THE GUNS OF TOMAREE

As many as 100,000 people a year climb to the top of Tomaree Headland. On the walk you will see evidence of earlier constructions, part of Australia’s wartime defences. This book will help you make sense of the block houses, concrete slabs, machinery and chunks of camouflage you may come across.

36 pages
19 photographs
7 maps
The GUNS of TOMAREE

Compiled by Michael Smith and Graeme Steinbeck

One of the two 6 inch (152mm) guns on Tomaree Head during World War 2.

6" (152mm) Coast gun.
Muzzle velocity, 773 metres per second.
Maximum range 14 km.
Weight of gun and breech mechanism, 7.5 ton.
Total length, 7.09 metres.
Elevation -10°, +16° with shield, +20° without.
Ammunition. Separate loading, bag charge, silk cloth bag containing 10 kg of cordite.
Shell. Piercing shell weighing 46.2kg for attacking ships. Capable of perforating 150mm of Krupp cemented plate at 3km.
In the early 1940s Port Stephens was a large natural harbour close to the vulnerable, yet essential steelworks of Newcastle. Australia was at war with Japan. An unguarded Port Stephens could have provided an easy landing place for any hostile force.

The guns at Newcastle were too far away to provide protection for Port Stephens.

By the end of 1942 Fort Tomaree was constructed and ready, with two "six inch" (152mm) guns, torpedo tubes, mortars, machine guns, rifle pits, search lights, command posts, observation posts, barbed wire entanglements and accommodation.

The guns were never fired in anger. Their installation did however provide peace of mind and the facilities for artillery training.

Nearby, at Nelson Bay, the Joint Overseas Operating Training School (JOOTS) was being set up to handle courses for officers and men of the U.S. and Australian Armed Forces. The bays and beaches of Port Stephens provided training for 2000 Australian and 20,000 U.S. ship-to-shore invasion specialists.

The base for JOOTS was H.M.A.S. Assault. Here the three armed services co-operated in their efforts to recapture territory lost to the Japanese.

With the war moving closer to Japan, the Amphibious Training Centre was closed on October 12th 1943, after only a year of operation.

From then until the end of hostilities on the 15th of August 1945, the military facilities around Port Stephens played only a minor role in supply and training. Gan Gan Army Camp. 4km from Nelson Bay was a troop staging and training area. The buildings there consisted of kitchens, mess, toilets and ablution blocks. The troops lived in tents.

The guns of Tomaree have gone. What remains are gun emplacements, observation and command posts, and the foundations of many of the structures.

Some of the buildings were taken over by Tomaree Lodge and still stand today. Tomaree Lodge is owned by the State Government. The eastern three quarters of Tomaree Headland is part of Tomaree National Park.

What follows are excerpts from the official records which have been edited slightly to correct spelling mistakes and to convert imperial measurements to metric.
"Mr. Abbot said that he and other members of the deputation were concerned about the defences of the Port Stephens district. This district is the centre of a large industrial area and he considered it vital that adequate fortifications should be provided to protect it. At present the only fortifications in that vicinity are those at Stockton and the range of these guns is not sufficiently great to protect the Port Stephens area.

Members of the deputation felt that at present, owing to the lack of adequate defences, enemy ships could pass through the entrance to Port Stephens and proceed a considerable distance up the river."

Gun emplacements under construction on Tomaree Head about 1941. Timber formwork is being positioned prior to pouring concrete.
"The then Minister for the Navy, presumably as a considered reply, said that he would not like to attempt to take a ship into Port Stephens as the batteries at Stockton would make the entrance untenable. I find on measuring up the various positions on the map that the distance of these guns from the entrance exceeds the range of the weapons by some 6km.

As you know the munitions and war effort of the Commonwealth largely depends upon the heavy industries situated round the shore of Port Hunter. In addition at Williamtown, some 16km to the north of Newcastle, the Commonwealth has recently built a very large aerodrome. I am aware of the fact that it is for training purposes but nevertheless it is the only aerodrome in the Newcastle District capable of landing machines of the Douglas and Lockheed type. As was demonstrated recently when the party of American journalists visited that city in a Douglas plane. As well there is situated adjacent to it the auxiliary supply of the Hunter River Water Board. From the sand beds here, I understand, the Board proposes to draw 63,000,000 litres of water per day, an amount equal to the Chichester supply, and essential for the industries located at Port Hunter. While at Hexham the supply pipe from Chichester is above ground and could easily be destroyed with a few charges of gun cotton. The whole of this most important area is very vulnerable to any mechanised raiding force landed in Port Stephens. And yet there is nothing to prevent them so landing and nothing to hinder them for many hours in any advance which they might make to destroy the B.H.P. and other works as well as the Aerodrome and waterworks."
"Site for 6-in (152mm) Battery.

It is agreed that a site on Yacaaba Head would give a better arc of fire leaving no dead water except behind the outlying islands, but the primary role of the battery being the prevention of troopships entering Port Stephens this task can be carried out more effectively from Tomaree. Furthermore the location of the main artillery Defences on Yacaaba Head would involve a corresponding increase in responsibility in local protection and an undesirable dispersal of forces. For these reasons Tomaree site was selected but if it is necessary at a later date to establish an O.P. on Yacaaba Head to give observation over areas obscured from Tomaree any small protective detachment will be provided from the Newcastle Covering Force whose commander has already received instructions to this effect."

The guns of Tomaree waiting to be housed
Part of a letter from the Secretary, Military Board, Melbourne, dated 9th October 1941, concerning the defences of Port Stephens, specifically the proposed installation of torpedo tubes.

"... the following conditions must be specified to give reasonable chances of success.

The maximum drop of the torpedo at any stage of the tide should not exceed 7.6 metres.

The minimum depth of water where the torpedo enters should not be less than 5.5 metres at any stage of the tide.

A reconnaissance by the Army, of the proposed position of the western side of TOMAREE has not been made by this H.Q. for this purpose, but the local Naval authorities advise that 9.5 metres of water can be obtained a few metres out and that there would be no difficulty about a maximum drop. A concrete pier would require to be constructed and this would be in a sheltered position on the western side of TOMAREE."
Above, view from the battery observation post, about 1943. The instrument is a "depression rangefinder"

Below, the same view in 1994.
"The Technical Director is not satisfied with the progress of the work. All the camouflage planned for this area is simple and it is essential that where conditions make it possible, it should be achieved quickly.

