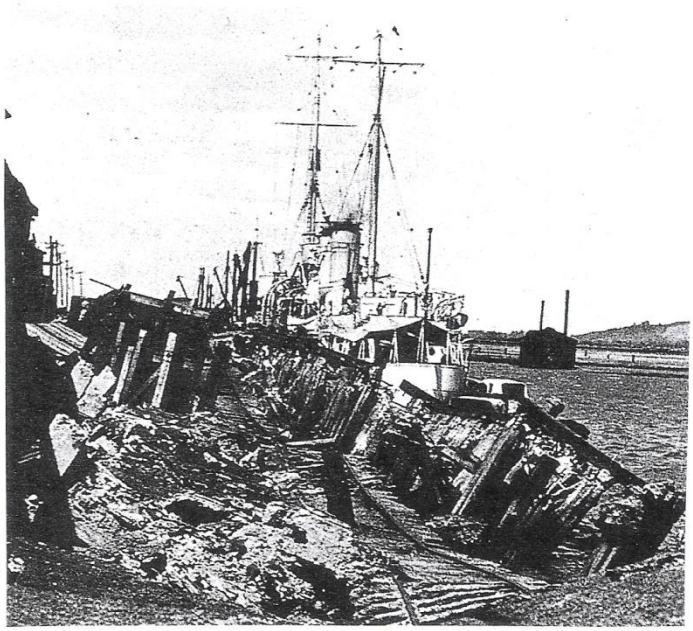
Chapter 2

Auckland Radio's Shaky Beginnings

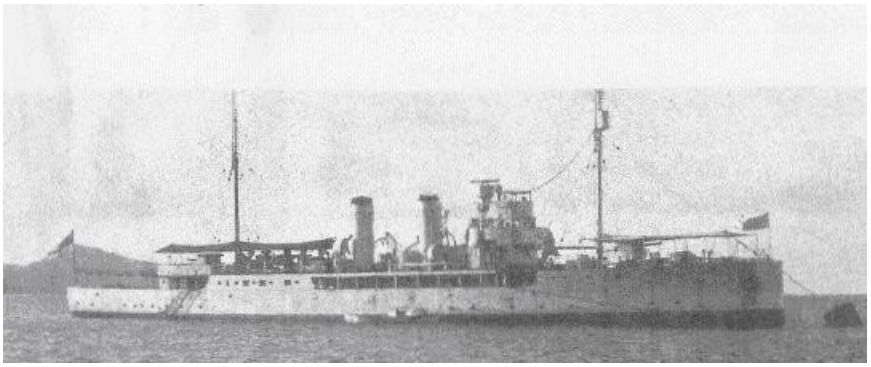
The first public awareness of activity associated with Naval Radio in New Zealand was the receipt of news of the Napier earthquake. On February 3rd, 1931, HMS Veronica had berthed at Napier shortly before the earthquake struck at 1045 The signal from Veronica that alerted Auckland and New Zealand to the catastrophe read, "Am berthed at Napier. Earthquake 1045 lasted for about 3 minutes. Ship trembled violently and bumped jetty. Securing wires eased. No damage to Veronica".



Napier Wharf immediately after the earthquake with H.M.S. Veronica in the background

Eight minutes later, Veronica signalled to Auckland that the ship was "hard and fast ashore". By 1331 the ship reported "Situation appalling. Whole town appears to be on fire." Just six minutes later, at 1337 Veronica advised Auckland that she had been advised by the Naval Secretary to keep watch with Wellington Radio.

Unfortunately, no frequency was specified but at 1347 Veronica was ordered by the Commodore Commanding the New Zealand Squadron to maintain watch on 111kHz, though whether this was the same frequency being used with Wellington Radio remains unclear. Over the following days readers of the NZ Herald and other newspapers throughout New Zealand grew accustomed to bylines that read "By wireless from HMS Veronica to HMS Philomel".



H.M.S. Veronica, a Flower class sloop

Subsequent investigation revealed the sea floor had, in places, risen over 2 metres with an average rise of 1.5 metres. Vertical acceleration was later estimated around 1G to cause the damage in Napier. The mooring cables snapped, leaving ordinary ropes tethering the ship to the broken wharf (picture). The ropes being elastic absorbed the sudden strain but the steel cables did not. The crew did invaluable rescue, fire and demolition work in the stricken, burning town while the navigation officers took soundings to discover whether the ship could be taken to sea. Eventually, at high tide, the ship was manoeuvred cautiously out of the suddenly shallow harbour and subsequently escorted to Auckland for hull repairs.

