but the boating and other portions of the work requiring marine training, will, it is considered, be more efficiently carried out by naval men.'[16]

By 1882 it had been resolved that torpedoes for attacking purposes - comprising the Thornycroft torpedo boat flotilla the government was purchasing in the U.K. - [17] should be under the command of the officer-in-charge of the Victorian navy, while the Military Torpedo Corps should control those torpedoes required for land (channel) defence. [18]



OUR TORPEDO DEFENCES.

State Library of Victoria - Accession no: A/S08/06/78/37 - The Australasian Sketcher 8 June 1878 - Our Torpedo Defences; Half pound disc gun cotton -- Exterior and interior of fuse -- Circuit Closer Jacket - - Torpedo in position -- Exploring a torpedo -- Tween decks of the Deborah, Torpedo cases in readiness.

The 1882 jetty at the north corner of Swan Island and its tram link to the construction site had been of great service in conveying building materials and was retained as a permanent link to the torpedo depot. The fort was divided into three compounds surrounded by a 64-ft thick escarp sloped at 1 in 12. There were two entrances to the stronghold - one in the left flank, the other at the rear of the right flank - both in the form of brick tunnels through the embankments and divisional walls. The left compound contained cable ponds and torpedo depot – with corrugated iron huts used for mine storage, a carpentry shop, and a smithy.

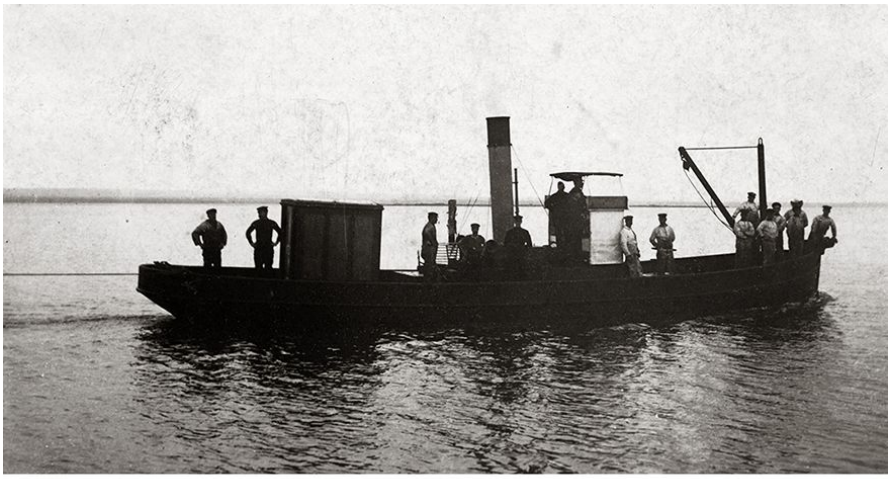
The Government had purchased *Octopus,* a small steam launch, and converted it for use by the Corps in laying mines. Renamed *Miner*, the vessel carried four mines from Williamstown to Swan Island in April 1884, for the corps' initial participation in the Heads defences. The steam launch

Miner grounded several times on sandy shoals in the shallow entrance channel and it was only in high water that the smart little steamer could run alongside the jetty. The torpedo camp tents were pitched on a flat grassy reserve next to the landing place. Each mine had previously been filled with 100-lb of wet gun cotton, and, as West Channel was being used to test Swan Island Fort's guns for the first time, the mines were set about a quarter of a mile north of the island in a depth of 21-ft of water.

There were three principal torpedo mine types available: - 1. Electro contact mine. 2. Ground mine. 3. Observation mine. All three types were used by the Swan Island Torpedo Mine corps in defending West Channel and South Channel. Observation mines and ground mines could be connected by submerged electrical cables to surveillance positions located some distance away. The special merit of this system was the alternative ability to set a mine to explode immediately upon contact with an approaching vessel, or trigger an alarm at a 'firing table' in the fortress control room. The latter arrangement meant safe passage could be provided to friendly vessels along a secretly marked channel and the mines re-activated before the arrival of enemy warships attempting to utilize the same entry line. [19] A buoyant torpedo was a buoy partly filled with air and partly with explosives, which floated half submerged in the water and exploded only on contact. Ground mines were simply submerged lines of torpedoes connected with the shore by an insulated cable and fired by means of an electric battery when a vessel was passing directly over them. This required great accuracy in positioning the mine, plotting its position and that of the approaching vessel. Depending upon the size of the charge (200-lb to 750-lb of gun cotton) the mine needed to exploded within 10 -25 feet of the vessels hull to prove entirely effective.[20]

The panic defence of Port Phillip Heads resulting from the 1884-1885 Panjdeh (Afghanistan) War Scare saw minefields placed in both the South Channel and West Channel, and on the advice of Major-General Scratchley, the most expert submarine mine officer available, Captain Rhodes R.E., was obtained from England, to the intense vexation of the Admiralty. Upon arrival (Major) Rhodes engaged in:

> …. taking up all the torpedoes which were laid at such expense a few months ago. The reason for this is that Major Rhodes, whose services have been secured, "after much persuasion, and at great expense," as the Minister of Defence might put it, declined to take charge of anything he had not seen. So, one after the other, the torpedoes are being fished up and carried to the store-yard, where they are opened, examined and tested. Whether they will be re-laid immediately probably depends upon how Russia will behave when the Czar learns that railway material is being massed near Quetta.[21]





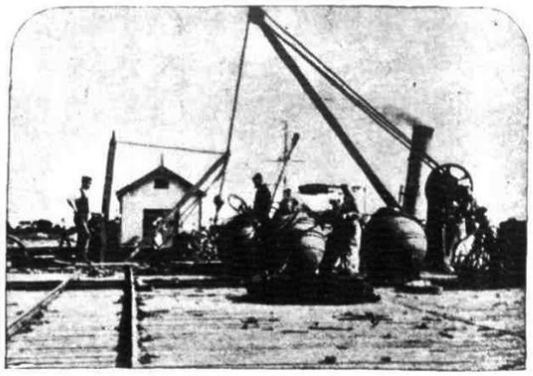
Top: Miner at Swan Island c. 1890 Photo collection. - Fort Queenscliff Museum

Bottom: Vulcan at Swan Island Naval Mine Depot. - Author's collection

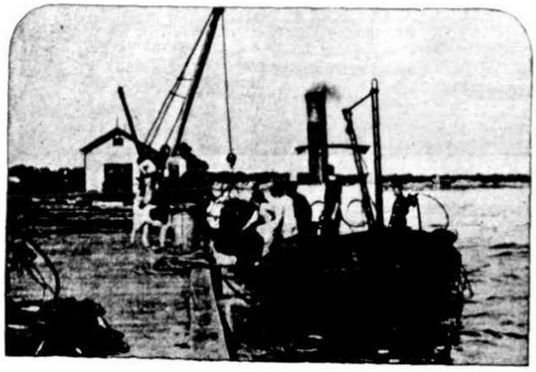
In spite of ongoing demands for his return to the UK, Rhodes remained in Victoria until 1889 and set up an effective system of submarine mine defence at South and West channels.[22] In 1887, on the advice of General Schaw, Rhodes conducted torpedo mine tests from Fort Nepean across the 'Rip' entrance to Point Lonsdale to try and ascertain if placing large ground mines across the entrance was a feasible option.[23] While the mines apparently remained in place, it was found the electrical firing cables did not survive the swirling currents and excessive tidal flow. Rhodes predicted a line of mines placed across the sand between Queenscliff and Observatory Point, near Pope's Eye Shoal at the entrance to South Channel, would be an effective alternative. The number of mine cases was increased to more than 300, so that a 1st 'defensive line' could be created under the guns of a sea fort to be constructed at the tip of the shoal. As Pope's Eye fort was never constructed, it is doubtful the plan was carried out, although, a small submarine mine position finder station was constructed on the Upper battery of Fort Queenscliff, circa 1887.[24]

SUBMARINE MINING AT THE HEADS.

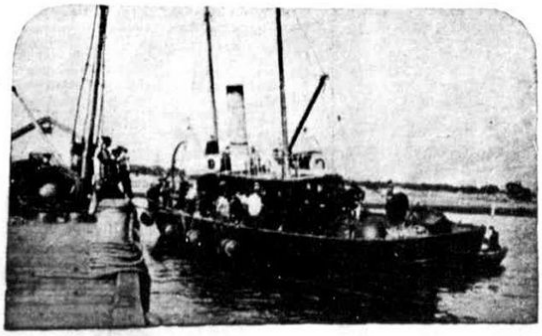
FROM PHOTOGRAPHS BY MAJOR R. E. JOSEPH.



PIER-HEAD PARTY.



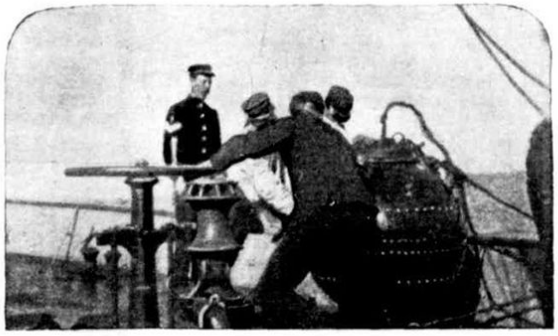
"SLINGING E.C. MINES" ON A "LAYING-OUT STEAMER."



THE VULCAN WITH A "LINE OF MINES SLUNG," AND GROUP OF E.C. MINES ON BOARD.



PIER HEAD: A GROUP OF MINES "CONNECTED UP."



PICKING UP MINES: MINE ON BOARD.



"CONNECTING UP."

Selection of Swan Island Torpedo mine photographs from the *Australasian* periodical – 1895

TORPEDO BOATS AT SWAN ISLAND

The Victorian torpedo boats arrived in the colony in mid-1884; *T.B. Childers* had accompanied *HMVS Albert* and *HMVS Victoria* under her own power on the passage to Australia and *T.B.'s Lonsdale & Nepean* as deck cargo aboard *S.S. Port Darwin*.[25] The fourth torpedo boat *T.B. Gordon* joined the flotilla in 1886. The permanent base for the growing Victorian squadron was the naval dockyard at

Williamstown, although there was also a training facility constructed for the Naval Reserve at Port Melbourne. It has been difficult to establish the year of the Swan Island harbour expansion - certainly prior to 1886. The northern jetty remained in the hands of the Torpedo Militia Corps, the southern jetty became a torpedo boat facility for use when the squadron was sent to Port Phillip Heads; equipped with a barracks and service shed located onshore - containing air compressors to charge the Whitehead torpedoes. *T.B. Countess of Hopetoun* joined the torpedo boat squadron on 22 May 1891.

Swan Island base continued to be used by the Victorian Navy throughout the 1890's and the first decade of the 20th Century. In 1911 the base was transferred to Commonwealth control, as the R.A.N. began to train members of the permanent force, militia and naval cadets, for the new destroyers *HMAS Parramatta* and *HMAS Yarra*. Both *T.B. Countess of Hopetoun* and *T.B. Childers* were used to give recruits sea experience on Port Phillip Bay.



T.B. Nepean & T.B. Lonsdale at Swan Island, Circa 1911. Photo: Author's collection. *Note deck dropping gear for two 14" Whitehead torpedoes, compressor work shed, and nearby tents of the naval recruit camp.

RAN MINE DEPOT SWAN ISLAND

By the commencement of WW1 Victoria had 410 electrical discharge mines, which were ageing and obsolete.[26] In 1920 the Naval Board accepted the offer of 2,000 'H' Mk. II' (Hertz-horned) mines as a free gift from the Admiralty. They arrived in Australia in August 1920 and were first disembarked at Flinders Naval Depot. Swan Island was selected as the best storage site available. The entirety of Swan Island Fort was taken over from the Army and corrugated iron storage buildings were erected,

with the mines were moved to the new depot in 1921. Depth charges were also removed from Sydney around 1921-1923 to be stored at the Swan Island Depot.[27]

Isolated and capable of expansion, Swan Island Naval Depot was considered to be excellent for the purpose of storage. Circa 1924/25 provision was made to create a 'Ready for use Store' and the hulk of *Countess of Hopetoun* was beached to act as the foundation for a new loading pier close to the fort precinct to enable mines to be prepared for laying and immediately embarked on a mine layer anchored offshore.[28]

In November 1932, on the advice of the Naval Board, the Minister of Defence (Sir G. Pearce) announced the closure of the Swan Island Depot while denying a report from Queenscliff to the effect that all naval mines In Australia were to be scrapped. Pearce stated Australia had other mine depots besides the one at Swan Island, and it was not true that there would not be a single mine left for coastal defence purposes. In February 1939, the *Argus* in an article on Australian rearmament plans, quoted Prime Minister Joseph Lyons as saying that a Mines Depot will be re-established at Swan Island. The move was confirmed when Robert Menzies assumed the Prime Ministership upon Lyons death in April 1939. Menzies also announced plans to lay minefields to defend Australian coastal shipping routes.[29]

Lieutenant-Commander George Saunders was placed in charge of the new facility and a substantial number of civilian men were selected from the Queenscliff area to staff the facility.[30] In October 1939, the author's father, Electrical Artificer, Chief-Petty Officer, Keith Quinton, was discharged from the RAN and secretly sent to Frater Mine Depot, Portsmouth, U.K., for advanced training in the construction and assembly of British mines - including new magnetic and acoustic 'aircraft' mine types under development. His role on return to Australia was to act as Foreman of Trades & Chargeman of Fitters[31] at Swan Island Depot. Plans were already in place for the Ford manufacturing plant in Geelong, Victoria, to commence production of Mk 14/15 and 17/17 mines in Australia. During the war subsidiary Depots were opened at Fyansford and North Geelong for assembly and storage, and mines were increasingly loaded directly from the plant to R.A.N. minelayers. This enabled Swan Island staff to give more time to magnetic and loop services and to carry out instructional classes for the benefit of R.A.A.F. and a number of Assistants (M.D.)[32]

Post WW2 Swan Island was used as a primary storage facility for excess war ordnance, until disposal could be carried out (largely by dumping at sea). The Naval base underwent closure in 1961 and control of the island and facilities was transferred to the Australian Secret Intelligence Service (ASIS)

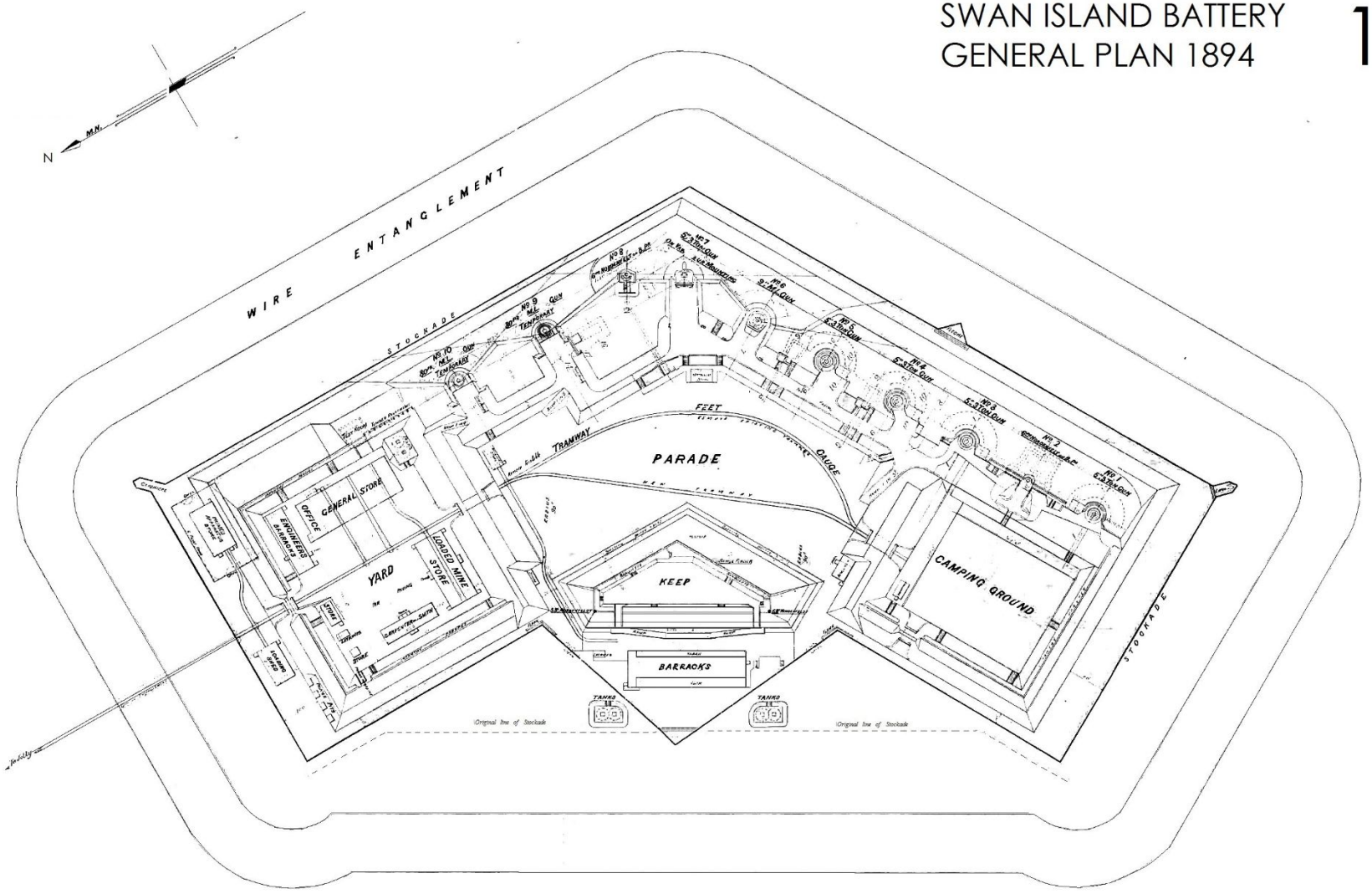
as a training area. In their 1989 study of ASIS, 'Toohey and Pinwill' describe the Swan Island ASIS facility as an 'ultra-secret clandestine warfare centre'. It is used primarily for the training of ASIS agents, and also is the location of a substantial ASIS communications facility and a special operations storage site. In addition to its ASIS role, during the 1980's and 1990's the Swan Island Training Area was also used by ADF Special Forces, especially from the Special Air Service Regiment, under the rubric of the Swan Island Army detachment (SIAD).[33]