It must be understood that the delays have not been due to the Camouflage Officers of Eastern Command. On the contrary Lieut. Dodd in particular has done a splendid piece of work under the most difficult circumstances. Possibly delays have been unavoidable owing the Australian labour conditions which are ridiculous in total war. The fact remains that the work has taken too long. It is also clear that even simple camouflage requires constant supervision of the labour concerned. There is no feeling of urgency or keenness in the ranks. It is only a few commissioned officers and N.C.O.'s who have shown real interest. Possibly this still indicates a lack of general interest in concealment.

Concealment is playing a most important part in this war and every effort should be made to see that work on concealment goes at a rapid pace. The idea of men having a smoko at the end of each hour, if true, and working a limited number of hours per day does not fit in with my ideas. I am, however, only detailing the actual state of the work in this report."
These aerial photographs of Tomaree were taken about 1942 to check how much camouflage was required.
EXTRACTS FROM THE FORT TOMAREE WAR DIARY

31-3-1942  Concrete canopies completed on Nos 1 and 2 guns. Troops move into huts in Upper and Lower Camps. Work commenced on torpedo tube emplacement. Bridge completed from shelter to rock at surf section.

23-4 1942  Tug Waratah was brought-to, and the second bring-to round passed through vessel without serious damage.

4-5-1942  Test round 1/2 charge fired from No 2 gun to test flash in No 2 section post. Flash does not interfere.

21-5-1942  Electric light and power switched on in Upper & Lower Camp.

10-6-1942  13.30 hours. Bomb seen dropped from plane approx. 20 kilometres bearing 120°.

26-6-1942  10.05 hours. Two RAAF personnel washed off rocks while fishing and drowned.

29-6-1942  Torpedo Tubes completed and awaiting dredging operations before trials are carried out.

23-7-1942  Heavy rain commenced and was still falling at the end of the month (230 millimetres to date). Drainage problems have occurred over whole hillside. Levee banks have proved effective. The main road through the camp has subsided on the edges in many places. Road to No
12 Engine Room cannot be used after heavy rain.

10-8-1942 Torpedo tubes tested, 2 torpedoes without war heads fired.

18-8-1942 Torpedo Tubes manned by Naval personnel. 2 torpedo tubes loaded ready for action with two in reserve.

28-8-1942 Neap spring tides washing over No 2 gun emplacement Surf Section. Portion of surf bridge washed away at No. 2 Gun. Portion of Torpedo tube retaining wall washed away.

16-9-1942 Visit from Mayor of Newcastle and Sir Alfred Davidson.

30-9-1942 Broadcast in foreign language (unidentified) picked up by 101 receiving set.

12-10 1942 Severe storm damage as per separate report.

18-10-1942 Mounting of No. 2 6" gun shield completed.

29-10-1942 6" 1/2 charge practice seaward - 12 rounds.

30-10-1942 3 pdr practice seaward, 2 series, 40 rounds.


3-11-1942 H.M.A.S. "Assault" now on Tomaree switchboard (extension 28).

28-11-1942 American aux. launch seeking shelter Port Stephens, damaged and with 10° to port having cut loose landing barge in tow, off Stephens Point, entry permitted.

30-11-1942 Camouflage work has been carried out on No 14 Coast Artillery Search Light emplacement which now resembles a small cottage with chimney and windows.

The number 2 surf gun emplacement in 1994
21-12-1942 Dummy location finder at Yacaaba completed. Dummy Battery site at Yacaaba visited by Lt. Petscher.

13-1-1943 Electric and percussion firing mechanism changed on both 6" (152mm) mountings from left to right hand side.

23-1-1943 Approx. 160 V.D.C personell carried out week end exercises at Tomaree.

19-2-1943 Practice ammunition arrived for annual shoot.

19-3-1943 Rammer staves on both 6" guns shortened by 300 mm.

25-4-1943 Combined Unit Church parade held on Bty. Attendance Navy (U.S.A. and Australian) Army and R.A.A.F.

24-5-1943 Catalina crashed in Port Stephens off Jimmys beach.

28-5-1943 Surf No 2 gun stripped, overhauled, painted and refitted.

30-5-1943 Owing to torrential rains revetting has been necessary in many place to prevent land slides.

20-6-1943 The first two L.C.T. entered port (capable of carrying 20 fully manned tanks).

25-6-1943 Torpedo tubes removed by Navy to Sydney.

7-7-1943 Continuation of practise shoot 2010 hours 10 round 6 C.R.H. 1/2 charge, opened at Bty Control and after 3 rounds changed to section control, targets were Hong Kong type, leading target hit 3 times, range approx. 5km.

10-7-1943 War cemetery opened, Nelson Bay area, adjoins existing civilian cemetery.

16-8-1943 Head Bty. practice shoot, 20 rounds. Target south end of Yacaaba.

18-8-1943 Surf Section, dismantled, equipment stored in No 1 Gun floor shelter.

22-8-1943 Head Bty. ceases to function.

Pack horse team commenced daily ration run to Stephens Point via sand spit.

31-8-1943 Head Bty personnel and equipment moved out.

Lower Camp area now disused.

1-9-1943 Channel cut in Point Stephens sand spit by heavy seas prohibiting use by pack horse.

17-10-1943 Flying fox completed for garbage destruction.

7-12-1943 Datum Post installed on Jimmys Beach.

Command line to Stephens Island completed.

31-12-1943 8 series of 25mm aiming rifle fired from Battery by V.D.C. personnel. Faulty ammunition marred several of the series. A new type of target was employed. It being a Naval Fog Buoy and proved very successful, as it allowed a lighter tow line and greater speed in tow.
REPORT OF STORM DAMAGE
TOMAREE OCTOBER 1942
by Major R. S. Mort,
Officer Commanding Tomaree Battery,
Fixed Defence Command, Nelson Bay.