From 1921 our operational naval forces were titled the New Zealand Division of the Royal Navy even though they were funded by Wellington and manned increasingly by New Zealanders. Like the cruisers, the Flower class sloops Veronica and Laburnum remained under Royal Navy control even though both were attached to the New Zealand Division. Veronica had arrived in the NZ area on September 19, 1920, and Laburnum later, in March 11,1922.

They each took part in ceremonial occasions, exercises with the cruisers, toured NZ ports and went on annual Pacific Islands cruises. They were replaced in the mid 1930s. Veronica was sold to John Cashmore Ltd and departed Auckland in 1934, bound for ,Wales. The following year, 1935, Laburnum returned to RN control and left NZ for service in the Pacific Islands before becoming the base ship for the Singapore naval reserve. She was lost when scuttled at Singapore in 1942 to prevent her being captured by the Japanese. Her wreck was raised in 1946 and sunk off the East Lagoon as part of a breakwater of ship hulks. She was raised again in 1967 and scrapped.

The genesis of NZ Naval activity began in 1909 when the N.Z. Government decided to fund a battlecruiser for the Royal Navy. The ship was named HMS New Zealand and fought throughout the First World War. The government later decided to create a national naval force and in 1913 the Naval Defence Act was passed to establish the New Zealand Naval Forces.

HMS Philomel, an already elderly 3rd class cruiser was the first ship commissioned into the N.Z. naval forces and it soon became apparent that the 26-year-old cruiser was on her last legs when she arrived in New Zealand in 1914. She then worked extensively during the war years, before being patched up enough to survive the journey back to Wellington and be paid off soon after arriving. She was

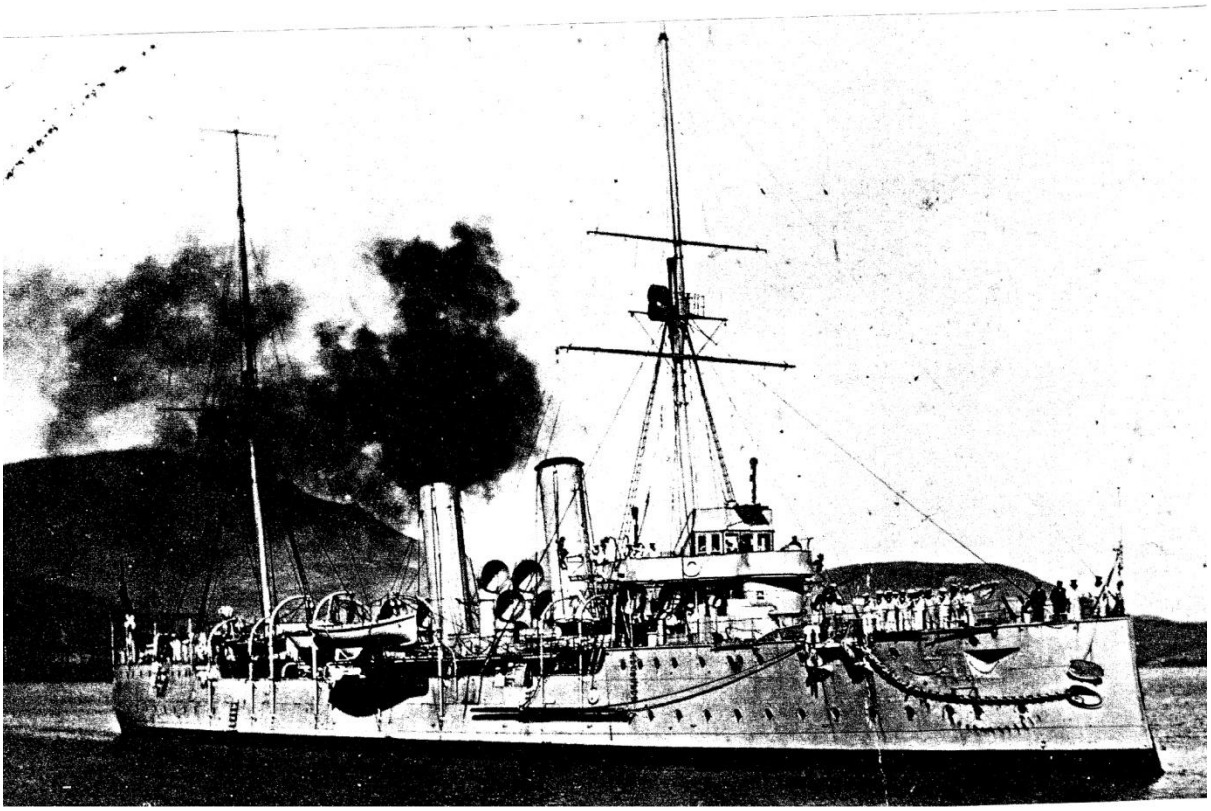
recommissioned with a caretaker crew, was stripped of her armament and became a feature of the port of Wellington for the rest of the war. During this period the N.Z. Naval authorities became increasingly alarmed over the state of the ship that a specialist Engineer officer was asked to carry out a detailed examination of the ship's machinery..