SIGNIFICANCE

The island is one of two examples of Victoria's 19th Century colonial era forts specifically designed to protect submarine minefields at Port Phillip. The Swan Island site also contained a boat harbour and facilities for the storing preparing, and laying of electro-discharged submarine mines. The facilities were developed by both Military and Navy Corps in three distinct phases – 1. Colonial era. 2. Post Federation. 3. Interwar years. As the gun battery and torpedo depot remain in excellent condition, they are of considerable heritage significance. The substantial chevron-shaped enclosed earthwork battery is sited in low dunes close to the sea. It consisted of three compounds connected by brick tunnels. The work was by a substantive earthwork keep on the land face. The barracks is also externally intact. The fort is notable for the extensive use of sand parapets (Height. 34-ft x Width. 22-ft) containing buried bursting layers of re-enforced concrete. The substantial earth mound of the Keep is located on the western face and is unique amongst the system of fortifications at Port Phillip Heads. The Naval harbour complex and corrugated-iron mine storage shed are largely externally intact. Due to current usage by ASIS as a training facility the island is not open for public access, or, any form of detailed historical evaluation of building interiors.

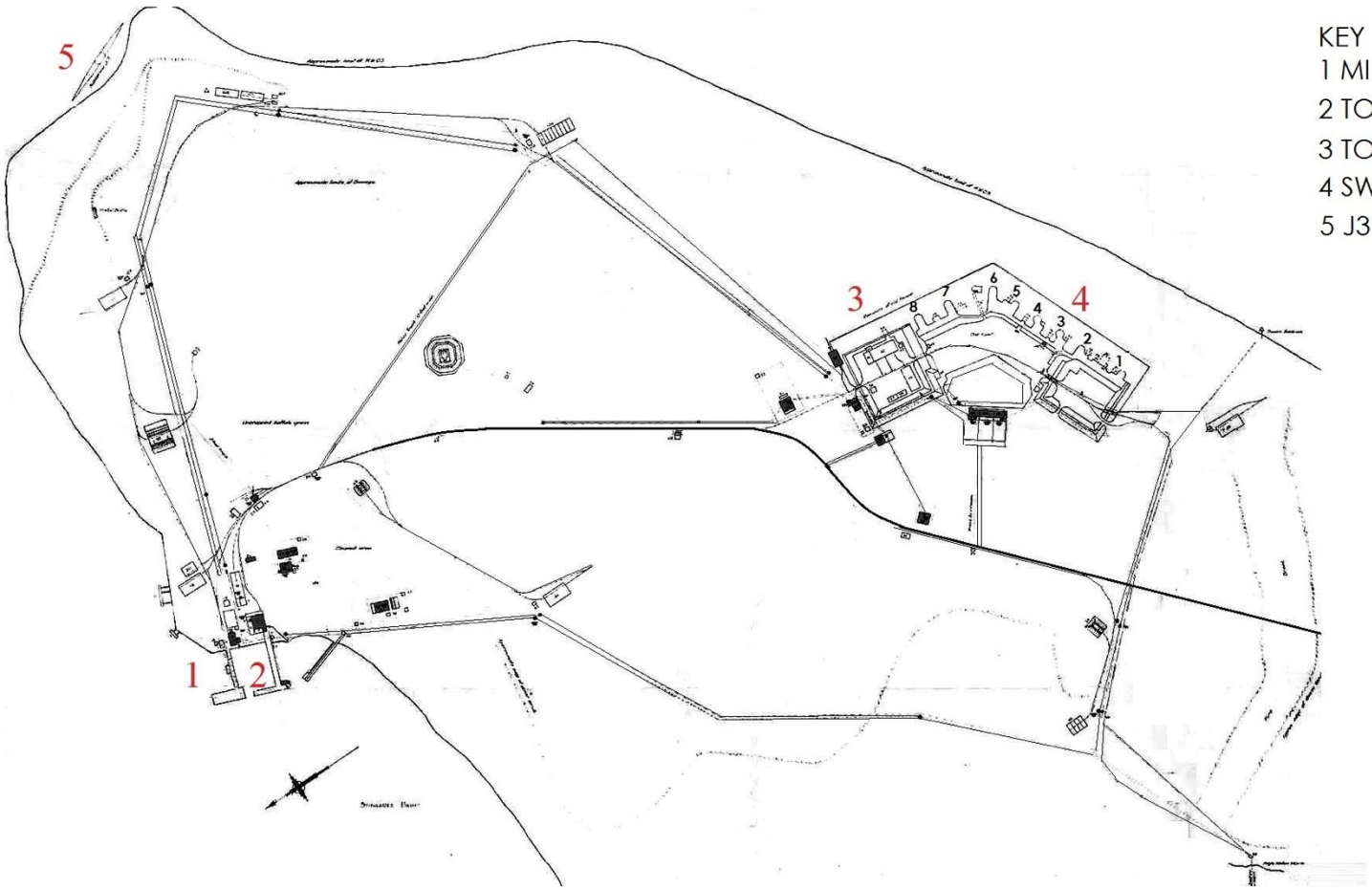
SWAN ISLAND BATTERY
GENERAL PLAN 1894

1



1894 - SWAN ISLAND FORT & TORPEDO BOAT HARBOUR

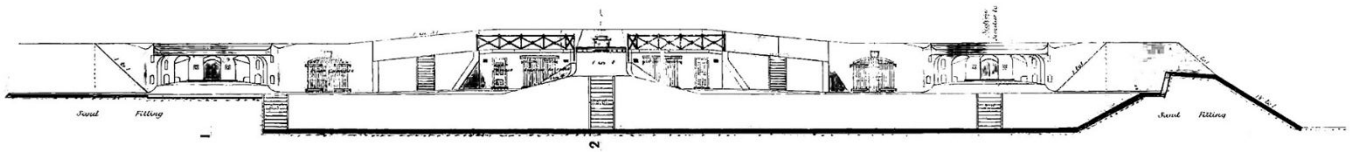
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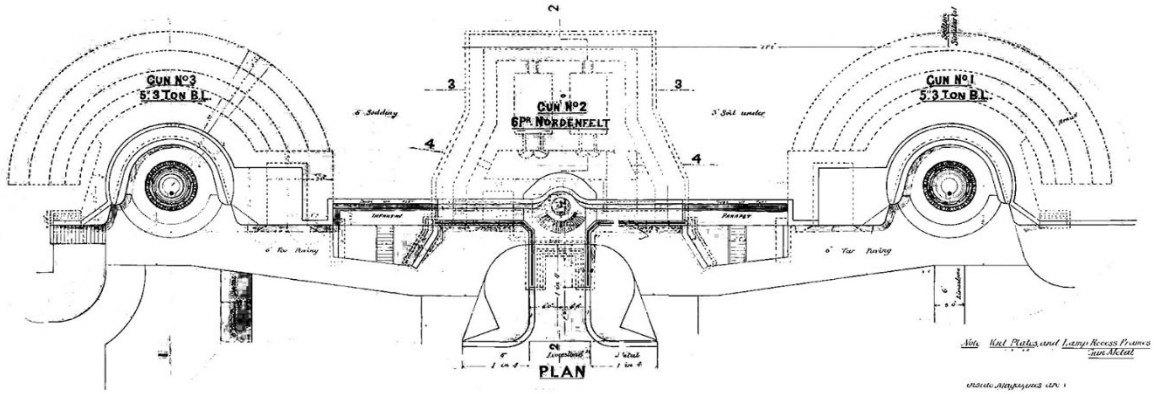


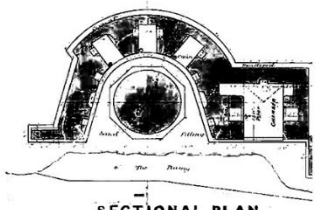
KEY
1 MINE JETTY
2 TORPEDO BOAT HARBOR
3 TORPEDO MINERS
4 SWAN ISLAND BATTERY
5 J3 SUBMARINE HULL

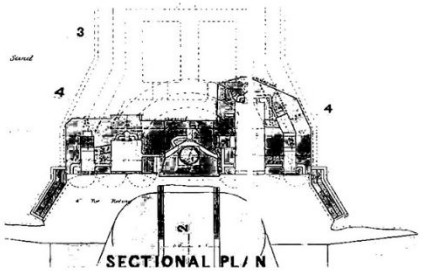
5-INCH HP BATTERY SWAN ISLAND
GUNS 1, 2, 3 - 1894