Sunday 11th - Seas rose shortly after night-fall and increased
towards midnight. Gun lookouts were recalled from No 1 3 pdr. Surf Section
(height 7.3 metres) and No 2 3pdr, Surf Section (height 5.8 metres) at
approx. 2130 hours.

Monday 12th - Terrific seas now running with wind at cyclone force.
Camouflage roof of B.O.P. partly torn away, sheets of roof iron found 150
metres away. Both 3 pdr gun emplacements continually awash; telephone
on No 2 3pdr gun floor washed to sea; bridge from gun floor shelter to Surf
Section Post (height 20.7 metres) awash. Pyramid switch-board on wall put
out of action by constant heavy seas; look-outs recalled. Also B.E.L. person-
nel recalled. Inspected by Bty. Captain who ordered Surf Section to "stand
down".

Tuesday 13th - Mountainous seas now running. Bridge at No 2 3
Pdr. rapidly breaking up; both guns and Section Post continually awash;
gun floor shelter at No 2 3Pdr. broke up completely within an hour at approx. 1100 hours; most articles of value being salvaged. Seas now breaking over No 13 Light emplacement (22 metres); shutters on Southern side carried away, also portion of camouflage. Projector and accessories salvaged. Camouflage on A.A.L.M.G. Posts torn away. O.C. inspected No. 1 Surf at low tide and found ammunition to be apparently dry although boxes extremely wet. Hand grip on shoulder rest broken off and recovered.

**Wednesday 14th** - Seas now their worst, all Posts previously mentioned continually awash plus No 1 6 inch gun (height 53 metres) being continually sprayed.

Numbers 12 & 13 C.A.S. L's not exposed this night as both emplacements were subject to continuous heavy spray. Roof of shed over torpedo tubes partly carried away.

**Thursday 15th** - Seas still too high for inspection or maintenance of equipment.

**Friday 16th** - O.C. inspected Nos 1 & 2 guns Surf Section and found both in an extremely rusty state, instructed Section Commander to strip all moveable parts and carry out maintenance. 303 rifle fitted to No 2 gun is practically ruined. Two boxes of ammunition on No 1 Surf found to contain approx. 180mm of water. Ammunition in No 2 ammunition recess in excellent order.
Events of World War Two that led to the construction of Fort Tomaree

December 1941 ... The southward thrust of Japan began.
February 1942 .... Singapore was lost to the Japanese.
February 1942 .... 71 Japanese aircraft bombers attack Darwin.
March 1942 ........ Nine Japanese Zeros attack Broome.
May 1942 ........... Japanese attempt to invade Australia repelled in the Coral Sea Battle.
.......................... 3 Japanese submarines enter Sydney Harbour.
June 1942 .......... 2 Japanese submarines shell Sydney and Newcastle.

![Map of Fort Tomaree and surrounding areas]

2. The Head Battery situated on Nelson Head

1. Fort Tomaree situated on Tomaree Headland

3. Stephens Section located on Point Stephens

TOMAREE BATTERY

(From AUSTRALIAN ARCHIVES (NSW), A.B. 360. Part 1. Section C. Garrison. PARAGRAPH 1, ARTILLERY MANNING DETAIL)

The equipment allocated to Tomaree Battery consists of two 6" C.P.B.L. guns and two 3 pounder "Hotchkiss" guns and is manned by Royal Australian Artillery personnel stationed at Tomaree.

Due to the depletion of the manpower Reserve and other problems closely allied thereto, it has been found necessary of recent date to reduce the number of men required for manning purpose and coupled with the fact that the threat of enemy action on this section of the coast seems, at the present juncture,
somewhat remote, certain other alterations have been made.

The following posts are manned and details of the manning will be fur-
nished hereunder Fortress Observation Post, Battery Observation Post, No.1
and No.2 guns, Surf Section Post, No.1 Gun Surf.

**NO.1 BY DAY ALERT CONDITIONS, GOOD VISIBILITY**

**F.O.P.** One air lookout on top of F.O.P. (two Naval Ratings are
available to assist in shipping recognition).

One look-out in F.O.P

**B.O.P.** One look-out telephonist

One duty signaller, not necessary if the B.O.P is
available.

**GUNS.** One roving picquet equipped with T.S.M.G.

**SURF.** One picquet on duty in Section Post.

**BY NIGHT CLOSE DEFENCE CONDITIONS**

**F.O.P.** All personnel stand down and report for duty in accordance
with night manning

**B.O.P.** One telephonist - look-out.

**SECTION POST** Not manned, but action crew sleep in B.O.P. shelter following
preparation for action.

**NO1 GUN** A complete manning (14) is on both guns - one gun is “duty
gun” and picquets for both No 1 and No.2 gun are drawn from
this crew. The personnel of the other gun sleep and these
duties alternate from night to night.

**R.D.F.** Manned at close defence throughout the night and as
directed by the duty B.C.

**No2 GUN SURF** This gun is picqueted and a full gun crew is allocated
thereto. The personnel sleep in shelters provided for that
purpose.

**No1 GUN** Is NOT manned due to depleted reserve of man power.
TOMAREE BATTERY COMMANDER'S STANDING ORDERS
(From AUSTRALIAN ARCHIVES (NSW) ARMY EASTERN COMMAND SP553, Records of Fortress Installations (NSW Coast), 1934-1950 item 144 SECRET)

1. GENERAL
For purposes of these orders Fort Tomaree comprises the following Units
(i) 6 in. Mk. V11 Heavy Battery, Tomaree
(ii) 60-pdr Medium Sec., Nelson Head
(iii) 18 pdr. Half Sec., Tomaree
(iv) R.A.E. (Fortress)
(v) Newcastle Fortress Signals
(vi) Infantry
(vii) A.A.O.C.
(viii) A.A.M.C.

PRIMARY ROLE of Fort Tomaree is anti-ship and in that role the entrance to Port Stephens will be denied to enemy vessels, including ships of war, troopships, and all types of landing craft.
SECONDARY ROLE of Fort Tomaree is Beach Defence, the tasks appertaining thereto having been issued by Commander N.C.F.

CONTROL The tactical control of Fort Tomaree is vested in the Battery Commander, Hy. Bty. Tomaree, and any change from primary to secondary roles will be ordered by him. Therefore should B.C. Tomaree, order “adopt secondary role” the medium and field units will carry out their beach defence tasks.