His report concluded..." that the starboard stern shaft was found to be worn down a quarter of an inch at the forward end of the stern tube....the whole line of starboard shafting will not run for another twelve months...the port line of shafting has been only partially realigned and should be properly done at the same time as the starboard shafting...in addition to these important items which would probably take 2 to 3 months there are other very serious defects which cannot be postponed much longer if the ship is to remain in continuous service...the crankhead bearings as well as the main bearings have had such a lot of wear that there is now very little left to wear.....the eccentric straps are fitted with brass bearing strips and these are very nearly worn to their limits.

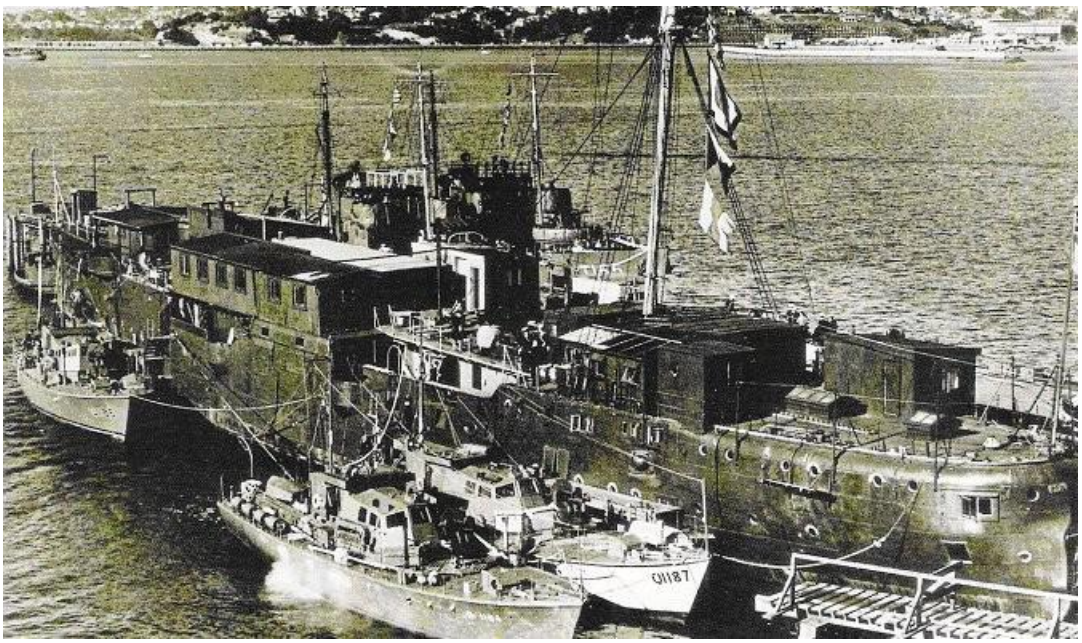
In other words the main engines require to be stripped down and refitted in almost every part and this should be done as soon as possible. The defect however which will probably involve the greatest length of time is the repair of the inner bottom and the frames under the boilers and this will probably involve the lifting of the boilers and may take up to six months...the bulkheads in the bunkers are also holed and a thorough hull survey will probably reveal still further defects..."