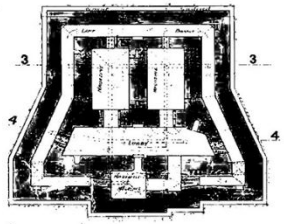
3

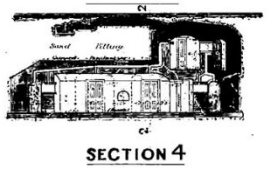


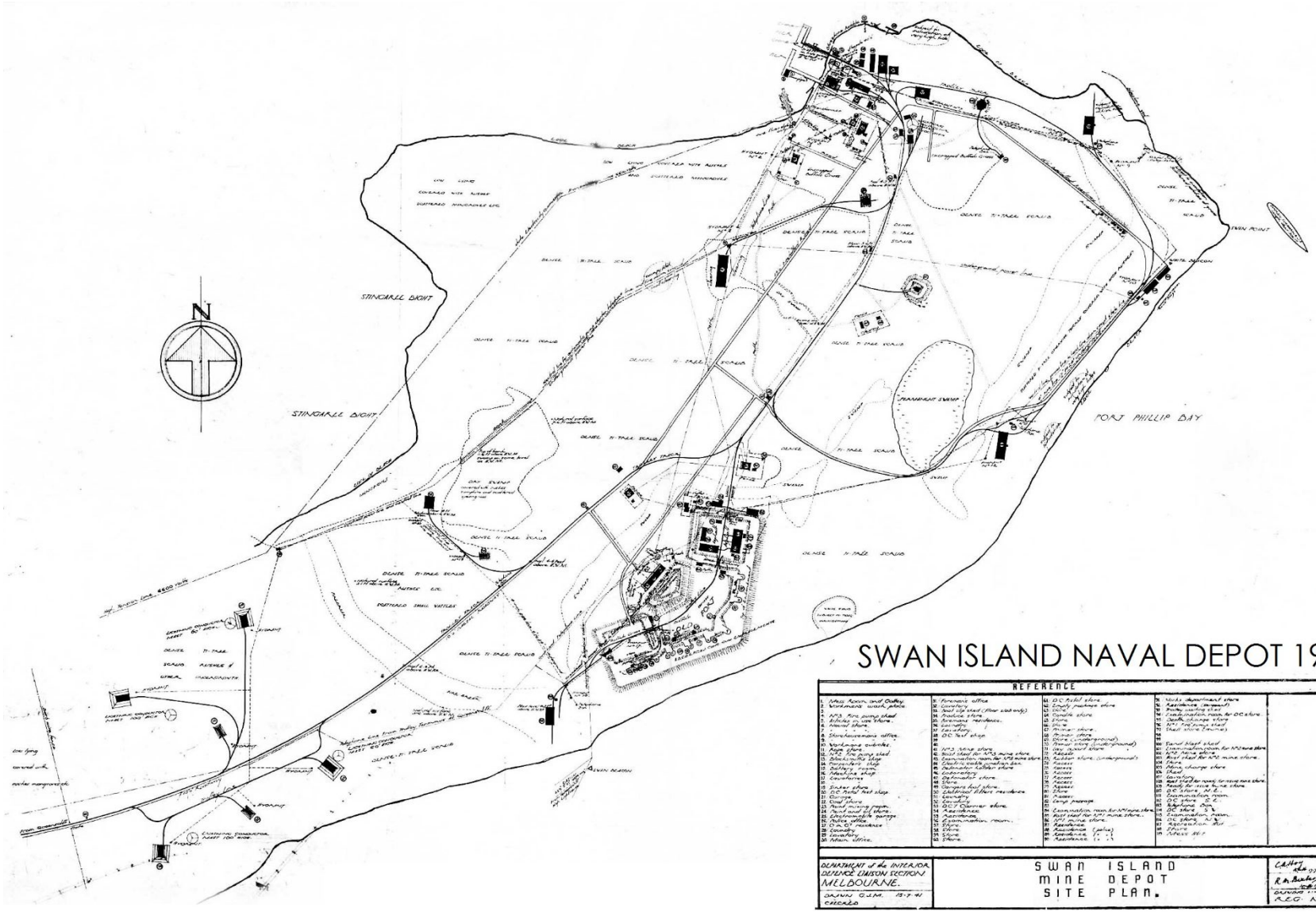



SECTIONAL PLAN


SECTIONAL PLAN

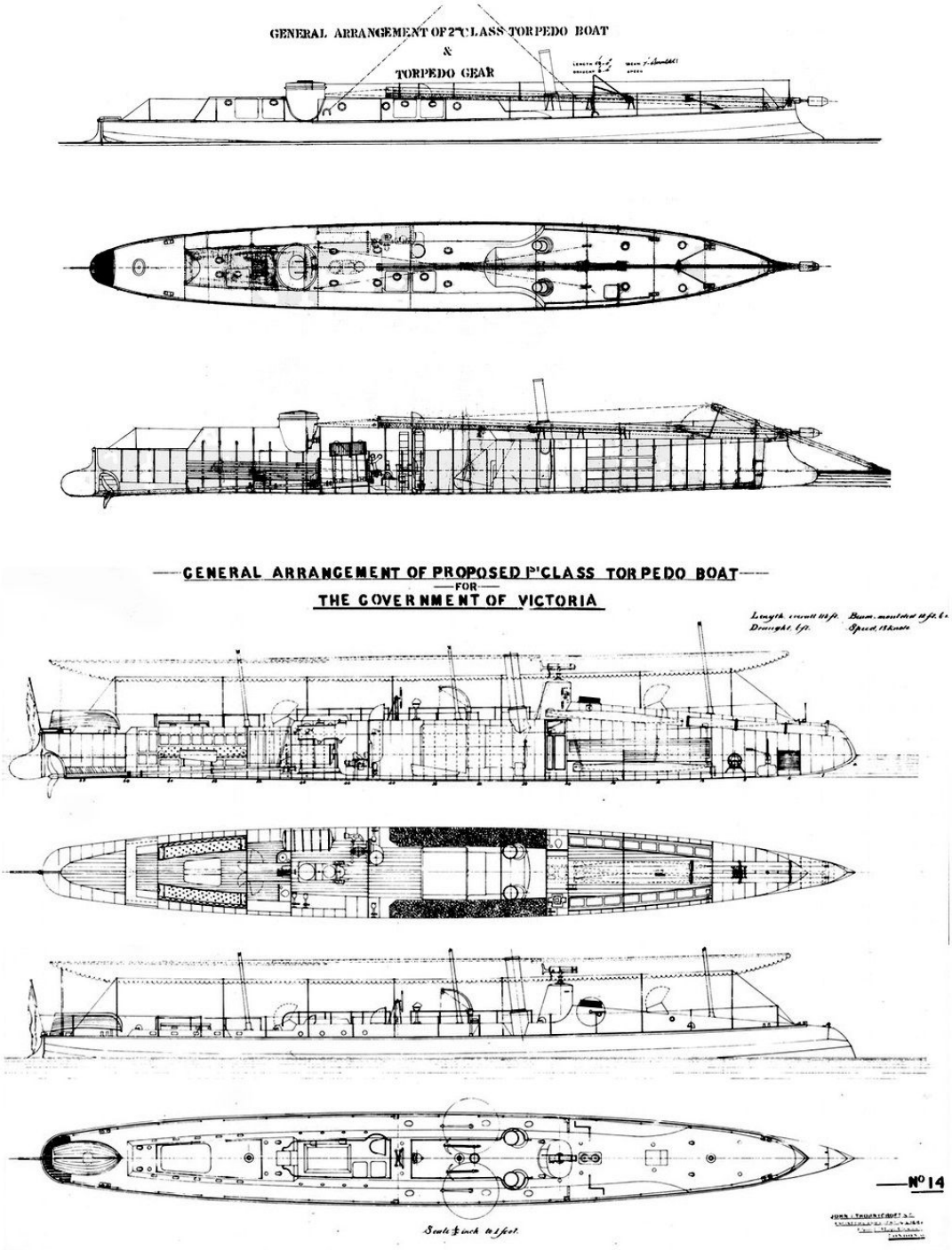

SECTIONAL PLAN


SECTION 4



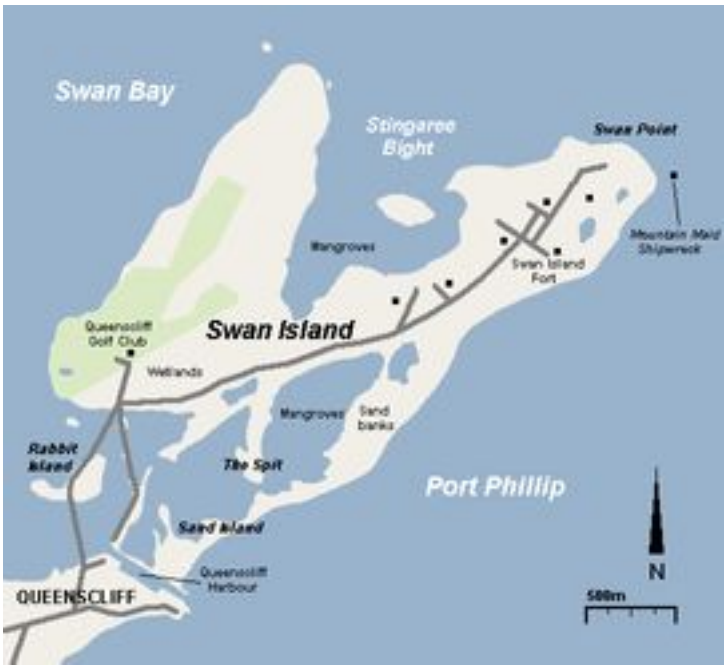
4

SWAN ISLAND NAVAL DEPOT 1926



Top: Class-2 Thornycroft Torpedo Boats. T.B. Lonsdale & T.B. Nepean

Lower: Class-1 Thornycroft Torpedo Boats. T.B Childers & T.B. Countess of Hopetoun



ENDNOTES

[1] Second Report on the Defence of Victoria. March 1, 1879.

[2] *Argus*. 31 July 1879. *The Defence of Victoria - Jervois.* Page 7.

[3] Second Report on the Defence of Victoria. March 1, 1879.

[4] *Weekly Times*.10 April 1880. *Unemployed.* Page 6.

[5] *Argus*. 10 August 1882. *The Swan Island Battery.* Page 9.
'The construction of the battery was commenced about two years ago by the Public Works department who sent a few hundreds of the "unemployed," who were then clamouring for work in Melbourne, to form some of the embankments roughly In February last a contract for the construction of the right face of the battery, including underground magazines and the emplacements for three guns at a cost of £9,000, was let to Mr John Horne, and has been carried out in a satisfactory manner under the supervision of the same department. Subsequently another contract was entered into with Messrs Garnsworthy and Smith for the completion of the battery, at a cost of £8,072 and this work is now in progress.'

The previous owner of the Swan Island land-title sold it to the Victorian Government for £2,750.

VGG Gazette 6 January 1 1881 page 156 Contract No. 1291 - John Horne
VGG Gazette 29 March 17 1882 page 687 Contract No. 2441 - Garnsworthy & Smith
VGG Gazette 8 January 25 1884 page 162 Contract No. 2009 – Garnsworthy & Smith
VGG Gazette 76 July 9 1886 page 1971 Contract No. 2498 - Garnsworthy & Smith

[6] *Age*. 6 September 1880. *The fortifications at the Heads.* Page 3.

[7] Ibid

[8] *Argus*. 10 August 1882. *The Swan Island Battery* Page 9.

[9] Ibid

[10] *Argus*. 18 April 1884. *The Torpedo Corps and Permanent Artillery - Swan island.* page 7

[11] *Argus*. 24 April 1886. Easter Manoeuvres. Page 9 - Cerberus, Nelson, Victoria Albert, the torpedo boats and Harbour Trust barges

[12] National Archive of Australia

[13] *Argus*. 22 September 1870. *Formation of the Torpedo & Signalling Corps.* Page 5

[14] Ibid

[15] *Mercury*. 9 May 1871. *Volunteer Review.* Page 3

[16] *Geelong Advertiser*. 16 July 1878. *The Torpedo Corps.* Page 4

[17] HMVS Childers (1884) Thornycroft 1st class T.B. https://en.wikipedia.org/wiki/HMVS_Childers
HMVS Lonsdale (1884) Thornycroft 2nd class T.B. https://en.wikipedia.org/wiki/HMVS_Lonsdale
HMVS Nepean (1884) Thornycroft 2nd class T.B https://en.wikipedia.org/wiki/HMVS_Nepean

[18] Tasmanian. 17 June 1882. *The Torpedo Corps.* Page 664

[19] *Argus*. 14 April 1884. *The Torpedo Corps and Permanent Artillery Easter Encampment.* Page 7

FIRING TABLE: 'The ordinary service table is fitted with keys to fire 140 mines, but the one now being used at Swan Island is a small affair, fixed for 28. This table does much more, however, than merely give the means for firing those mines not set to explode on contact. When a vessel strikes one of the torpedoes, it also rings a small electric bell, so the operator bending over his table knows all that is going on outside. The means for testing the torpedoes when laid down are complete and interesting. A telephone is attached to the cable, and a very weak current of electricity is applied to the line, not strong enough to cause an explosion. If the mine is in thorough working order, a humming noise from what is known as the relay will be heard through the telephone In work of this kind, where no opportunities are given to remedy a mistake, it is not desirable to leave anything to chance. The battery used in connexion with this table is composed of 50 of the 'Leclanthe' firing cells. In laying down a group of torpedoes they are all connected with another chamber called the junction box, fixed far enough from the mines to avoid any damage by the explosion of any particular torpedo. Four mines are usually attached to each box, so that in the event of any cable being raised and cut by the enemy, the damage may be limited to a few mines. The charge used for the torpedoes now on Swan Island is 100-lb of wet gun cotton; the explosive force being much greater than when dry. As it would be impossible to detonate wet gun cotton by electricity, it is necessary to put in a small bring charge of dry,2½ lb being sufficient to detonate a charge of 500-lb of wet gun cotton.'

[20] Ibid

[21] *Herald*. 13 August 1885. *Swan Island Defence Works.* Page 5

[22] Rhodes was replaced by Captain Harvey R.E. in February 1889. - Mercury. 13 February 1889. Page 2

[23] *Leader*. 4 June 1887. *General Schaw's Report on the Fortifications.* Page 28

[24] National Archives of Australia. MP338/1Victorian Defences. Queenscliff Battery. 6 pr Nordenfelt gun on balanced pillar - 1889. Barcode: 1845508 (Note 'existing position finder')

[25] HMVS *Childers* – arrived 24 June 1884. HMVS *Lonsdale* & HMVS *Nepean* arrived 7 July 1884.

[26] Victorian Ordnance Report 1905

Buoyant mines	16	… 500 –lb spherical
	124	… 100-lb spherical Mk.III. E.C.
	60	… 100-lb pear-shaped Mk.III E.C.
	70	… 70-lb spherical Mk.I. E.C.

Ground mines	90	… 500-lb cylindrical Mk.II. E.O.
	48	… 250-lb cylindrical Mk.I. E.O.
	15	… 250-ld cylindrical Mk.II. E.O.

** British Type H Mk.II mines were the first reliable British contact-type mine, this was copied from the successful German Hertz-horn contact mine. Production started in early 1917, but it was not available in useful numbers until November 1917. Spherical design. Charged with 320-lbs (145 kg.) and used Hertz horns. Still in use during the early years of WW2.

[27] RAN Mine Depot Swan Island http://users.tpg.com.au/borclaud/ranad/about_swanisland.html

[28] While the channel to the TB boat harbour had been dredge, there were ongoing problems with silting.

[29] *Argus*. 12 September 1939. Page 1

[30] Presumably a core group had previously been employed prior to the 1933 closure.

[31] A position normally designating Engineers in Charge of personnel at Naval Dockyard facilities.

[32] RAN Mine Depot Swan Island http://users.tpg.com.au/borclaud/ranad/about_swanisland.html

[33] Nautilus Institute https://nautilus.org/publications/books/australian-forces-abroad/defence-facilities/swan-island-training-area/

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R.A.N. Armaments Depots. *R.A.N. Mine Depot Swan Island.* http://users.tpg.com.au/borclaud/ranad/about_swanisland.html

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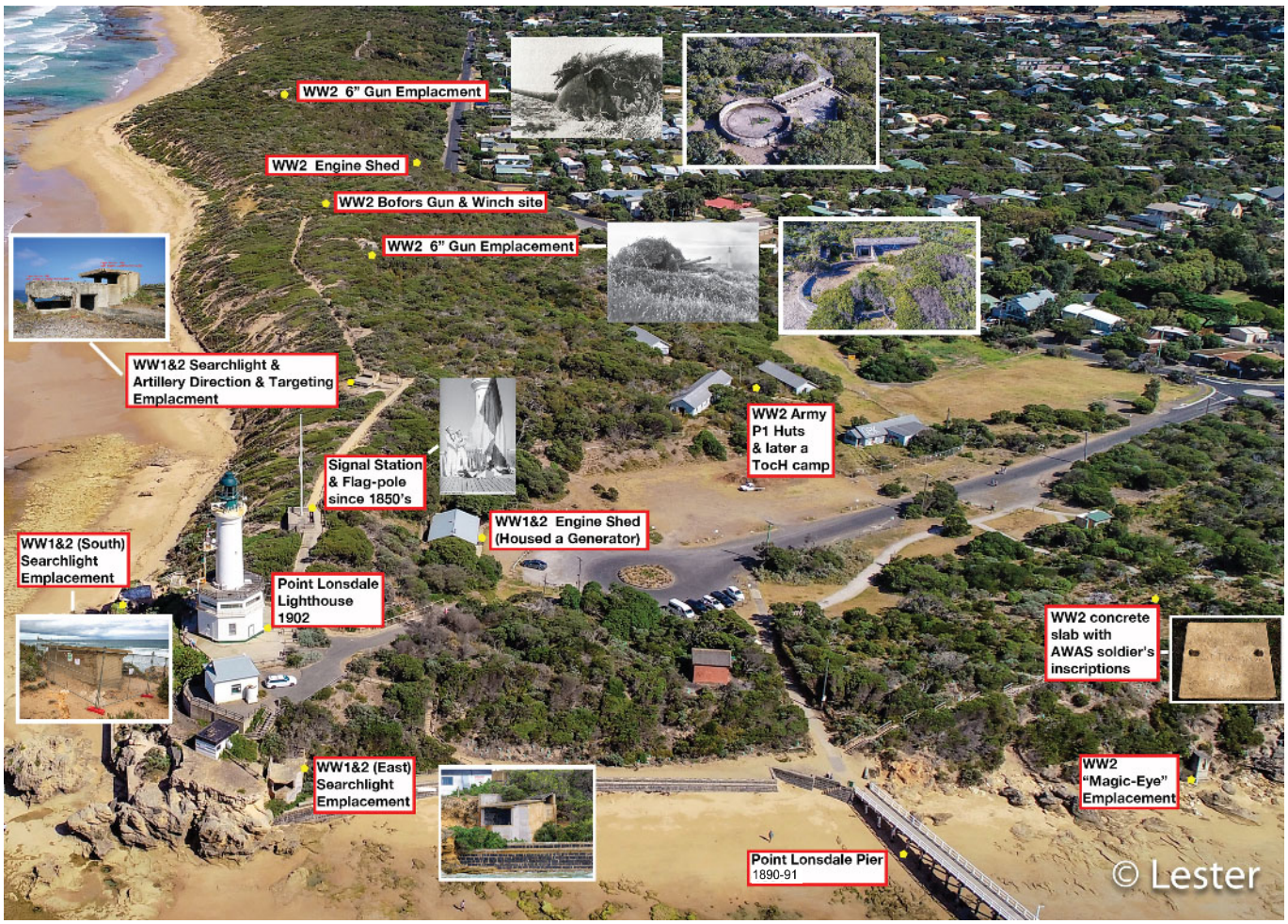
Victorian Govt. 1894. *Victoria, Annual Report - Year 1893-4,*

Victorian Govt. Victoria Defence Reports 1878 -1896. - Various

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Trove Digital Newspapers – As referenced in endnotes.

POINT LONSDALE/SHORTLAND BLUFF



Point Lonsdale/Portland Bluff Military Sites: drone photograph by Lester Hunt



Point Lonsdale/Shortland Bluff Maritime, Signalling and Lighthouse Sites. Drone photograph by Lester Hunt

EXISTING STATEMENT OF SIGNIFICANCE

The Victorian Heritage Register lists the **Point Lonsdale Lighthouse** precinct as follows.

What is significant?

The Point Lonsdale Lighthouse precinct consists of the lighthouse and associated buildings [both extant and ruins], and defence structures associated with the First and Second World Wars. The area was first used in the mid-nineteenth century for the construction of navigational structures to guide vessels through the heads of Port Philip Bay.

European discovery of the entrance to Port Phillip Bay occurred in 1802 when Acting Lt John Murray in command of the *Lady Nelson* sighted the promontories now known as Point Lonsdale and Point Nepean. With the later exploration of Port Phillip Bay and the consequent development of the towns of Geelong and Melbourne, safe navigation through the dangerous Port Phillip Heads was of critical importance. The promontory at Point Lonsdale provided an obvious location for the placement of navigational guidance structures. Although a flagstaff had been manned from 1852 and a warning light shown, the first lighthouse was not erected until 1863 when the former timber leading light at Shortlands Bluff which had been constructed in 1853-54 was relocated to Point Lonsdale. Lighthouse keepers' quarters [since demolished] were also constructed in the 1860s and in 1884, a weatherboard foghorn shed was constructed at the site. In 1891 a building for the storage of explosives held to blast a navigation channel near the jetty constructed was erected in the place of a former powder magazine. The store was later used as a rocket shed. The jetty was erected c1890 to house a lifeboat in accordance with the recommendation of the Commissioner of Customs following the wreck of the barque *Glaneuse* in 1886.

The Point Lonsdale Lighthouse constructed in 1901-02 is the last remaining of the three successive light structures erected at Point Lonsdale. The lighthouse was designed by the Public Works Department and the reinforced concrete structure was erected by the contractors Coates Brothers. The lighthouse was first lit on 20 March1902. In 1951 an octagonal structure housing the signal station and observation room was built around the base of the lighthouse.

The principal light station related structures remaining at the point are the lighthouse [1901-02], fog horn shed [1884], the rocket shed, which contains two rare vertical boilers [1891], the jetty [c1890], the scend shed [1941], the signal mast [1951], and the remains of the lighthouse keepers quarters [1860s].

The Point Lonsdale lighthouse is of a traditional design consisting of a shaft and capital and closely follows the form of many late nineteenth century Victorian lighthouses. The structure is mass concrete tower similar in construction to the earlier Point Hicks lighthouse. The structure is surmounted by a Chance Brothers lantern. The original oil lamp of the light was replaced first with an acetylene light and later an electric light. Half way up the shaft is a cantilevered platform supporting red and green navigation lights which replaced a subsidiary light original to the 1901-02 structure.