2. ACTION BY DAY

The responsibility of opening fire lays with the B.C. Tomaree. In the primary role it will be the duty of the Hy. Bty. to deny Port Stephens to all enemy vessels, observing due regard to the relative importance of targets. In making a decision as to the priority of targets consideration must be given to the principle that it is more important to destroy Motor Landing Craft at close ranges than transports at longer ranges. Therefore M.L.C. will not be engaged at long ranges by the Heavy Battery unless such are attempting to gain the protection of its deadwater area.

In the primary role, Medium Artillery will, under the fire control of B.C. Tomaree, assist the Heavy Battery in its tasks.

3. In a distribution of fire scheme the B.C. Tomaree, will allot targets with the object that the Medium Artillery will deal with lighter classes whilst the Heavy Battery gives its attention to heavier types.

4. The Field Artillery, in the primary role, will engage any enemy vessel which has come within its arc of fire by means of the shelter of the deadwater area under the Heavy Artillery. It is to be remembered that the deadwater underneath the Heavy Battery is not covered by the Medium Artillery, and also that enemy craft may, in the heat of an action, use such deadwater unbeknown to Heavy Battery personnel. In this respect it is the responsibility, once warning of attack has been given, for the officer or N.C.O. in charge of Field Artillery detachment to engage any such vessel without direct orders from B.C. Tomaree Battery.

5. Targets other than those described in the preceding paragraph may be allotted from time to time, but in the event of a situation such as that described above, the officer or N.C.O. in charge of Field Artillery detachment will abandon the allotted target in favour of the target moving in from the deadwater area. He must immediately inform the B.C. Tomaree of the action he has taken.

3. ACTION BY NIGHT

1. By night the Fighting Light System for distribution of fire will be employed against close defence targets, i.e. the different units will engage enemy vessels located by the searchlights allotted to them. In this respect units will open fire on enemy vessels appearing in their normal search areas without orders from B.C. Tomaree. The responsibility for so opening fire rests with the unit commander.

2. In the event of an attack and should no target appear in the particular searchlight allotted to a unit, the latter will engage the nearer visible target.

3. If the fire of a detachment is being brought to bear on a target illuminated by another unit, its searchlight will not relinquish the normal search of its own zone.

4. When an inner unit of the defences engages hostile craft it is vital that a brief informative message be sent to the B.C. Tomaree as fast as practicable (e.g. “Mediums engaging M.L.C. moving west”).

5. Should the B.C. Tomaree consider it advisable he will assume fire control of all units by night by sending the following message: “B.C. Tomaree has taken
over fire control. Ack”. This will be followed by tactical instructions or allotment of targets. B.C. Tomaree may re-delegate fire control to unit commanders by the message: “Assume unit fire control”.

4. SEARCH AREAS OF SEARCHLIGHTS
1. The areas of search for searchlights will be co-ordinated by Searchlight Commander, Tomaree.

2. A continuous search will be carried out by the searchlights from the Heavy Battery, but searchlights allotted to other units will only adopt searches when so ordered by B.C. Tomaree or by S.L. Commander, or at the discretion of the unit commander for investigation of suspicious movement.

3. Where searchlights are operated by batteries the unit commander is responsible that such batteries are at all times sufficiently charged to carry out continuous searches.
5. **TEMPORARY FIRE CONTROL BY UNIT COMMANDERS**

1. Unit commanders must be prepared to exercise temporary fire control of their own units as well as fire direction. Such an occasion would arise in the event of a disruption of communications with Tomaree Command Post.

2. In the even of a breakdown in communications every effort will be made, consistent with the tactical situation, to establish contact by alternate means. This unit commander will use his own signal personnel for the purpose. Pending the re-establishment of fire control by the B.C. Tomaree an isolated unit commander must act on his own initiative in the conduct of any action.

6. **INFANTRY**

1. Where the fire of M.M.G., L.M.G's and rifle sections adjacent to artillery positions can be brought to bear on artillery targets, unit commanders will arrange for that assistance.

2. The main task allotted to attached infantry, other than N.C.F. is the close protection of Tomaree and Yacaaba Headlands. In the event of a retirement such retirement will be made into the headlands and each are to be held at all costs.

8. **AIR DEFENCE**

1. All aircraft will be reported immediately to C.P. Tomaree, and will be treated as potentially hostile until positively identified as friendly.

2. No aircraft will be fired upon at the present unless displaying enemy markings or committing a hostile act.

3. An action seawards will continue to be fought in spite of air or other attacks.
9. ENTRY OF FRIENDLY VESSELS

1. The responsibility of reporting vessels to this port rests with the Duty B.C. Tomaree, acting upon instruction received from time to time from Naval Staff Officer Newcastle.

2. By Night or By Day when permission is given to vessels to enter the port each unit will be notified in the following form: "S.S.................has been given permission to enter port Ack".

3. As the port is closed by day and by night it is the responsibility of the unit Commander by night. (See Sec 3 Para. 1) to engage any vessel of which no notification has been received stating that such vessel has permission to enter port. This does not apply to small fishing vessels which use the harbour.

4. There is no restriction on outward movement nor are local fishing craft restricted although an attempt is being made to restrict them from entering port by night.

CAMP - POINT STEPHENS

CAMP COMMANDANT

O.C. Garrison Platoon is the Camp Commandant for the Area.
His responsibilities are:

(1) Close Protection
(2) Security - (Guards and Sentries)
(3) Maintenance of Good Order and Discipline
(4) Pay
(5) Rations
(6) Leave
(7) Maintenance and Cleanliness of Area
(8) Information to C.A. HQ on all matters

He is to issue:
(a) The Defence Plan and the Orders for the implementation thereof
(b) Camp Standing Orders

RATIONS

Fourteen days Reserve Rations will be held at the Post. Daily supplies will be drawn from Tomaree Bty by pack or boat tpt.

Reserve rations consumed by reason of weather conditions making the daily supply impossible, will be replaced at first opportunity.