While Point Lonsdale had always been of strategic defence interest, it was the outbreak of the First Word War which prompted the construction of defence structures in the vicinity of the lighthouse. Two search light emplacements, an electric light directing station and engine house were constructed in 1914. Further defence structures were erected in response to the commencement of the Second Word War. A new concrete emplacement, now the scend shed, was constructed in

1941and two gun emplacements and a fire directing emplacement were added in 1942. At about the same time, the Point Lonsdale defence camp was erected. The camp, consisting principally of P1-type huts, initially accommodated the 7 Australian CRE [Works] and with a small area set aside on the east side of the Point Lonsdale Road for the Australian Women's Army Service [AWAS]. At the height of the war, there were fifteen camp buildings at Point Lonsdale. In 1946, the service personnel social and benevolent organization Toc H applied to use the camp buildings as holiday accommodation for children of former members of the services. Toc H later purchased the buildings and continues to lease the land from the Victorian Government.

How is it significant?

The Point Lonsdale Lighthouse precinct is of architectural, historical and archaeological significance to the State of Victoria.

Why is it significant?

The Point Lonsdale Lighthouse precinct is of historical significance for its association with the maritime and defence history of Victoria. The lighthouse structures in the precinct demonstrate the importance of a system of navigational aids in a time when shipping was of singular significance in maintaining commercial links between Melbourne and Geelong and Britain and Australian colonial ports. The Point Lonsdale lighthouse was of critical importance as the first guiding light to the entrance of Port Phillip Bay visible from sea. The defence group is of historical significance for the range of fixed defence structures within the site, reflecting the importance of the defence of Port Phillip Bay and the major cities of Melbourne and Geelong during the duration of both the First and Second World Wars. The P1-type huts are of interest for their association with the 7 Australian CRE [Works] division, the Australian Women's Army Service [AWAS], and the Toc H organization.

The Point Lonsdale Lighthouse group of buildings is of architectural significance for its lighthouse which is a typical and aesthetically pleasing example of an early 20th century lighthouse design, and the ancillary structures and fittings. The fog horn shed is the only known fog horn shed at a Victorian lighthouse and the two vertical boilers which provided the power for the steam operated fog-horns are rare in their original setting. While there are rocket sheds at three other Victorian light stations the rocket shed at Point Lonsdale is the only one located in close proximity to a lighthouse.

The Point Lonsdale Lighthouse precinct is of archaeological significance for its potential to reveal significant artefactual remains pertaining to the use of the place as a lightstation and signal station. Sites in the vicinity of the demolished keeper's buildings have a high archaeological potential.

The Victorian Heritage Register Lists the **Shortland[s] Bluff** precinct as follows:

WHAT IS SIGNIFICANT?

Shortlands Bluff including all of the landscape elements, navigational aids and defence bunkers.

HOW IS IT SIGNIFICANT

Shortlands Bluff is of historical significance to the State of Victoria. It satisfies the following criteria for inclusion in the Victorian Heritage Register:

Criterion A

Importance to the course, or pattern, of Victoria's cultural history.

Criterion B

Possession of uncommon, rare or endangered aspects of Victoria's cultural history.

Criterion D

Importance in demonstrating the principal characteristics of a class of cultural places and objects.

Shortlands Bluff is significant at the State level for the following reasons:

Shortlands Bluff is historically significant for its association with maritime navigation since the 1840s. The construction of maritime navigational aids at Shortlands Bluff assisted in the safe passage of vessels into Port Phillip Bay. This was critical for the establishment of Melbourne and the development of Victoria, particularly following the discovery of gold in 1850. [Criterion A]

Shortlands Bluff is also historically significant for its association with defence from the 1860s until the end of World War II. Defence emplacements were initially prompted by the discovery of gold in 1850 and the outbreak of the Crimean War in 1853. Additional emplacements and searchlight-bunkers were constructed from the late nineteenth century until the end of World War II. [Criterion A]

Shortlands Bluff contains uncommon elements associated with maritime navigation and defence.

The White and Black Lighthouses are an uncommon example of lighthouses which were designed and constructed as a pair. The concrete bunker of the see?]saw searchlight is evidence of the only known example of this type of searchlight in Victoria and one of only four known examples worldwide.[Criterion B]

Shortlands Bluff is significant for containing notable examples of elements representing the classes of maritime navigation and defence. It was the location of some of the earliest maritime navigational aids and defence emplacements in Victoria. The land formation and location of the place was critical to the development of Victoria through its ability to provide safe navigational guidance for maritime vessels entering Port Phillip Bay, and as one of the places in a strategic network around Port Phillip Bay from which to defend Victoria in the event of seaborne attack. [Criterion D]

POINT LONSDALE/SHORTLAND BLUFF

Andrew Sutherland

Andrew Sutherland is a retired public servant who has been working with a team of enthusiastic local historians for many years to preserve and promote the remarkable military and maritime heritage of Point Lonsdale and Queenscliff. He lodged the submission for National Heritage for Point Lonsdale which was then placed on the Australian Heritage Council's Finalised Priority Assessment List for 2017-18. This section on Point Lonsdale is a summation of the extensive research work undertaken in conjunction with Michelle Jepson, Carole Barwick, Lester Hunt, Lynn Hunt, Keith Quinton, David Connoley and Chris Smyth.

STATEMENT OF SIGNIFICANCE

The Point Lonsdale Lighthouse Reserve/Shortland Bluff and environs ('the Reserve') is situated on a headland commanding a 270^{O} view which includes Queenscliff, Port Phillip Heads, Point Nepean, and Bass Strait. The Reserve's strategic geographical position has ensured it has been of great significance to Australia for over 150 years and in many respects it is an exemplar of an integrated maritime and defence landscape. The site retains important navigational aids critical to the economic development of Australia as it controls the entry to Port Phillip Bay, also known as 'the Rip', one of the most dangerous harbour entrances in the world (31 of the 120 shipwrecks known to have occurred within a 10 nautical mile radius of Port Phillip Heads are thought to be within the Marine National Park abutting Point Lonsdale and Point Nepean). The site also has many remnant structures associated with the defence of Australia dating back to the pre-World War 1 era although its military history dates to the 1850s with strong linkages to other nearby Port Phillip Bay defence sites, notably Point Nepean and Fort Queenscliff.

The evolving cultural landscape produced by such prolonged maritime and military usage is important for its association with, and ability to illustrate, a broad range of processes which exemplify the strategic role of the Point Lonsdale headland in the growth and defence of Melbourne, the Colony of Victoria, and Australia under Colonial and Commonwealth governments.

The first recorded European entrance to Port Phillip Bay was in 1802. By 1835, only 12 vessels are known to have sailed through Port Phillip Heads, but in the following year 81 entered the Bay, most from Tasmania, carrying sheep. Then the pastoral settlement of Victoria gathered pace with the Gold Rush creating a completely new impetus with rapidly increasing trade and migration. The colonial peak of shipping movements was reached in 1854 when 2,629 vessels brought immigrants and goods to the colony. The critical role of Point Lonsdale in enabling safe passage through Port Phillip Heads determined and shaped the history of Melbourne and Geelong, thereby advancing Victorian economic development. The site illustrates the emerging nation's dependence on the sea for transportation. Concurrently the sea also provided the greatest military risk – seaborne threats associated with Australia's position within the British Empire.

The Point Lonsdale headland reflects the somewhat ad hoc decision making relating to military and navigational infrastructure, particularly as technology was evolving steadily. With regard to fixed

defences, the Reserve's geographically strategic position overlooking the entry to Port Phillip inevitably made it important for defence purposes. Geo-political and colonial defence based on fears of foreign aggression drove the development of coastal fortifications from the 1870s. The strategy adopted by military planners was to have a series of overlapping forward defences at the entry to Port Phillip Bay with supplementary fortifications around Melbourne. As such, the Port Phillip defences are part of a larger cultural landscape stretching around the shores from Point Lonsdale and Queenscliff, through the city of Melbourne and around to Point Nepean - they exist as part of a network rather than just individual defence structures.

There were increasing concerns of threats to Australia when Russia and Britain came close to war in 1879 (Constantinople) and again in 1885 (Afghanistan). Initial plans by Captain Scratchley in 1863 for guns at Point Lonsdale were not progressed, despite popular support. The main function of the site remained shipping control although the clear overlap of defence and trade saw Point Lonsdale equipped with one of the first telegraph posts in 1860. There were ongoing suggestions for additional defences at Point Lonsdale by General Schaw in 1887, then Major General Edwards in 1889. These plans did not eventuate due to factors such as the increased capacity to mine the shipping channel, adequacy of existing fortifications and the economic downturn of the 1890s.

With the outbreak of World War 1, Point Lonsdale's role as a Port War Signal Station focussed primarily on the identification and control of shipping to prevent the entry of enemy vessels into Port Phillip Bay. It is noteworthy that after the federation of Australia in 1901, Melbourne was the seat of government until Canberra became the permanent capital in 1927. Point Lonsdale, along with other defence infrastructure at the Heads, was essential to mitigate of the risk of an attack on the nation's capital was essential to the war effort. This function continued to the end of World War 2 and was enhanced with sophisticated infrared ship detection and additional battery positions. The numerous remnants of military infrastructure still on the site therefore represent an important reminder of the participation of those personnel engaged in the domestic defence of Australia' particularly during the First and Second World Wars.

At the end of World War 2 and immediately afterward, the Reserve's P1 military huts were initially used to house Italian prisoners-of-war, a little-known story which can demonstrate how Italians engaged with the local community and the extent to which they were accepted in a non-adversarial environment.

Regarding the Point Lonsdale/Shortland Bluff navigational infrastructure, the Government obtained advice from notable mariners such as Captain William Hobson (later Governor of New Zealand) in 1836, Captain Owen Stanley from HMS Rattlesnake in 1849, and Captain (later Admiral) John Erskine from HMS Havannah, both in 1849, that the optimal place for a lighthouse was at the Heads. This view was supported by other prominent Victorian marine specialists, but the colonial government opted to put two lighthouses at Shortland Bluff in 1862 and used the Point Lonsdale headland as the location of fairly basic landfall aids to guide vessels through the Heads. However, regular loss of shipping and the need to have reliable port entry in support of trade and defence ensured the Point Lonsdale light station was substantially upgraded to become the most important lighthouse on the Victorian coast due, not only to its navigational function, but also of the role of lighthouse staff in rescuing mariners in difficulty.

PROPOSED VALUES

CRITERION A: Processes

Military: The Point Lonsdale Lighthouse Reserve (and environs) is significant as a cultural landscape containing a rich collection of historic elements including: gun batteries; searchlight emplacements; 'magic eye' infrared ship detection; P1 huts; and other support facilities relating to the important theme of coastal defence in south-eastern Australia. Given its natural vantage point, the Point Lonsdale headland has played a significant role in the development of colonial and national defence until 1945. The prolonged military involvement on the site is important for its role in the overall defence strategy implemented at Port Phillip Heads.

The site was recognized as a strategic position as early as 1858 when it was declared a Battery Reserve. In response to fears of Russian invasion of Britain's colonies in the late nineteenth century, the Reserve was nominated as a key position for armaments, following the reviews by Scratchley and Jervois. These military reviews emphasized the triangular nature of the defence strategy for the Heads, namely, Point Lonsdale/Shortland Bluff, Point Nepean and Fort Queenscliff. Point Lonsdale's commanding view of the approach to Port Phillip resulted in a telegraph station being installed by 1860 in support of the general defence of the Heads. Port Phillip was reputedly the most heavily defended harbour in the Southern Hemisphere in the late 19th Century, earning the sobriquet of 'the Gibraltar of the South'.

The coastal defences of Port Phillip are part of a large cultural landscape built between about 1860 and 1940, as a result of remote political forces, and adapted to the particular geography of Port Phillip Bay. From 1851 the Victorian Government invested heavily in Port Phillip's defences, expending £7m over fifty years. Victoria also led the way for other colonies, appointing the first Minister of Defence in 1883 [Marmion, 2009, p. 274].

Into the 20th Century, the defence function of the Reserve evolved in line with technological changes reflecting the importance of the defending Port Phillip's major cities of Melbourne and Geelong during both World Wars. Two searchlight emplacements, an electric light directing station and engine house were constructed in 1914. Further defence structures were erected in response to the commencement of WW2. A new concrete emplacement, now the engine shed, was constructed in 1941 and two gun emplacements and a fire directing emplacement were added in 1942. The P1-type accommodation huts are important for their association with the 7 Australian CRE [Works] division, the Australian Women's Army Service [AWAS] and the housing of Italian prisoners-of-war.

Maritime: The Point Lonsdale lighthouse is significant for its association with the development and establishment of navigational aids along the Australian coastline following the 1856 Lighthouse Commission, which manifested the first Inter-colonial Agreement on the provision of lights around Australia. The site's operations started with simple markers and tide flag signals which facilitated entry only during daylight. The flagstaff was manned from 1852. Gradually the technology became more sophisticated with illuminated beacons providing limited range. The first lighthouse was erected in 1863 when the former timber leading light at Shortlands Bluff (constructed in 1853-54) was relocated to Point Lonsdale. Lighthouse keepers' quarters (since demolished) were also constructed in 1857 and in 1884.

The principal light station related navigational structures remaining on the Reserve are the lighthouse (1901-02), fog horn shed which contains two rare compressors (the Victorian Heritage Database erroneously refers to the compressed air storage tanks as "boilers"). Following the wreck of the barque *Glaneuse* in 1886, the Commissioner of Customs recommended an emphasis on rescue efforts at Point Lonsdale resulting in the construction of the 1889 lifesaving rocket house and the 1890 jetty (pier) and lifeboat shed. As a result of the continuous Government deployment of new technology and trained staff, the Reserve provides a complete narrative of the evolution of

navigational aids and rescue assistance to mariners from the most basic solutions used in the 19th Century to the present day digital technology.

Collectively, the lighthouse, tide signal mast and fog horn demonstrate the importance of an integrated system of navigational aids in a time when shipping was significant in maintaining commercial links between Melbourne and Geelong, with Britain and other Australian colonial ports. These aids were also relevant for transforming and managing natural resources in the social setting of "living from the sea" as Queenscliff harbour once was the centre of a large fishing fleet which operated past the Heads, into Bass Strait. For over 100 years, the lighthouse, jetty and signal mast are significant as dominant features in the landscape of Port Phillip Heads and surrounding region. The lack of development on the Reserve and environs has maintained much of the physical and visual context of the structures, enabling comprehension of design intent.

CRITERION B: The place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history

The Point Lonsdale fortifications in the high coastal ridge facing south, feature a number of particularly unusual attributes, including a rare example of gun mountings, observation post, gun-crew rooms, ammunition supply and a small gauge supply rail track. The site contains several P1 huts which were once common but now becoming much rarer in their initial setting. Among other uses, these huts were used during WW2 to accommodate Italian prisoners/interns. The Reserve was the first site in Australia to have the 'Magic Eye' infrared beam technology deployed to detect enemy shipping - the remaining structure is very rare in Australia.

The maritime structures on the Point Lonsdale headland, particularly when linked to the other navigational aids at Shortland's Bluff, comprise a rare 19th Century Australian example of an integrated approach to port entry which reflect the complexity of entering Port Phillip. The lighthouse is believed to have been the first reinforced concrete (Portland cement-based) building in Victoria while the fog horn shed is the only known one at a Victorian lighthouse and the equipment is rare in its original setting. While there are rocket sheds at three other Victorian light stations the rocket shed at Point Lonsdale is the only one located in close proximity to a lighthouse. The rocket house is a scarce reminder of the inherent dangers of the Rip and how limited the technology was for rescue situations. The adjoining Port Phillip Heads Marine National Park which

is significant as it contains outstanding environmental, cultural and recreational values including intertidal rock platforms and numerous shipwrecks (for example, *Anonyma, Black Boy, Conside, David, Elizabeth, Gange, George Roper, Glaneuse, Holyhead, Sacramento, Thetis and Yarrow*). These wrecks are an integral part of the maritime narrative of the Reserve.

CRITERION C: The place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history

A study of maps and charts associated with the military and maritime use of the area together with on-site research has the potential to add to our understanding of the development and operation of 19th and 20th century practices and procedures from the 1850s. Archaeological evidence of the military and maritime infrastructure has potential to reveal details of the living and working conditions and experiences of those engaged in both the defence of Australia, and the protection of mariners dating back to the colonial period. In particular, research would enable the period from the 1850s-1900s, a formative period for navigational practices in the Australian colonies, to be better understood and interpreted in the context of the archival record and the surviving, functionally-related, buildings, planning and layout of the site.