O.C. Tomaree Bty has been made responsible for the maintenance of Land and Water communications with Point Stephens.
The means at his disposal are:
(1) Pack horse
(2) Sea transport by arrangement with H.M.A.S "ASSAULT".
Should conditions arise precluding a crossing of the isthmus in daylight or stores of a bulky nature require transportation, O.C. Tomaree Bty to submit requisition for water transport to H.M.A.S. "ASSAULT"
CAMOUFLAGE Trees or scrub will NOT be cut nor removed and every effort will be made to preserve the camouflage scheme. Tracks are to be kept to a minimum.

MEDICAL
In cases of illness or accident, Camp Commandant will contact O.C. Tomaree Bty. who will arrange for M.O. to visit Point Stephens or order that the Medical Case be ordered to R.A P. Tomaree. Evacuation to be by barge or sand spit or M.T. from Box Beach which ever is the most expedient or suitable. Sick personnel are NOT be to kept in Camp but evacuated to R.A.P. Tomaree.

Entrance to the section post next to Mrs. Murphys (south-west of the No. 1 6" gun)

Range Finding
Before the use of radar, target location was achieved by visual means. A range would be pointed at the target and the angle of depression and bearing noted and plotted. The same would be done from other locations separated as far apart as possible.

Using Trigonometry and triangulation the position of the target could be plotted. All this may have to be done whilst under fire, at night, with the target moving at full speed.
To be successful the instruments had to be of high precision and used skillfully. Clear communications had to exist between observation stations and the gunner.

**Fort Tomaree had the following fire control installations.**

Battery observation post 50 metres to the rear of the six inch guns, was equipped with a Depression Range Finder Mark 5, (see photographs page 7).

The following items were normally found in the battery observation post:
- Tide tables and tide graphs.
- Current ship and aircraft recognition code signals.
- Illustrations, "silhouettes", of own and enemy warships and aircraft.
- Fire Commander’s Standing Orders.  
- Copy of the book "International Code of Signals".
- "Jane’s Fighting Ships".
- Coast Artillery Training Volume 3.
- Log of sightings.
- Message log.

The two surf guns (3 pounders) had a section observation post 10 metres to the rear of the No 1 Surf Gun, equipped with a depression range finder Mark 2.

Blockhouses, such as the observation posts and plotting rooms, were concealed by building imitation rocks over them. Small gauge wire netting was placed around and over the building and the netting was coated with rough cast cement. The cement was then coloured to match the surrounding rock. Pieces of this coloured, reinforced cement lie around most of the fortification relics on Tomaree.

Walking tracks to searchlight positions and observation posts were also hidden. This was done by covering the tracks with suspended wire or twine camouflage netting. All this was to keep such defense installations invisible from the air.

**Searchlights.**

Fort Tomaree had three searchlight emplacements described as Coast Artillery Search Light (C.A.S.L.) numbers 12, 13 and 14. The barrel, reflector (90cm) and undercarriage were housed in a small concrete blockhouse with its roof supported by the rear wall and tubular steel posts at the front corners. The opening had shutters for weather protection. Electricity was supplied to the light by generator, 110 volts direct current at 100 amps. The light source was a brilliant white flame produced by this electric current arching across a small gap between the carbon electrodes in the lamp. Some lamps had a motor that automatically fed the carbon rods forward as they burnt away and magazines of carbon rods, enabling it to burn for about three hours continuously if needed. Lamps using the anti-aircraft projector had no such magazine and its burning time was about twenty minutes before a pause to change the carbon rods became necessary.

There were also eight portable Beach Lights for infantry use. These battery powered lights operated at 12volts, 420 watts and 35 amps. The 2 million candlepower globe had a life of 100 hours.

**Yacaaba.**

A dummy battery was contracuted on Yacaaba. Made of wood and hessian, this “battery” was also camouflaged, but the camouflage was deliberately untidy. The nearness, height and width of Yacaaba caused a blind area behind it where shipping could not be seen or attacked by the guns on Tomaree.
Anti-Aircraft Guns
The main defence against low level air attack, dive bombing and strafing was the Lewis gun (.303) on an anti-aircraft tripod. The guns were relics of World War One, sadly worn and prone to stoppages.

On Tomaree these guns were located in camouflaged pits. The pits look a little like mud nests. Rocks were piled up in a circle to a height of about 1.5 metres and the lot covered with pigmented concrete. They were completely open at the top. Most of them are still in good condition, although well hidden in the bush. Some still have a timber pole standing vertically in the middle of the structure, probably to support twine camouflage netting.

Six Inch Guns
The aim of Fort Tomaree was to deny the use of the Port to an attacking force. The main defensive weapons were the two six inch guns. They fired an armour piercing shell with sufficient kinetic energy to penetrate the armour built into warships.

Different types of shells were used. Vital information about the shells was indicated by stampings, colour or painted lettering.

Yellow - HE Shell, a nose-fused shell which burst instantly on impact. It had little penetration ability and was
used against unarmoured vessels. It caused damage by the blast and resultant splinter damage. Those filled with TNT had a green band around the body with the letters TNT in black.

**Black, with a wide yellow band and white tipped nose.** This was practice shot, incapable of exploding. A solid piece of steel having the same weight and shape of HE service rounds.

**Black stencilled data.** This was the BL Cartridge, made up of sticks of cordite, bound into cylindrical cloth bags. On firing the whole bag was consumed leaving nothing to be extracted when the breech was opened.

Tomaree had two BL six inch Mark 7 guns on P 3 mounting with a range of 12.8 km and on arc fire of 330° - 180°. They were 54m above sea level.

Each of the two six inch guns was provided with an 18mm thick steel protection shield, to protect the operators from aerial cannon fire and bomb splinters. The shield also provided shelter for the detachment from muzzle blast and from small arms fire up to about 20mm calibre.

The shield was supported from above and was pushed around, with the gun, on about 8 wheels which ran on steel circular tracks cast into the gun floor.

**The Surf Guns**

Two QF 3 pounders provided defence against fast moving vessels. They had a range of 3 km and an arc of fire of 300°-135°. They fired a high explosive shell with a tracer element. They were not provided with rangefinders, range to the target being estimated.

The 3 pounders were "Hotchkiss" guns and were manned by Royal Australian Artillery personnel stationed at Tomaree.