CRITERION D: The place's importance in demonstrating the principal characteristics of a class of Australia's natural or cultural places

Military: The seaward oriented defences, together with the other military elements of the site, work to illustrate the evolution of military technology during the 20th century. The gun fortifications, searchlight emplacements, 'magic eye' structure, engine shed, P1 barracks, and the spatial relationships between all these elements all help to convey the changing requirements of the defence forces over time. They combine to represent a very valuable example of a coastal defence over an extended period when the risk of a sea-borne attack on Australia was deemed a possibility. The variety of design and construction methods of the structures are important in illustrating the sequence and changing military uses of the Point Lonsdale headland over time, from an army battery and enemy detection base through to prisoner-of-war accommodation. The remaining military structures are significant for their association with the development of static coastal defence methods and the advances in artillery and shipping detection technology during the twentieth century.

Maritime: The Reserve with its lighthouse, flagstaff, foghorn shed, rocket house and ruins dating back to the 1850s constitute a precinct with a major heritage value to Australia. The site can demonstrate the complete range of maritime communications, navigation support, shipping management, emergency rescue operations from colonial times. The water-based view of navigational structures on Point Lonsdale retain a critical role in providing safe navigation. There has been little change in the built environment observable from shipping entering the Heads. The mariner's view of these headlands has remained consistent for generations and in many ways constitutes a heritage navigational line of sight. Ample evidence is available to confirm the visual navigational guides remain 'mission critical' to sailors.

In the broader context, the Point Lonsdale Lighthouse Reserve is significant for its association with the development and establishment of navigational aids along the Australian coastline following the 1856 Lighthouse Commission, which manifested the first Inter-colonial Agreement on the provision of lights around Australia. From the perspective of ensuring safe navigation, the site has evolved in accordance with technological changes and the need to service the increasing maritime usage of Port Phillip. The lighthouse was first manned in 1852 and has remained so ever since, unlike any other lighthouse in Australia. The lighthouse still manages vessel traffic and controls access to the Port of Melbourne to control shipping in Port Phillip. This function will remain into the future due to the complex mix of large containers, coastal fishing and recreational vessels that make the Rip one of the busiest waterways in Australia. The Port of Melbourne handles almost 40% of container shipping to Australia so the lighthouse continues to be integral to national trade.

CRITERION F: Technical achievement

The site has archaeological and remnant infrastructure which illustrates the evolution of navigational aids. Point Lonsdale was an experimental site for the first ship-to-shore wireless transmission in 1901, when Walter Jenvey messaged the *HMS St George*, part of the fleet bringing the Duke and Duchess of Cornwall to Australia for Federation activities. During World War 2, the Reserve was the first site at which the 'magic eye' infrared beam was deployed which enabled the detection of ships entering Port Phillip

CRITERION H: 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

A natural feature in the Point Lonsdale escarpment is 'Buckley's Cave' associated with William Buckley, who escaped from the first penal settlement at Sorrento in 1803 and lived for much of this time in a hut near Breamlea, 23 kilometres away, until giving himself up in 1831. It is thought that he used the cave as an observation point for passing ships. Point Lonsdale, together with Fort Queenscliff, Shortland's Bluff and Point Nepean are significant for their association with leading military planners of the late 19th and early 20th centuries. Given the intertwined defence and navigation functions, the area around the Heads was regarded as one zone. Lieutenant Colonel Peter Scratchley and Major General Sir William Jervois advised on defence design, with recommendations for Point Lonsdale. Another well-known Army officer linked with the artillery defence of Port Phillip Heads was Major-General Sir John Monash. Monash spent a formative period in the area as an Army officer. Monash's engineering partnership of Monash and Anderson provided an unsuccessful tender for the construction of the Point Lonsdale lighthouse in 1901.

Alfred Deakin had a great understanding of the area as Prime Minister in addition to his own long period spent living in the area. Field Marshal Viscount Kitchener visited Australia in 1909 to inspect the existing state of defence preparedness, and advise on the best means of providing Australia with land defence. Alfred Deakin, by then Minister for Defence, accompanied Kitchener to Queenscliff before departing to his own house at Point Lonsdale. Kitchener, stayed in Queenscliff at 'Hopewell', the holiday home of Sir Simon Fraser (the uncle of Prime Minister Malcolm Fraser).

CRITERION I: The place's importance as part of Indigenous tradition

The Bellarine coastal environment was an important source of resources for Aboriginal people, resulting in a high concentration of Aboriginal archaeological sites along the coastal zone. The time before inundation was remembered in Aboriginal oral tradition, with Aboriginal people recalling when Hobsons Bay was a kangaroo ground, and when the River Yarra went out at the Heads before the sea broke in [1858 report to the Select Committee of the Victorian Legislative Council by Mr W. Hull JP cited in Sullivan 1981:4]. The coastal zone of the Bellarine encompasses the traditional country of the Wathaurung people of the Geelong area. This area continues to be of economic,

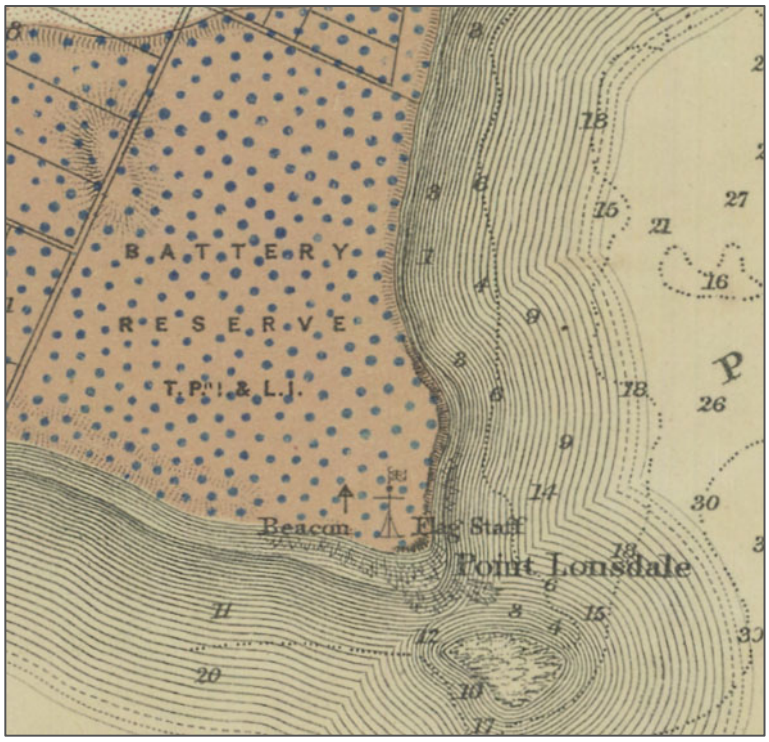
spiritual and cultural importance to Aboriginal communities. The earliest evidence of Aboriginal occupation is dated to the mid to late Holocene, approximately 5,000 years ago [Goulding 2006]. Aboriginal groups exploited the resource rich areas on the coastal margins and wetlands, moving seasonally between the coast and the productive basalt plains of the hinterland [Goulding 2006; Department of Natural Resources and Environment 2001]. Coastal resources were central to Aboriginal economies and some sites may demonstrate an increasing trend towards intensified exploitation of marine resources, higher population densities and social change during the late Holocene. There is information (not in the public domain for cultural security reasons) which indicates the Point Lonsdale Lighthouse Reserve and environs has numerous areas of Aboriginal sensitivity. The 2006 Victorian Government management plan for the Reserve noted:

> The rich natural landscape at Point Lonsdale, with its intertidal rock shelves and surrounding coastal vegetation, provided an abundant and regular source of food. Evidence of patterns of past use within the district is reinforced by the frequency of middens amongst the dunes… A great challenge is presented to the future management of archaeological sites, known and unknown, at Point Lonsdale. Many known significant sites are close to popular recreational areas and heritage structures of European significance. The potential to damage these areas through poor appreciation and management is high. [Department of Natural Resources and Environment 2001, p.20-21]

DEFENDING THE COLONY: POINT LONSDALE DECLARED A BATTERY RESERVE 1858

The rapid development of the military landscapes of Port Phillip was often achieved by the exclusion of other landscape uses. Point Lonsdale was designated a defence reserve in 1858 [Duncan 2006, App.C-1, p.1], which precluded alternative development forms along the coastal dune zone for at least 50 years. The early adoption of this policy did not preclude the use of some areas within the zone for other Government purposes such as navigation.

The Port Phillip Heads area was surveyed by Richard Daintree, Field Geologist, in 1861, and the resulting map (published 1863), shows the Point Lonsdale headland, along with what is now the Point Lonsdale township, as a Battery Reserve.



Location of Lonsdale Battery Reserve: Detail from Geological Survey of Victoria 1861 Government Printing Office, Melbourne

The narrowness of the entry to Port Phillip dictated the optimal locations on which coastal defences should be positioned, particularly given the armaments of the period. Geographically, the three headlands of Point Lonsdale to the west, Queenscliff to the north, and Point Nepean to the east, had capacity to ensure complete coverage of the entry to Port Phillip.

During the Crimean War (1853-1856) 'panic' articles appeared regularly in the Colonial press. It was thought that if Britain was involved with other naval powers, the 'gold colonies' could be seen as tempting baits or easy triumphs that could be taken by surprise. As a result, several gun batteries were established within Port Jackson, while two gun batteries containing eighteen ML SB 32-pounder guns were established in 1856 at Williamstown and Sandridge on the shores of Hobson's Bay.

In 1858, a commission reviewed the defences of Melbourne and expressed little faith in the ability of naval units to defend Port Phillip. General Sir John Burgoyne submitted a memorandum to the

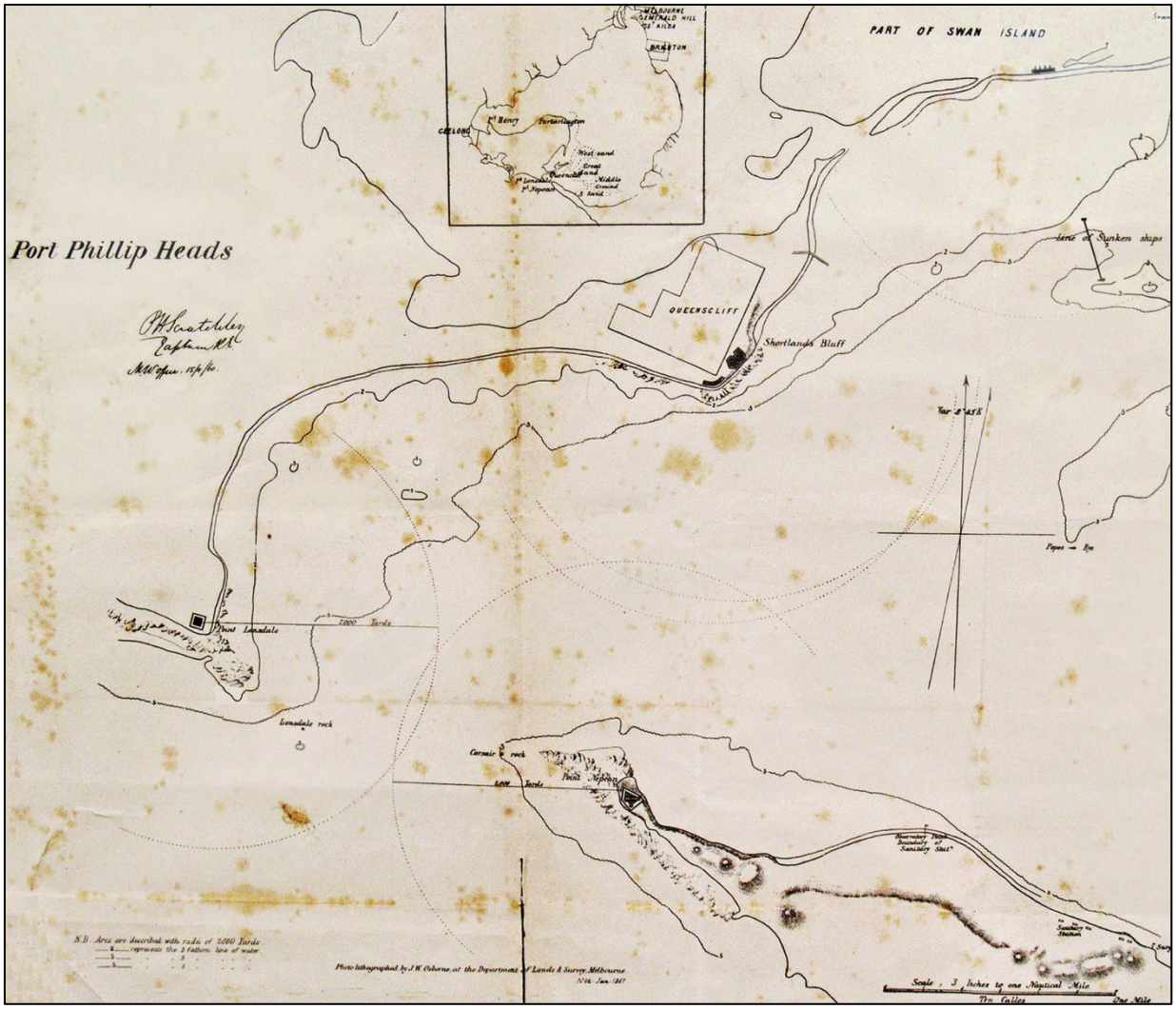
commission on 6 May 1858 in which he proposed that defending the Heads as the best means of protecting Port Phillip. However, the distance across the Heads (3,650 metres) was too great for the artillery being used at the time. In 1860, the Commission sought to gain the advice of a Royal Engineer Officer skilled in fortifications. The Colonial Defence Act (UK) was passed in 1865 and the Colonial Defence Committee (subsequently the Committee of Imperial Defence) drew up memoranda outlining the shape and form for imperial coastal defences, with the Colonies then preparing schemes for local defence. An armoured monitor HMVS *Cerberus* was commissioned in 1871.

By 1860, concern about harbour defences, persuaded the Victorian Government to request London for an experienced Royal Engineer (RE) officer to provide advice. Captain Peter Scratchley was selected and spent the following three and a half years in Victoria advising on defence works. During this period there was a Royal Commission into defence preparations and Scratchley submitted his report on the Hobson's Bay defences. The necessity to review defences was heightened in 1862 when the Russian Corvette *Svetlana* entered Port Phillip and fired a salute to Queenscliff, it was an embarrassing moment for the locals, as they could not return this salute because they were not supplied with gun powder.[1]

Scratchley's approach was to have a military linkage between all three Port Phillip Heads headlands (Queenscliff, Nepean and Lonsdale) and he recommended that four forts be built near the Heads of the bay (refer to map below). In 1865, the *Geelong Advertiser* published a summary of the Scratchley report which recommended inter alia:

> it is best to construct the following work ... as proposed in 1863:-
> (1) On Point Nepean, a tower of four guns.
> (2) On Point Lonsdale, another tower for two guns.
> (3) At Queenscliff, a work near the lower lighthouse for three guns and the existing battery retained with a more powerful armament.[2]

Only Queenscliff was developed at this time but nevertheless Scratchley identified the triangular nature of defending the Heads. The Queenscliff Volunteer Artillery Battery manned the 68-pounders on Shortland Bluff, the land on which Fort Queenscliff is located overlooking the channels into Port Phillip. There was vigorous debate throughout the 1850s and 1860s between those who favoured a forward defence at the entrance to Port Phillip and those who favoured a closer defence based on Hobsons Bay.[3]



Scratchley map of proposed Port Phillip Heads defences 1861
Source: State Library of New South Wales

Commodore Wiseman's Memorandum on the Defences of Port Phillip and the Harbor of Hobson's Bay was published in 1865:

> At the Heads should be placed a closed work for six guns, three 40-pounder Armstrong's and three 68-pounders, on the shoal in advance of Point Lonsdale, or if practicable, on the Lonsdale Rock. A similar work on the Corsair Rock, and a work for three 40-pounder Armstrong's near the lower lighthouse at Queenscliff. The whole to be so constructed as to bear on the entrance at the Heads, and on the ship channel. The foundations for the whole of these forts should be made sufficiently strong to carry guns of at least twelve tons weight, and armour plating ten inches thick; for though at present no material of this description is at command for defensive purposes, there is no doubt that before long it will be generally available. Of the works thus recommended, those at the Heads may be depended on to do substantial damage to a hostile vessel, whilst those round the Bay would soon disable and sink any vessel bold enough to take up a position near the anchorage.[4]

Early in Victoria's establishment, the requirements for lights and maritime markers and signals were recognised by Governors Bourke and Gipps and these essential public works were begun by Superintendent La Trobe in 1841. Fast and reliable communication for commerce and defence was needed and there were strong recommendations that Queenscliff be linked to Melbourne by telegraph. `By 1855 the first line between Melbourne and Williamstown was extended to

Queenscliff. In 1860 this was extended to Point Lonsdale where a signal station was also constructed.

The intertwining of the strategic importance of Point Lonsdale defence and commercial importance was demonstrated by the allocation of £7,000 for the construction of the telegraph to Point Lonsdale. *The Argus* of 30 January 1862, by the General Superintendent of Electric Telegraph of the Department of Electric Telegraph (part of the Office of the General Superintendent) noted the importance of the line to the Point Lonsdale lighthouse precinct. Mr Samuel W. M'Gowan, the Deputy Postmaster-General, wrote a detailed article giving a status of telegraphy in Victoria and emphasizing that telegraphy was essential for 'defence and protection from aggression, apart from its incalculable value in a mercantile and commercial point of view'.

The Queenscliff/Point Lonsdale telegraph line was one of the first in Victoria due to its strategic location. 'The expenses of working and maintaining the two coast lookout stations at Cape Schanck and Point Lonsdale (and, indeed, the whole cost of maintaining the Cape Schanck line) should also be deducted from the general expense account, those branches having been established as one portion of the works for the defence of the colony recommended by the military authorities when the whole subject was under discussion in 1859'.[5]



1870 Skeleton Map of Victorian Telegraph Circuits printed by Crown Lands Office Melbourne (inset detail).

In terms of military infrastructure, progress was slow and fortifications for the Colony of Victoria were constantly under review, not always favourably. In 1870, *The Argus* criticized the lack of progress in improving defences at the Heads:

> Port Phillip Heads consist of three points of land, which bear to each other the relations of an equilateral triangle. Two points are on the western and one on the eastern side of the entrance channel. The last is a long, narrow, promontory of rocks and sand, being an extension of the south-eastern coast, and is known as Point Nepean. Of the two prominent points on the opposite side the most southerly is Point Lonsdale, and the other a bluff of peninsular land connected with the mainland by a narrow neck of some length, is known as Queenscliff. As the latter more immediately commands the entrance from Bass's Straits than any of the other points indicated, it is the site of the pilot and lighthouse stations... The south channel, which is wholly beyond their [shooting] reach, is commanded by Point Nepean, but that place is not fortified neither is Point Lonsdale, where the channel is a mile and a half wide. Captain Scratchley, when on the spot, strongly recommended a battery of guns to be right of the present position, and pointing seaward, which would also command the site of the probable landing-place should an attempt be made to take the present battery in flank, but nothing was done in consequence.[6]

In the late 1870s, Scratchley returned to Australia with Major General Sir William Jervois to advise on defensive measures in a number of the colonies. In June 1877 Jervois, Scratchley together with Colonel Anderson and Captains Stanley, R.N., Snee, Bull, and Panter, visited Queenscliff and Point Lonsdale to review the defences. As reported in the *Weekly Times* in 1877:

> The party landed at Queenscliff, and proceeded to inspect the lighthouse battery. This battery was constructed over twenty years ago, and is decidedly old-fashioned. It mounts three guns — two 68-pounders, and one 80-pounder. The position is excellent, but nothing else can be said in its favour. It is here that any attack on the Bay would be finally decided. Point Lonsdale, three miles farther on, commands the western approach to the Bay. Carriages were in waiting, and the party conveyed there. The outlook was carefully inspected, and doubtless this position will be found to enter into the scheme proposed by Sir W. Jervois for the general defence.[7]

However, by 24 July 1877, while Jervois recommended improvements at Queenscliff, with regard to Point Lonsdale he stated:

> It has often been suggested that a fort should also be placed at Point Lonsdale, and no doubt such a work would be of advantage as affording a cross fire with the guns on Point Nepean in the passage of a vessel through the 'Rip,' I think, however, that this additional work would be an unnecessary expense. It would not oblige a ship to pass any nearer to Point Nepean, and the narrowest part of the channel is not between Point Lonsdale and Point Nepean but between the latter point and Queenscliff. An enemy, knowing that access to Hobson's Bay and Melbourne was absolutely barred by the defences at the shoals, would not risk running of the gauntlet between rimfire of the Cerberus and the two outer works which I propose. The works at Point Nepean and Queenscliff will... be arranged so as to afford the greatest amount of fire that can be obtained from them upon the entrance channel and on the passage between Point Nepean and Queenscliff.[8]

The necessity of constructing defence infrastructure at Point Lonsdale was also lessened by technological changes, notably the development of quickly deployable mines and torpedos. In 1871, the Volunteer Torpedo and Signal Corps had been formed with an establishment under Captain Couchman. In 1885, the Russian war scare meant the situation was considered serious enough for the Queenscliff depot at Swan Island to become operational. In March 1885, entry to Port Phillip was restricted as part of a worldwide Royal Navy alert. 56 buoyant mines and 96 ground mines were

laid on 30 March and exercises conducted on 2 April. On the last night of the exercise the colonial fleet attacked the forts at the Heads with Swan Island taking 10 minutes to get into action. On 10 April, mining of the West Channel began and was completed by April 13.[9] Such exercises demonstrated the responsiveness of mobile assets contrasted to fixed defence positions.

Despite Jervois' negative assessment regarding Point Lonsdale, there nevertheless remained a steady calls for guns at Point Lonsdale. In 1887, General Schaw provided a report to the Cabinet on fortifications at Port Phillip Heads which recommended guns at Point Lonsdale as a way of forcing ships toward Point Nepean's batteries. Schaw's report additionally noted the triangular nature of the defences at the Heads:

> Hence, if mines, adequately supported by artillery fire, be used in the triangle Queenscliff-Nepean-Lonsdale, it is most improbable that any hostile warships will attempt to enter between the Heads. A great advantage possessed by this outer line of defence results from the great difficulty an enemy would experience in destroying the mines by countermines, as he would have to rig his countermine boats and make his attack from the open sea, a thing practically impossible except in remarkably calm weather, such as is seldom experienced.[10]

Similarly, in 1889, a report on Australia's defences from Major General J. Bevan Edwards, C.B., to Sir W. C. F. Robinson, the Acting Governor, stated 'the Swan Island and South Channel forts, with their mine fields, answer all present requirements as an inner line of defence. If any future works are undertaken, two or three powerful guns on Point Lonsdale would give great support to the guns of Nepean, which are now somewhat isolated and unsupported'.[11] However, by 1890 there was intensive review of Port Phillip Heads defences in context of the fiasco of the abandoned Pope's Eye fort with *The Age* writing:

> cost and expediency are the standards by which the Pope's Eye Fort is declared the silliest blunder of our time in the matter of defence. The cost has been estimated at from £188,000 to £250,000, and the objection on this point is unanswerable— that for a small portion of that money a most formidable work could be built on Point Lonsdale, a part of the mainland, which is the most salient position in the whole system, and has yet been ignored with amazing obstinacy by the present Government, which claims to have done so much for our military defences. Military science declares emphatically for the unoccupied Point Lonsdale as an artillery position, but the pettifogging civilians, who know better, prefer to shovel the people's money into the ocean in a wild attempt at island building.[12]

Notwithstanding the extensive defence infrastructure development around the Heads, the 1890s depression heavily impacted colonial defences. The Naval Permanent force was reduced to 181 and the Naval Brigade reduced to 151 (all of whom resigned at once). The Victorian Permanent Artillery (which manned forts at the Heads) lost 43 men and the militia 279. Militia pay, which was set at £12 per annum in 1891, was reduced to £6.50p by 1894. [*The Military History of Swan Island*, unknown

author, p.7]. Until WW1, Point Lonsdale's role was primarily focussed on maritime activities except when military manoeuvres were underway and observers were placed at the Reserve to act as look-outs for ships attempting to 'run the Heads'.[13]

DEFENDING THE EMPIRE: THE GIBRALTAR OF THE SOUTH

The threat of war was present in defence planning well before the commencement of WW1. In 1908, *The Age* carried an article about searchlights at the Heads:

> Advantage is to be taken by the Minister of Defence, of the researches of Professor Ayrton, when ordering the apparatus, for the new searchlights' at the Heads. Professor Ayrton has invented the only perfect non-flickering carbon. Colonel Parnell, Chief of Ordnance, has kept himself fully posted in the progress of the professor's valuable production. The machinery for the lights is expected to arrive very soon from England, the contract for emplacements, stations, engine house, &c., having been let some time ago to Messrs. Wilson and Sly, of Melbourne. When the new lights are in position, and other improvements at Queenscliff, Point Nepean and Point Lonsdale have been completed, it will be practically impossible for foreign vessels to enter Port Phillip in wartime at night unobserved.[14]



American fleet in Australia, USS New Jersey steaming up Port Phillip Bay in 1908
(Source: Australian National Maritime Museum)

Military defence capability at Fort Queenscliff, Fort Nepean and Fort Pearce had also improved by 1911 with the early replacement of the ageing and increasingly obsolete 19th century military ordnance. Remote observations posts and range finding facilities allowed the Heads fort to effectively shell vessels in Bass Strait with ballistics of substantial range and armour penetration.

Land fortifications in Australia played no direct part in WW1, the notable exception being in 1914 when Fort Nepean firing a warning shot across the bow of the German merchant steamer 'Pfalz' as its Captain attempted to escape internment. During the inter-war period, the Point Lonsdale searchlights were maintained and used in the search for survivors of the Wyrallah (in 1924), and boats in distress (in 1931 and 1935).

By 1936, the growing probability of another European war and Japanese military aggression in China, revitalised concern over national defence capabilities. This first really palpable threat of an

invasion saw Australia's semi-neglected coastal fortifications system re-energised with Command defence plans.[15]

PORT WAR SIGNAL STATION POINT LONSDALE WORLD WAR 1

The flagstaff and bridge platform at Point Lonsdale Lighthouse served as a naval war signal station in both WW1 and WW2. At other times it carried civilian status and was manned by Commonwealth lighthouse keepers. The current lightkeeper station located at the base of the Lonsdale lighthouse was constructed after WW2, and the original Port War Signal Station hut (shown in the above photo), was demolished. The signal mast remained.



Lighthouse and Signal Station, Pt. Lonsdale.



Members of the Victorian Defence Regiments; 5th/ 6th/ 7th / 8th. (Citizens Military Forces) at Point Lonsdale (Source QHM)

The outbreak of WW1 heightened the need for tight security in the Bay. In response to the threat of German raiders attacking Australian ports, the pilots of the Port Phillip Sea Pilots were commissioned as lieutenants in the Naval Reserve, and undertook patrols and naval control duties for the duration of the war.[16]

The Soldiers who manned the Port Phillip searchlights were from the 34th Fortress Company Royal Australian Engineers (RAE). This group was originally formed in 1871 as the Victorian Volunteer Torpedo and Signal Corp (Engineers). Shortly after Federation, the duties related to laying sea mines

was handed to the infant RAN (c.1904-1914). Rather than disband the soldiers, who were highly experienced in all things electrical, they were gazetted as the 34th.

Searchlights at Point Lonsdale

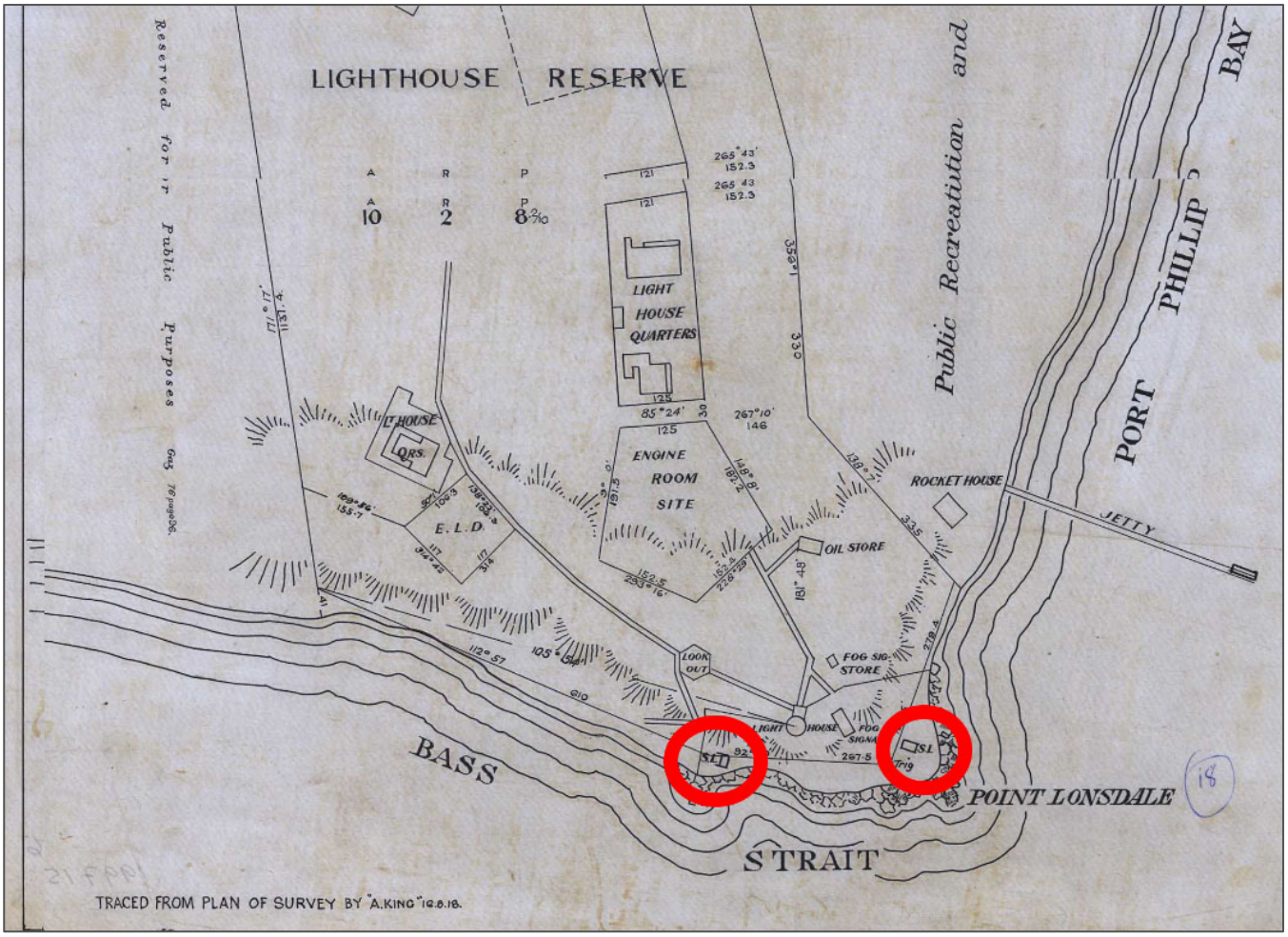


34th Fortress Company RAE at Point Lonsdale (Source QHM)

Two searchlights were constructed at Point Lonsdale during WW1. There were two primary lights, No.6, which swept Bass Strait, and No.7 which covered Port Phillip Heads as shown in the drawings below. Modifications to the searchlight structures was carried out in 1937 by the Department of the Interior whereby new concrete roofs were installed.[17]



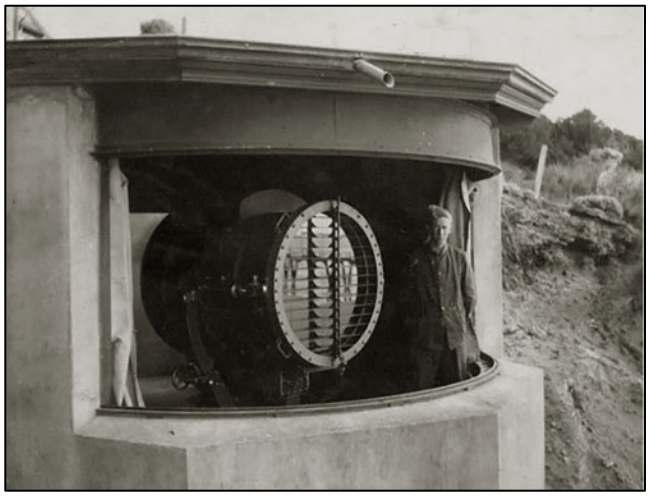
Plan showing ranges of Point Lonsdale searchlights in 1917 (Source: AAHU Fort Queenscliff)



Plan of the Point Lonsdale Lighthouse Reserve in 1918 showing location of the two searchlights (Source: AAHU Fort Queenscliff)

Searchlight Emplacement #1 1914

Facing east across Port Phillip Heads to Point Nepean. Sheltered by a reinforced concrete slab cantilevered over the working space immediately below it. Reinforced concrete side walls, mostly +/-30 cm thick. The flooring appears to be reinforced concrete.