A **Fortress Observation Post** was located at the top of Tomaree to seaward of the radar (the Air Force early
warning was added in 1943).

The FOP could provide target location information to the gun batteries by use of the depression position finder. The post also acted as a Port War Signal Station (PWSS), Naval personnel being attached for shipping identification.

The building was a concrete blockhouse with an unrestricted observation front window, 162 metres above sea level. It was equipped with a Depression Position Finder Type O Mark 1.

The purpose of the FOP was to give bearings to the Fortress Plotting Room (immediately behind it) and target locations to the Fire Command Post. Tasks allotted to the FOP's were

1. Keeping a lookout to seawards
2. When allotted a target, to report continuously to the Fortress Plotting Room the bearing of the target.
3. To report fall of shot and target behaviour (a stereoscopic telescope was used for this)
4. To keep a look out for other targets during an engagement.

**The Head Battery**

Nelson Head had 2 sixty pounder and one 18 pounder guns. They were 10m above sea level and had an arc of fire of 245°-60° (these are true bearings).

This battery was not equipped with any rangefinder

**The No 1 gun** of the “Head Battery” was a 60 Pounder NoL/1277 Mk1 Ordinance on a Mk 3 Carriage No 1221

- Maximum elevation 21° 30’
- Maximum depression 5°
- Range 10 km
- Date of Manufacture 1913
- Equipped with No 7 Dial Sights
- Arc of fire 6°-130°

**No 2 Gun** was a 60 Pounder No L/879 Mk 1 Ordinance on a MK3 Carriage No 16348

- Date of Manufacture 1916
- other specifications as above
- Equipped with No 7 dial sights and illumination equipment. Arc of fire 22°-130°

**No 3 gun** was an 18 Pounder QF field piece No L11221 on a Mk3 carriage situated 3 metres to the east of No 1 gun

- Date of manufacture 1918
- Breech No 7714
- Range 5 km
- Elevation 16° 30’
- Maximum depression 5°
- Sights - directional sight and clyno.

This gun was attached to a base place and was equipped with Pneumatic tyres.

- Arc of Fire - this piece had an all round traverse.
- There were also forty two 303 rifles distributed amongst the personnel on charge to this station.

**Ammunition**

- Head Battery 60 Pounders
  - 97 Fuses No 88 Mk6
  - 190 Fuses No 117 Mk 3
  - 375 Tube Shells
  - 250 Shells (various types)
  - 98 Shrapnel Shells
  - 348 Cordite Cartridges (9 pound 7 ounces)

- 18 Pounder
  - 442 Fuses QF cartridges
  - 52 Cartridges AP shot

These guns used on aiming point of 70° 30’ on the trig. point on Yacaaba Head.

There was a Battery Observation Post on Nelson Head to direct fire. It is still there today underneath the Coastal Patrol Gift Shop.
There were no range finders allocated to this battery. Supplied was one pair of Mark 2 graticuled binoculars to assist in observing fall of shot.

**No 20 Radar Station**
(Situated on the top of Tomaree Head)

20RS was the first AW equipment commercially produced by the HMV Gramophone Company at Homebush, the first to be manned by mechanics wholly trained in the RAAF, the first to have a building specifically designed and built for radar and the longest serving RAAF radar in WWII. Radar ranges were correct to 25m and bearing to 2 degrees.

The unit went on air on 12-4-1942 and was disbanded on 20-1-1947.

The neglected radar structure corroded over the years, eventually falling over. In 1995 a helicopter from the RAAF Base at Williamtown lifted the remains from the top of the hill with the view to restoring it.

**The following memories of 20RS were written by C. E. (Ted) Williams and first appeared in "More Radar Yarns".**

"Tomaree is essentially a huge boulder about 500 feet high, and forms the southern headland of the entrance to Port Stephens, which, incidentally, is an excellent deep water port. It was officially Fort Tomaree, and housed about 500 Army men, but there was also a contingent of Garrison Infantry. "The Old and Bold", all WWI veterans. There were also a few Navy types for ship recognition.

Mains power had not yet been brought through, so we would have to rely on a stand-by unit, a 25KVA Ford V8.

When we drew up to the bottom of the "hill", we saw that there were two ways to the top. The people who had erected the building had constructed a miniature railway going up the hill at an angle of 45° with a trolley operated by a cable and winch. The alternative was a narrow path which zig-zagged its way to the top. Needless to say, for some reason which eludes me now, we were unable to use the trolley, and obviously we would have to do this job the hard way, a man on the corner of each cabinet, with frequent changes of men, and much loss of sweat. (The receiver cabinet weighed 1000 pounds and the transmitter 1200). Up to this time, most of our experience with
NCO's had been DI's, and I am quite certain that the example set by Scotty and Ray, influenced us all, when we too became NCO's.

When we finally made it to the top, we found that everything had been prepared for us. The aerial was all matched up, the RF switch was mounted on the wall, and it was obvious where we were to position the transmitter and receiver. There was even a duct under the floor to take the synchronizing cable from the receiver to the transmitter. Unfortunately we could not use it because the conduit was too small to take the PT29M which was the only cable that we had.

So, late in the afternoon of Sunday 12 April 1942, 20RS became operational, three weeks to the day after 31RS at Darwin.

Now we must admit that the steel mesh and concrete camouflage was incomplete, and on going on my first leave to Newcastle, the unpainted mortar stood out like a sore thumb.

Because of the dangers of the patch, it was decided to run eight hour shifts, midnight to 8 am etc. The Boss quickly organized bunks, for anyone who didn't want to risk the path in darkness: most decided to take the chance.

One of the lovely things about this camp, was that the Army had a wet canteen. Life was indeed good.

A few days later, the operators spotted on the screen, something that later became known as "walking sticks", this was probably the first time this phenomenon had been observed in Australia, and while intermittent, it generally seemed to be coming from a southerly direction. I figured that we might learn something if we were able to listen to what was being displayed on the screen. After switching off the transmitter, I connected a capacitor in

Section Post behind the number 1 surf gun, 1998
series with a pair of headphones and touched the capacitor onto the anode of the 807 video amplifier. There was a clear indication of a note in the order of 400 cycles per second. We therefore decided that this must be Shepherd's Hill and we lost no further sleep over it.