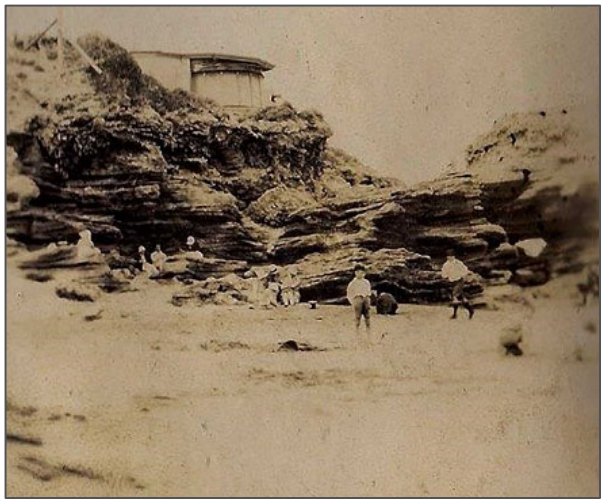
Searchlight #1 facing the Rip (Source: Queenscliffe Historical Museum)



Current condition

Searchlight Emplacement #2 1914

Facing south to Bass Strait. Sheltered by a reinforced concrete slab cantilevered over the working space immediately below it. Reinforced concrete side walls, mostly +/-30 cm thick. The flooring appears to be reinforced concrete.



Searchlight #2
(Source: AAHU Fort Queenscliff)



Current condition



Searchlight #2 facing Bass Strait (Source: Queenscliffe Historical Museum)

Electric Light Direction Station 1914:

Electric Light Directing station, plus DRF Direction Range Finding station addition 1942. On an elevated very exposed position of the cliff top near the Lighthouse is an observation emplacement that was built in two sections. The rear higher section was built in WW1 and the front lower section was an addition during WW2.[18]





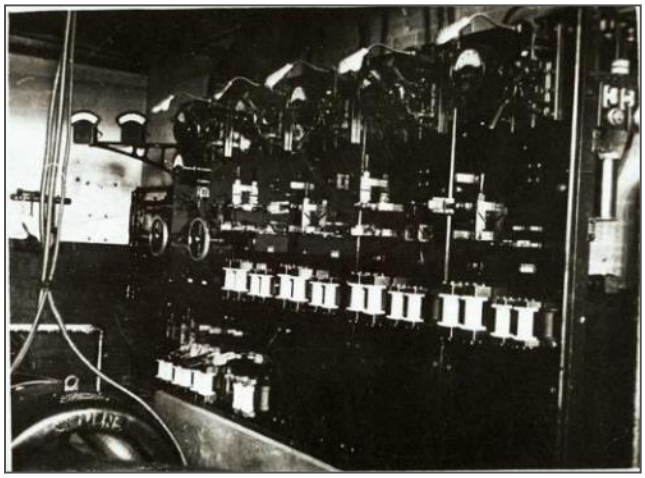
Current condition of Electric Light Detection Station

Engine Shed 1914:

During WW1 and WW2, the equipment generated electricity for defence structures on Point Lonsdale Lighthouse Reserve. These structures included the two searchlights, the two infrared beam transmission stations or "magic eyes", gun emplacements and the searchlight and artillery directing emplacement.[19]



Engine Shed c.1917
(Source: Queenscliffe Historical Museum)



Engine Shed switchboard
(Source: Queenscliffe Historical Museum)



Current view of Engine Shed

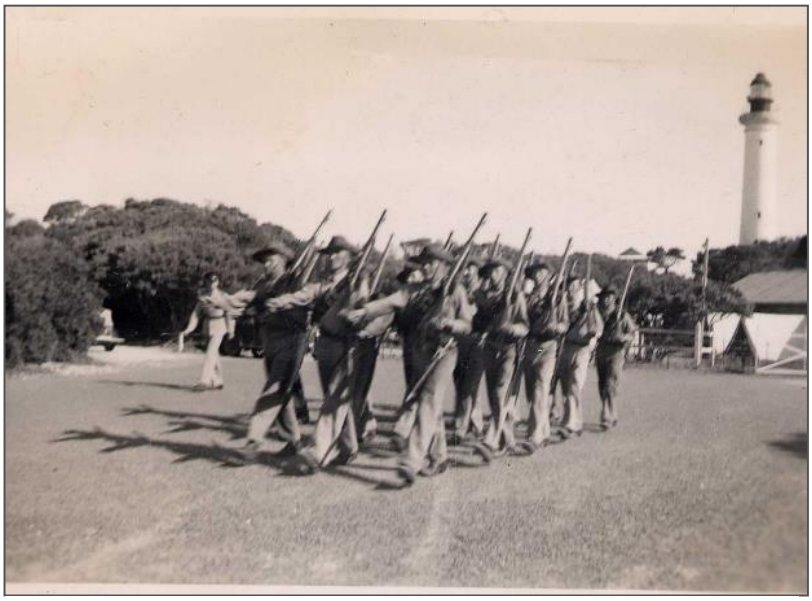
DEFENDING AUSTRALIA: WORLD WAR TWO 1939 – 1945

During WW2 the defences at Point Lonsdale were significantly increased. The Japanese air attacks on Pearl Harbour, Hong Kong and Singapore in 1941 showed that fixed land-based fortifications in northern Australia were vulnerable to bombing. The failed midget submarine raid on Sydney Harbour emphasized the vulnerability of Australian ports to submarine penetration and at Port Phillip the entrance zone and channels were heavily mined and most coastal guns were relocated to camouflaged dune positions at Cheviot Hill, Crow's Nest and Point Lonsdale.



Camouflaged coastal gun at Point Lonsdale 1943
(Source: Australian War Memorial)

Given its strategic position overlooking Port Phillip Heads, in 1942 the Point Lonsdale Lighthouse precinct was declared a Prohibited Place 'in the interests of the defence of the Commonwealth or the efficient prosecution of the war'.[20]



Troops on parade below Point Lonsdale Lighthouse c.1942
(Source: Queenscliffe Historical Museum)

The significance of Point Lonsdale as an integrated part of the Port Phillip defences was well described in the 1944 *Preface to the Command Book at Fort Queenscliff*:

> The fixed defences of Melbourne and Geelong are situated at the entrance to Port Phillip, at which there are two heads, Point Nepean and Point Lonsdale, 1,000 yards apart. The entrance itself is commanded by Shortland Bluff, Queenscliff.

On Nepean Peninsula, are two 6-inch Gun batteries, each of two Guns; Forts Nepean and Pearce (Cheviot Hill) and at Lonsdale one 6-inch two-gun battery. These form the main armament of the Port Phillip Defences. A two 4.7-inch gun battery is employed at Crow's Nest, Queenscliff, against possible penetration. The armament at Nepean, Pearce, Lonsdale and Crow's Nest is served by appropriate proportion of fighting lights. In addition to these there is a CASL mounted at each flank as F.C.'s observation lights…



Members of the Volunteer Defence Corps searchlight crew taking part in an anti-invasion exercise (Source: Australian War Memorial)

The artillery units are merged into one unit in accordance with the "Order of Battle" and styled Port Phillip Coast Artillery with C.C.A. a Commander, the sub-units being known as Headquarters, Fire Command, Lonsdale, Nepean, Pearce, and Crow's Nest Battery. The Engineer Unit in the "Order of Battle" is designated 7 Aust. A.A. & Fort Coy., R.A.E., 5 Aust., Fort. Signal Section is a part of No. 3 Coy I.H/Q. Signals Port Phillip Fortress Workshops EME is a subdivision of Melbourne Static Workshops AEME. 3 Aust. Radar Detachment (Type "C") is allocated for early warning duties. 58 Camp Hospital AAMC establishes an M.D.S. in Queenscliff and Nepean Areas.

A Photo Electric Beam (P.E.Beam) is installed between Lonsdale and Nepean and is connected by relay to No. 10 C.A.S.L. This is a warning device which automatically exposes a C.A.S.L. when beam is interrupted.



34th Fortress Company, Lining up for a meal, Point Lonsdale Lighthouse Reserve (Source: Private collection of the family of Captain Jack Lawlor)

THE AUSTRALIAN WOMEN'S ARMY SERVICE AT POINT LONSDALE

The Australian Women's Army Service (AWAS) established on 13th August 1941, played an important role in the defence of Australia during WW2, including at Point Lonsdale. In the years, 1943-1944, the presence of AWAS in Queenscliff and Point Lonsdale, was relatively high. The AWAS Coastal Artillery Specialists (range-takers and signallers) replaced those male specialists who moved north to somewhat equivalent Artillery Batteries.

The Women's barracks at Point Lonsdale, Fort Queenscliff, Whitehall, and Pearce (Nepean) were staffed by women undertaking general duties, catering, and managing administration, hairdressing and seamstresses. AWAS were members of various units including Brigade Headquarters, Coastal Artillery, Engineers, Signallers Battery Observation Posts, telephonists, drivers, cooks, storemen (rations, clothing, engineering, general), and clerical administration.



AWAS radio work in the field. Two WRAAC radio operators undergoing training near the Point Lonsdale observation post in 1943.
Source: Australian War Memorial)

During 1943-1944 on an average there were 55 AWAS – part of the Coast Artillery personnel on full time duty. They had similar NCO rank to the males and were led by two AWAS officers. The ratio was 1x AWAS to 3 x CMF.



AWAS Gunners Thompson & Alchin 1944, at Point Lonsdale operating the range finding equipment (Source: Australian War Memorial)

At Point Lonsdale, many young women crewed the guns. The AWAS personnel were housed in barracks on the east side of the Defence Reserve. By 1943, the camp below the lighthouse was the main training facility in Victoria. The AWAS was demobilised by June 30th 1947. At a later time, the camp was switched to Lonsdale Bight and then to the camp at Crow's Nest, Queenscliff, in 1953.



Parade, Lonsdale Bight 1953. (Source: WRAAC, Victoria)

P1 Army Huts/Barracks 1942-1947 - Army Barracks:

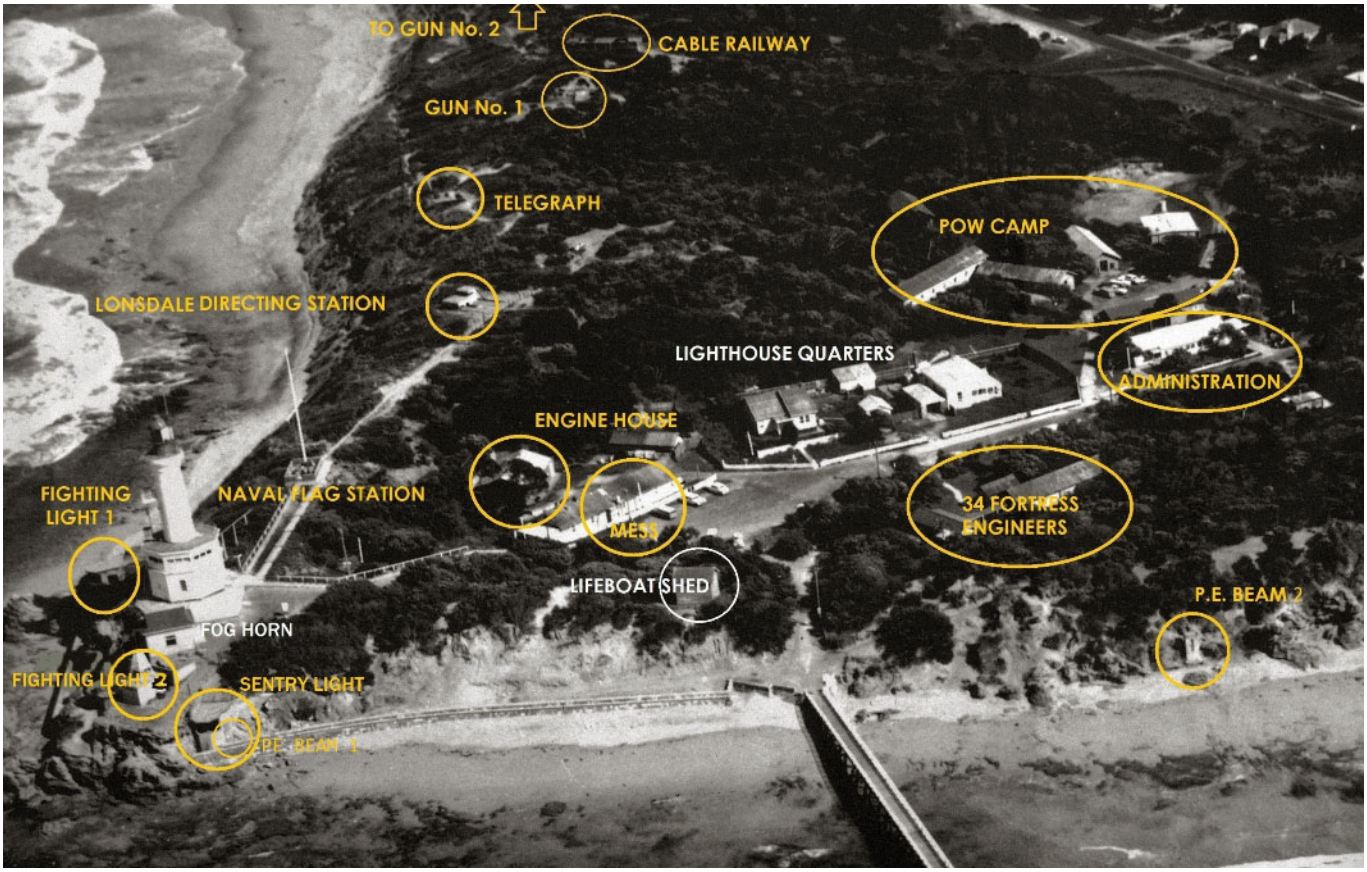
Given the hundreds of military personnel working in and around Point Lonsdale, accommodation was a major logistical problem for defence planners, just as it was with many other sites around Australia. The solution arrived at for temporary accommodation was effective and inexpensive – the P1 hut. Thousands of these huts were built by civil contractors across Australia in the period 1939-1945. At Point Lonsdale, the P1 huts were initially used by the 7 Australian CRE works detachment. From late in WW2 (likely after Port Phillip was declared an 'open port' in September 1944), the P1 huts were used for the accommodation of Italian internees and Dutch refugees. The P1 huts to the west of the access road are referred to as the "Point Lonsdale Internment Camp" on the Queenscliff Sewerage Authority map cited in Duncan 2006. After WW2, the Toc H charity organisation took over the buildings in 1946. In his study of the P1 hut, *A Little Marvel in Timber and Tin – the Military P1 Hut of the Second World War*, Patrick Miller wrote:

> It is commonplace these days to argue the significance of unpretentious or vernacular buildings. The general significance of these humble P1 huts as a type of building is twofold. On the one hand there is their functional excellence which is proven by their longevity and adaptability. On the other hand there is their importance as a symbol of a particular kind of experience to a wide range of ordinary (and a good many extraordinary) people who built them or who lived and worked in them during the six years of the Second World War and the 30 years of the post-war immigration programme… The military P1 hut as a type is an important icon of Australia's participation in the Second World War. Its rugged, easily repaired and adapted structure saw it outlive its original temporary status by a half a century.[21]

An assessment by Catrice and Nelsen cited in Department of Natural Resources and Environment, (2001) commenting on the historic value of the former defence buildings at Point Lonsdale, found that they are of interest as an essentially intact group of P1 type huts, which remain on their original site. The assessment concludes that, if possible, all the army huts should be retained.

Defence infrastructure on the Reserve:

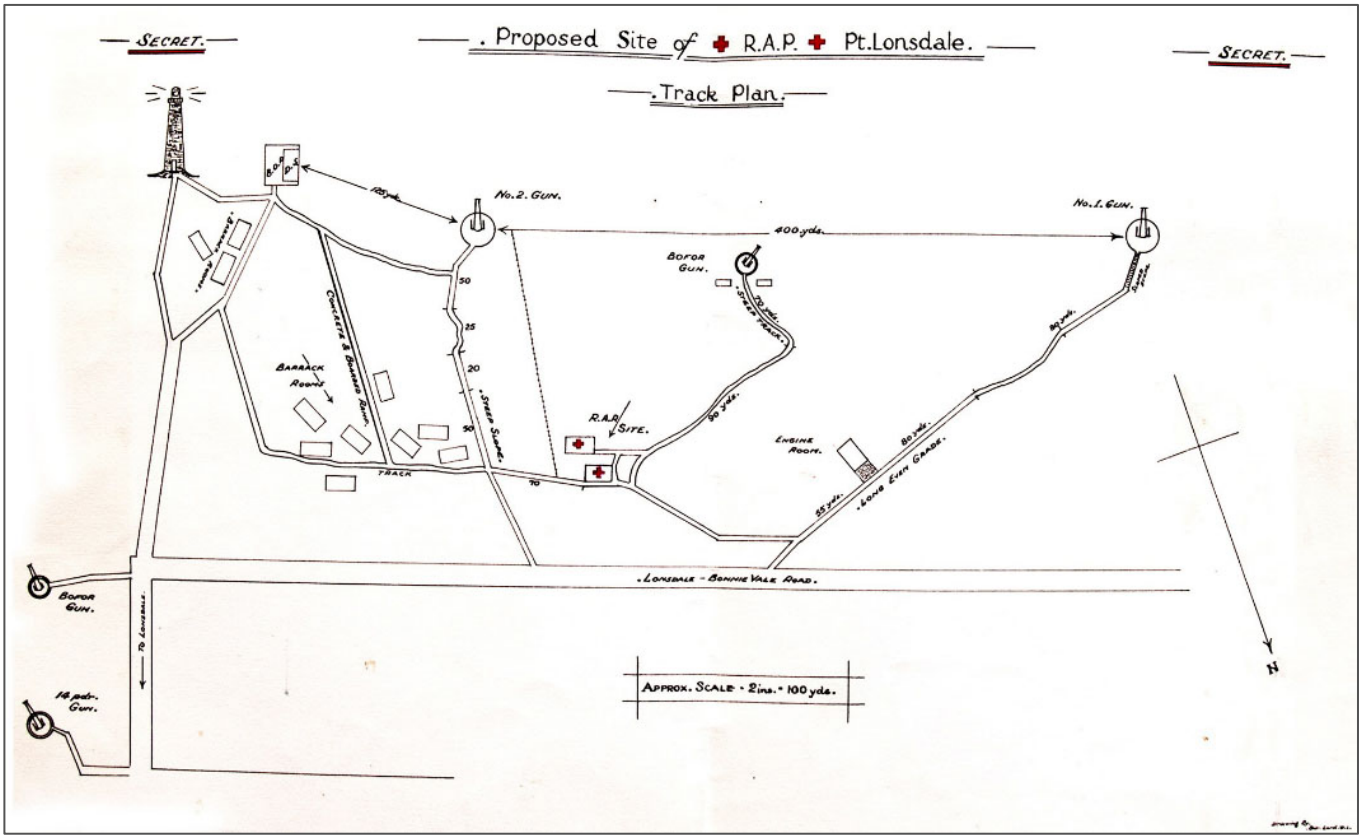
The following image provides an overview of defence installations on the Reserve during WW2.



Guns from Fort Queenscliff were transferred to camouflaged positions in the dunes at Point Lonsdale. The third Queenscliff gun was sent north to Darwin (carved wooden lamp-posts surreptitiously replaced two guns at Fort Queenscliff which had been moved). The Heads Fortress Command Books contain a hand drawn map showing mobile Bofors AA guns at Point Lonsdale. One between the two emplacements and the other on the cliff where the Point Lonsdale Lookout/Carpark is now situated. A 14-pounder also probably moved from Fort Queenscliff was also emplaced in the car park zone. There was a First Aid station at the reverse of the dunes.



Bofors guns in Point Lonsdale dunes (Source: AAHU Fort Queenscliff)



Plan of Point Lonsdale Defences from the Heads Fortress Command Books (Source: AAHU Fort Queenscliff)

2 x 6" Gun Emplacements 1942:

2x Breech loading Mark 7 guns on concrete foundations. These two most westerly installations show evidence of reinforced mounts guns together with a large circular rail around the perimeter that enabled a large protective semi-circular steel cowl to be rotated in line with the guns.



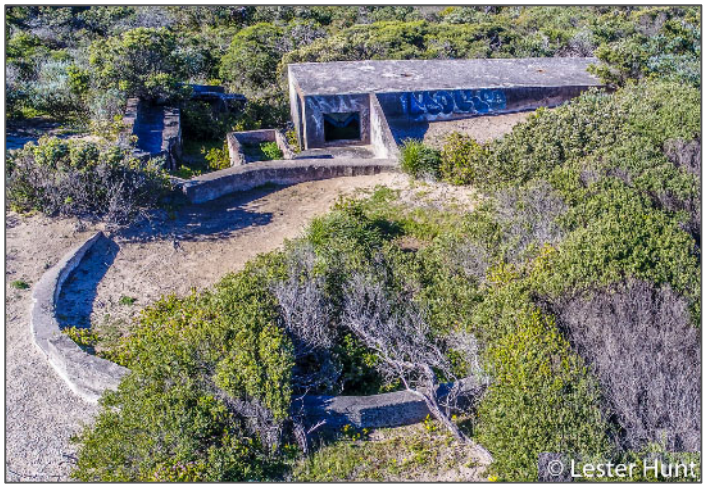
Crew winching the gun cowling up the dune in 1942. (Source: Beavis family archives)



Source: Australian War Memorial



Gun emplacement #1 (western) – current condition



Gun emplacement #2 (eastern) – current condition



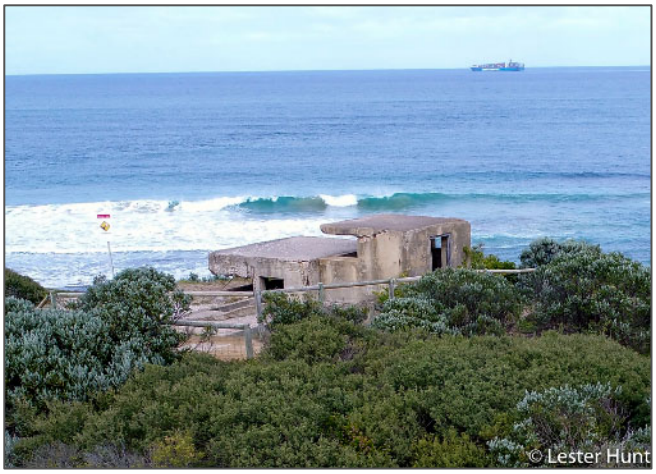
Engine Shed #2 – current condition

Engine Shed #2 1942:

Located on the track up to No.1 Gun Emplacement as shown on the Heads Fortress Command Books. Possibly the engine shed housed electrical generation equipment supplying power to the 6” gun emplacement nearby.

Direction Range Finding (DRF) Station 1942:

Amongst the crew working in the DRF station were female AWAS Australian Women’s Army Service personnel carried out targeting and range finding duties at the DRF station.



Direction Range Finding – current condition



Direction Range Finding interior – current condition

Magic Eye Infra-red Beam Emplacements 1942

An infra-red beam projected at sea-level from Point Nepean to Point Lonsdale was meant to detect night entry by a ship or surfaced submarine. The warning system proved to be ineffective in fog and storm conditions and even large waves in The Rip would interfere with the beam. A second "inner" beam was projected between Swan Island Popes Eye and Portsea. Both installations were replaced by Coastal Radar in the final year of the Pacific War. Long range Japanese submarine attacks on Australian east coast shipping was combated with corvettes and mine sweepers until developments in the Pacific War removed Japanese naval activity from Australian waters. In September 1944, Melbourne was declared an open port and the Port Phillip coastal fortifications were mothballed.[22]

Experimental installations for detecting vessels entering The Rip. In March 1942, a facility called the 'Magic Eye' was installed which shone a photo-electric (infra-red) beam from two transmitting units at Pt Lonsdale across the Rip to two receiving stations at Pt Nepean. The transmitter produced a light source that was projected through an infra-red filtering screen and passed through a series of holes in a rapidly revolving disk, which broke the beam into a series of pulses as it was projected. At the receiving side it was focused to a pinpoint beam (via a paraboloid mirror) onto a photo-electric receiver cell tuned to a specific frequency (M.E.E, n.d.:2). The amplified signal triggered an alarm in the Nepean Battery Observation Post [Duncan 2006, App. C-2:11]. The second emplacement was demolished as part of the construction of the bluestone sea wall in the 1950s.



Camouflaged beam emplacement (Source: Queenscliffe Historical

A document held at the Queenscliffe Historical Society, *Defence of the Rip – Infrared Beam Interceptor*, discuss the highly innovative technical development of the infra-red system deployed across the Heads, the first in Australia:

> The detection and monitoring of vessels sailing in and out of the Rip was a major part of the defence of the Port of Melbourne and of the land around Port Phillip Bay. Early in the war searchlights were located at Point Nepean and Point Lonsdale to shine across the water between the heads. It was quickly realised that these lights gave an excellent navigational guide to potential raiders (but) the tidal range and, more seriously the strength and turbulence of the water flow precluded using any type of boom or physical barrier. A novel method was needed. Colonel Buckland (?) who was then in charge of the defences at the Heads, approached the Heavy Wireless Signals Group of the 13th Australian Light Horse to assist with development of a system. This unit had been formed within the Light Horse to develop long distance signalling systems. The unit had been recruited mainly from around Sale in Gippsland, and had gathered together a small group to

set up transmitters and receivers for communication with London, New York and similar overseas centres. The group was based at Park Orchards where the Chalet was their operational HQ.



Remaining emplacement north of jetty

A development team of about four people was pulled together from within the Signals Group. It was led by Capt. H.D Nicholson who had been an instructor at the Melbourne Technical College (now RMIT) and included Cpl G McGowan, a radio technician, and R. Ems, a fitter and turner. They visited the Rip to see the site, then, using the expertise in optics, radio and electronics within the team they developed a system using an infrared beam and receiver across the gap. If the beam were broken the system would trigger an audible alarm. It could also be connected to switches to tum on appropriate searchlights.



Arrow shows second demolished emplacement (Source: Sutherland family)

Detailed development was carried out at Park Orchards, where a long stretch of a then quiet back road between Mitcham and Ringwood was used to simulate the gap across the heads. (Deep Creek and Loughnan Roads?). The team had to create performance Standards themselves as this was novel work. The transmitter had a lamp and optical device that sent out an Infrared beam across the gap. The beam was passed through a perforated disc rotating at high speed. This broke up the beam into a series of pulses. The receiver was made from the body of a searchlight, with the parabolic mirror focusing the beam coming in from the transmitter onto a photoelectric cell located where the light globe would normally be. The cell was connected to an amplifier with a relay on its output connected to the alarm or switch systems. When the beam between the transmitter and receiver was momentarily or permanently interrupted the output circuit of the receiver was actuated and the alarm and, if desired, the lights were switched on. An alarm also connected to the transmitter to warn of any failure in transmission.

The system used the usual 240-v electric supply. The light used to generate the beam was a standard aircraft landing light (12 volts 120 watts). The receptor electronics were housed in a heavy duty, weatherproof box. For the system to work effectively the transmitter and receiver had to be mounted on substantial concrete bases, to eliminate vibration. The transmitter was based at Point Nepean and the Receiver was based at Point Lonsdale. To cope with the tidal range each station had two levels, one above the other, each with its transmitter/receiver pair. The concrete pillboxes built for 9\e purpose can still be seen, one near the shore end of the Point Lonsdale jetty and the other opposite on Point Nepean.

Details of the system are contained in the report, originally secret 'BEAM INTERCEPTOR BIIR/F (AUST) MKII DESCRIPTIVE DATA AND OPERATING INSTRUCTIONS' from the Commonwealth of Australia, Department of the Army, M.G.O. Branch Design Division, part of the Mechanisation Experimental Establishment, Monogeeta, Victoria… Other places such as Sydney Harbour used physical booms, ASD C, and underwater microphones. After the development of the system used at Port Phillip heads a similar system was installed in Sydney to strengthen their defences.

A second beam was installed further up the shipping channel, somewhere about the second light. The housing for this beam was built by the Ports and Harbours on the main Queenscliff jetty and then towed out and dropped on the bank. The Army installed the mechanism, but before it had been properly commissioned the fighting had moved further north and the beam was demounted and moved away.[23]



Aerial photo showing operation of two 'Magic Eye' beams across Port Phillip Heads

POINT LONSDALE PORT WAR EXAMINATION SIGNAL STATION WW2

National Security regulations were in force at the commencement of WW2. They provided that the Minister control all vessel movements, including navigation, pilotage, anchorage, mooring, berthing and lighting, under delegation to the authority of the Naval Chief of Staff. The regulations applied to masters of merchant vessels, officers in charge of any defensive battery, examination port, and/or examination service.



Signal Yeoman of the RAN at the Point Lonsdale Port War Signal Station. (Source: Australian War Memorial)

At the commencement of WW2 there was an urgent need to expand RAN signal staff numbers at shore bases, port war signal stations, coastal batteries at Australian defended ports, or as requisitioned ships. Thus, Point Lonsdale Battery was established by the Royal Australian Navy for the duration of the war. Point Lonsdale became RAN Station 242 under 'Fortress Command' at Fort Queenscliff. Extensive regulations were in place under the Commonwealth's National Security (General) regulations and the Navigation (Control of Public Traffic) order.



Radio Telegraphist seated at the window looking towards Queenscliff [Source: Australian War Memorial]

A Port War Signal Station bridge was constructed to the west of the Point Lonsdale lighthouse comprising an open octagonal platform with a rectangular lookout structure. The Signal Station deployed a variety of means to communicate, such Aldis lamps, flags and weather cones.





Raising the flags at the Point Lonsdale War Examination Signal Station [Source: Australian War Memorial]

INTERNMENT OF ITALIAN AUSTRALIANS DURING THE WW2 AT THE POINT LONSDALE LIGHTHOUSE RESERVE

Before the outbreak of war, Fascism was viewed in a not unsympathetic light by some sectors of the Australian political establishment. The government welcomed Mussolini's September 1939 declaration that Italy was to maintain a position of non-belligerence and as late as May 1940 Prime Minister Robert Menzies expressed the hope that Italy's position would be accompanied by support and understanding for Australia.

When later Italy entered WW2, it brought with it considerable disruption to the over thirty thousand strong Italian Australian community whose presence was seen by the Australian authorities as a serious threat to national security. About 4,700 mainly male Italian Australians were incarcerated in internment camps while women and children were left to fend for themselves in a highly hostile environment.[24] About 90 had been sent down to Point Lonsdale.

In *Friends of the Fort* Issue 1/05 January 2005, Mike O'Brien wrote *The Italian Prisoners of War at Port Phillip Heads during World War Two* using research from the Report on the Directorate of Prisoners of War and Internees at Army Headquarters 1939 to 1952. The article notes there were 18,164 Italian POWs incarcerated in Australia who were eventually located at many camps in Queensland, NSW, Victoria, SA, WA and Tasmania. POWs moved from these camps as the war progressed and ended. From 1943 to 1946, Italian POWs were distributed to many 'control centres' in all the States listed. By 1945 some 75 Italians were held on the Mornington Peninsula (from August 1945 to December 1946) and 90 in the Bellarine Peninsula (from August 1945 to March 1946) engaged on activities such as reclamation of Army stores and reconditioning of camps.

> The Italians on the Bellarine Peninsula were held at Point Lonsdale in what was later known as the 'Toc H Camp' area. The guards came from Fort Queenscliff. Perhaps most importantly, it is evident that the POWs soon became valued members of the local community. The prisoners wore a distinctive maroon uniform. They appear to have been employed on any task for which the military could find a reasonable excuse. For example, some of them mowed the lawns and tended the gardens around the cottage occupied by Mayor Fred Chapman in King Street. Just outside the Fort Queenscliff wall. The Queenscliff Historical Museum bas a photo of a group of them assisting with filling in the 'moat' outside the Fort in 1946.[25]

During the day the men were to be put to work in the district. They remained under supervision and abided by a curfew at night. Italians worked on the golf course, did repairs around the community, worked in gardens, and were delivered in work parties to guest houses.[26] Locals such as Reverend Donald Johnston and Judith Harley (Alfred Deakin's granddaughter) recalled when passing by the Toc H Camp how they could hear the exotic sounds of a tenor singing operatic arias. By May 1946, there were only about six Italian POWs at Point Lonsdale and their camp was gradually handed over for the use of Toc H. Gordon Anderson, the first Toc H Warden, took over on 10 May 1946. The last Italians left the area a few months later.[27]



POWs / Interns outside the Engine Shed, Point Lonsdale Lighthouse Reserve, (Source: Collection of the family of Peter Lawlor).

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