My pay book shows that we, the mechanics, were reclassified as LAC’s on 16 April 1942 and acting corporals on 1 May 1942. Naturally we did not know this till some time later.

From here on, I no longer have documentary evidence of the sequence of events, so happenings are not necessarily in chronological order. Our first real fault manifested itself when the operators started complaining that they could not focus the display. It took a lot of tracking down to find the villain, a 60K resistor in the auxiliary focus had gone high resistance. Figuring that this component would not have failed so quickly if it had not been overloaded, we replaced it with two 30K resistors in series.

Not long after this I was thoroughly caught out one night when I was on the dog watch. The Boss had told me that W/Cdr Pither was paying us a visit and would be arriving about midnight. Therefore would I apply a bit of spit and polish so that the place looked good when Mr Pither inspected it. About 0100 hours when the plotting board operator was curled up on the floor alongside the plotting board, and I was thinking that I had better start some cleaning up, there was a loud knock at the door. Fortunately this woke up my sleeping beauty who scrambled onto his chair, because when I opened the door, there was the Boss with the Wing Commander. Luckily the place was not too messy, but the Boss did give me a rather reproachful look. However, I put it to you, what other “stranger” would be so foolhardy as the climb that path at 0100 hours. Perhaps it was this ability that permitted George Pither to achieve so much in radar.

In due course, this mains power came through, and our rather worn standby-by unit was relegated to its proper task, with an off-duty operator sleeping alongside it in case of power failure.

Also about this time, stresses caused by high winds knocked a few teeth off a cog in the aerial turning gear. This put us off the air for a few days until the NSW Government Railways came galloping to the rescue with a replacement gear made from stronger steel. For me, climbing out to the end of the array to fasten a rope so that we could stop it thrashing around, was just a foretaste of some of my future RAAF activities.

Soon after this we had our tragedy. One of the replacement mechanics, along with one of the operators, was rock-fishing when a freak wave got them both. One body was recovered but not the other. At this stage, I discovered that there was more to being a corporal than going to the head of the meal line. The CO gave me the job of going through belongings, and making an inventory. This rather harrowing experience contributed to the growing up of a corporal who had celebrated his nineteenth birthday at Tomaree.

Somewhere about the three month mark, I had the dog watch, and went up to the radar about 2200 hours, to find Jacky in a state of near panic. The screen was so filled with interference that the station was effectively off the air. After a bit of elimination, we tracked the problem down to the transmitter blower, which, while quite adequate for aircraft use, was quite unsuitable for continuous operation, where 1000 hours was run up every six weeks.
A vacuum cleaner seemed to be the best solution as a stop-gap, so we roused the CO out of the Officers' Mess. He in turn roused the Fitter DMT and gave him a purchase order, and despatched him to Newcastle with instructions to find a shop where the owner lived on the premises, and which furthermore, had a vacuum cleaner for sale.

The Fitter DMT did his job well, and by 0600 hours we were back on the air with the vacuum cleaner propped up on a log. It "held the fort" nobly, until a really suitable blower turned up in two or three weeks. Since this blower was now located outside the building, we had a much quieter operations room.

Shortly after this, Jacky was posted, to where I can't recall. However he did spend a lot of time at Merauke.

By now the equipment had got over its birth pangs, and had settled down to a relatively trouble free existence. This gave us time for such niceties as painting the concrete floor to control dust, etc.

Sometime during July around 1530 hours we spotted a periscope travelling northwards so it was promptly reported to Fighter Sector. Time went by, we followed its straight line path for about an hour. Nothing happened until about 1800 hours when a Walrus appeared to survey the scene, of course by then the submarine had long since departed leaving us to wonder about the activities of Fighter Sector.
Kevin H Thomas (N93213) ex A.M.F. (62670) ex R.A.A.F. writes of his memories (in 1986) of the Tomaree Radar Station.

My next posting was to No 20 Radar Station Nelson Bay where I was stationed for about 5 months. The radar equipment was located on Mount Tomaree on the southern headland of the bay, with the camp consisting of prefabricated timber huts at ground level. Although U.S. warships used the bay to a large extent for repairs, and radar protection was necessary for them, this was mainly a rest camp. There were almost double the number of personnel based there normally required to run a radar station so we had plenty of free time. Two cooks were stationed there and as each tried to outdo the other, the meals were always of top quality much to our satisfaction.

Swimming in the local baths, visits to the local hotel and to the local picture theatre occupied most of our free time. One of our operators was keeping company with the daughter of the local postmistress who often provided him and about 6 others of us with supper at night after the pictures. One night I can remember the postmistress bought a large cooked lobster for (25 cents) from the local fisherman, and that time was sat down to freshly cooked lobster sandwich for supper. Another night we went to a ball in the small local hall. I can't remember what it was in aid of, but we only had uniforms to wear and as clothing was practically unprocurable, the women and girls wore their everyday dresses. An elderly gentleman provided the music with a piano which belonged to the hall. A very simple type of ball, but a big event in the local community, and as far as I can remember a good time was had by all.

On one side of the southern headland of the bay is an inlet named Shoal Bay and on the other side is a small ocean surfing beach. Together with some of the locals we used to surf at this beach, but only after arranging with the radar mechanic on duty to keep watch from the top of Mount Tomaree. When any sharks swam towards the beach the lookout fired a warning shot from a .303 rifle and we left the water till he waved all clear. Often it was not possible to stay in the water longer than 5 minutes at a time as the sharks were very frequent visitors. After it became my turn to go on lookout duty and watching groups of 3 sharks at a time swim in towards the beach I gave up surfing there altogether. Although the sharks must have been swimming near the bottom of the bay, due to the height from which we were looking down on them they appeared to be near the surface, however, from all the shots that were fired at them no one ever hit one of them. Apparently the concussion of the bullet hitting the water was felt by them, and caused them to dart to one side, then they regrouped and swam together again. At no time did firing shots at them cause them to swim out to sea.

After a spell of leave I returned to camp one night to find that a dance had been organised and WAAF s from another camp had been invited. My attempts at dancing wearing hobnailed boots weren't very successful, and when time came for supper I was informed that it was the sergeants' duty to hand around the eats, and wait on all those present. One of the WAAF s who had attracted my attention and appealed to me was seated with a group of others who did not seem to be getting much attention, so seizing the opportunity I approached them with a plate of sandwiches in one hand and a plate of sausage rolls in the other.
Whether the couple of beers I had had made my hand unsteady or I tripped on something I do not know. Needless to say a greasy sausage roll slipped off the plate and landed on the very clean and neatly ironed skirt of the girl whom I was trying to impress. In spite of my humble apologies, she declined all my efforts to help her remove the grease stain and didn’t seem very interested in me for the rest of the evening.

Ross Risbridger, a keen military collector, has the following memories of 20RS, from his frequent holidays in the area after the war.

The antenna would weathercock and then in 1969 was blown down in a storm. Water had dripped down the mast and caused rusting and weakened the support frame. The doover was on a concrete base about 5m X 3m supporting a firbo clad building, with concrete camouflage. It was painted to look like a rock. There was a large gear and other gears inside, with heavy angle frame about 4’ cube. Thinks there had been a worm gear but it disappeared. 5m away there was a 1m high concrete survey marker with pyramid shaped top.

There was a light gauge railway line running up the hill on a 45 deg. slope. The carriages (trucks with seats) had been pushed off into the bush next to the line. At the base of the hill were two underground diesel fuel tanks, one had been dug up, but was still there with pipes, valves etc still visible.

Laurie Leckie spent 5 months in 1943 at the 20RS site.

The Americans were everywhere at that time - heavy concentrations round Nelson Bay and numerous camps in the then bush off the Newcastle to Nelson Bay Road.

We usually relied on their transports (trucks) when going on leave back to Newcastle hitching rides - ex Newcastle usually picking them up at the ferry crossing. We also got lifts on Australian Army trucks and Air Force trucks.

One of our good shifts was the evening shift when we would go up earlier and cook our own tea in the serviceable kitchen that was part of the doover. We always had lashings of mashed potato. We took our rations up with us and prepared everything in the kitchen.

The Army battery was further round the rock facing out to sea - but I can only recall one visit to have a look at their set up.

Sometimes when “off shift” we would explore the coast/beaches on ocean side South from Tomaree. There were barbed wire entanglements along the beach.

Our main job at 20 was plotting flight movements ex RAAF Williamtown, plus all flight movements along the coast in our vicinity.
TODAY

Most of Tomaree headland is now part of Tomaree National Park. Approximately 100,000 people a year walk to the top of Tomaree Headland. Most of the track is paved on the moderate slopes. Steel stairways and walkways cover most of the steep, rocky sections.

The route to the top of Tomaree starts at the car park in front of the gates to Tomaree Lodge (A on the map opposite). The summit track runs from A through B and C. To visit the "six inch" gun emplacements branch off at B and walk down the pathway to D. It is possible to return to the carpark by walking through the grounds of Tomaree Lodge (a mental institution). Alternatively walk back to point B and downhill to the car park. Anyone who climbs Tomaree Head can collect a free Certificate Of Ascension from the Tourist Information Centre at Nelson Bay to commemorate the event.

Allow 80 minutes for the return journey.

Part of an old military track near the water tanks in 1994

It is possible to visit the site of the torpedo tubes and Number 2 Surf Gun (3 pounder). From A follow the road through Tomaree Lodge (disregard the "no entry" signs, visitors are allowed on this road), branch off at E and follow the waters edge to the end of the headland. This is a very easy, level walk and is suitable for wheelchairs.
STANDING ORDERS
DEFENCE SCHEME FOR
ANTI-SABOTAGE GUARDS
FORT TOMAREE.

(REFERENCE 20 AUST. GARRISON
BATTALION O1 No 14, Dated 27 Dec. 43.)

1. OBJECT To protect Tomaree Battery until such time as other Troopers are available to take over Close Protection Group.

2. METHOD
(a) TROOPS AVAILABLE
1 Rifle Platoon 1 x 34.

ARMS AVAILABLE
 Rifles 34
L.M.G. (G) 3
S.M.G. 5
(b) Two Sections Forward - 1 Section Reserve.

FORWARD SECTIONS
(a) One section to occupy defensive positions extending from No 2 M.M.G. position as shown on sketch plan, on “W” Beach to No 3 L.M.G. position as shown on sketch plan.

FIRE PLAN L.M.G. (G)
L.M.G situated at No 2 M.G. position.

TASK
To bring fire down on all Targets “W” Beach and landing Craft.
(b) One Section to occupy defensive positions extending from No 3 L.M.G. positions to Main Gate entrance Lower Camp.

FIRE PLAN L.M.G. (G)
L.M.G. (G) situated at No 3 M.G position.

TASK (1) To bring down fire on all Targets and landing Craft, on Geddes Beach.
TASK (2) To bring down fire on all Targets and vehicles along the Nelson Bay Road.

RESERVE SECTION.
One section to be held in reserve at O1, H.Qrs Lower Tomaree Camp

3. PLAN. Defensive positions will be manned, and all weapons will engage the enemy by Rapid Fire.

4. AMMUNITION Each Section Post will be issued with the following ammunition.
2496 Rounds S.A.A. Carton Packed
3000 Rounds S.A.A. Charger "
200 Rounds 45 Cal
On “Alarm” each man will be issued with 50 Rounds S.A.A.
L.M.G. (G) 1248 Rounds S.A.A. Carton Packed.
S.M.G. 100 Rounds .45Cal.

11. ALARM SIGNAL The Signal for Alarm will be - Loud rapid beats on Gong, situated at No 1 Post.

20 AUST GARRISON BATTALION
OPERATION INSTRUCTION NO 10
SECRET

GUARD - YACAABA
Issued 6th July 1942

1. GUARD A. Tk. P1 less MC. Orderly will move to YACAABA on the 7 July. Time of taking over from 2 Aust. Inf. Bn will be 1400 hours.

2. DUTIES To guard 18 pdr field gun, ammunition, emergency rations, etc. and provide watching posts on beaches on the NORTH side of YACAABA. Keep in communication with Bn H Q and intelligence reports. Repel or delay any attempted landing on YACAABA or beach in the vicinity.