Faced with this overwhelming catalogue of critical defects the decision was made for Philomel to make her last journey, from Wellington to Auckland. After her arrival in Auckland her engines and boilers were removed and by 1921 she had become a base ship for the growing navy that was to perpetuate her name. She also became the main radio communication station for the Navy in Auckland. Using callsign FA7 she provided communication between Admiralty and ships at sea on the N.Z. station.

Demands for space within the aged cruiser and space for antennas as well as the increasing use of radio made it necessary to move the ship's rudimentary radio equipment to a purpose-built building in the dockyard. The building, officially known as New Daventry, was built in Clover Avenue, just Northeast of the point from which the sheer legs had recently been removed.



H.M.S. Philomel much earlier in her life



HMNZS PHILOMEL in 1944. Note the number of huts which had been added on her upper deck for use as classrooms and accommodation

To celebrate the opening of the radio station a line of Pohutukawa trees was planted along the Southern face of the station. In addition to the spark transmitter transferred

from HMS Philomel, the station had two type 37 valve transmitters, one each from the spares held for the cruisers Dunedin and Diomede as well as a new transmitter and receiver built by Telegraphist, later to become Lieutenant, Bill Brewer. One unintended consequence of the transfer was because the station was no longer aboard a seagoing unit, it could no longer use Philomel"s FA7 callsign, and was issued with the New Zealand registration four letter callsign ZLEA. The new radio station was completed in almost all respects by noon on Tuesday 24 April 1934.

Despite the loss, or at least the change in its callsign, Philomel continued to play a role in the development of the base. Finally, after being stripped of all valuables, in 1946 the hulk was sold for $1500. She was stripped of timber, steel and sundry fittings and in 1949 was towed out to the 100 fathom line and sunk 11 miles east of Cuvier Island, just 22 days short of 59 years afloat It is a matter of pride that much of the steelwork and wooden decking of the original Philomel was used for the construction of a trading motor launch, named "Coromel" that spent almost 20 years trading around the Islands of the Hauraki Gulf before being scrapped..

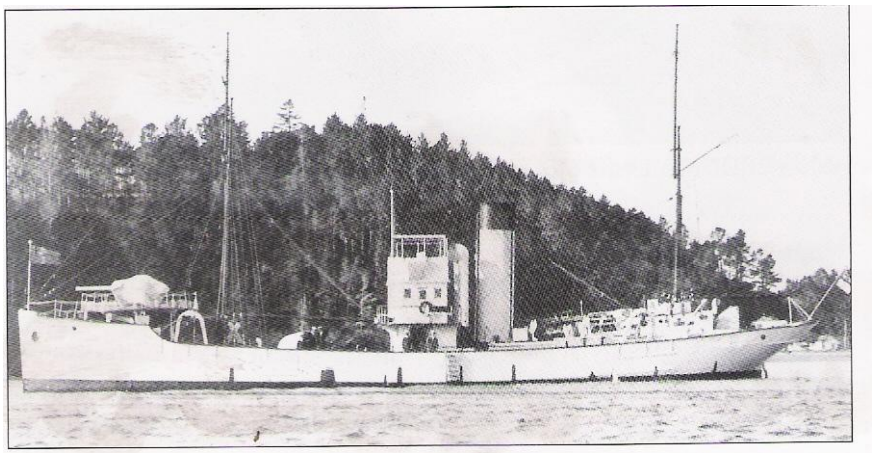
. **The building housing "New Daventry" in Clover Avenue**

Although the new radio building did contain provision for an operator"s bunk there was no provision for a urinal or even a washbasin , an omission that was later to cause some concern to the wife of a certain Naval Officer. The lady in question had planted flowers around the building but could never understand why those flowers that did survive had an aroma unlike any flower she had ever smelled before or since.

Almost two years later, the Manager of the Base was told:

"It is obviously impossible to provide these very necessary facilities [urinal and washbasin] unless they drain into the stormwater system. Is there any serious practical difficulty in making provision for this?. The Base Manager replied*:- "This could be arranged but I think it is necessary to get approval of the Health Officer and the Auckland Harbour Board to discharge the urinal into the Harbour."*

The missing toilet was not the only problem plaguing this new outpost of Empire. HMS Laburnum, the sister sloop to HMS Veronica, had been acting as guard ship during the transfer and installation of equipment and was sailing on April 20 so, for four days, it was necessary for HMS Wakakura to carry out Philomel's a.m. and p.m. routines with Wellington Radio on 4600kHz.



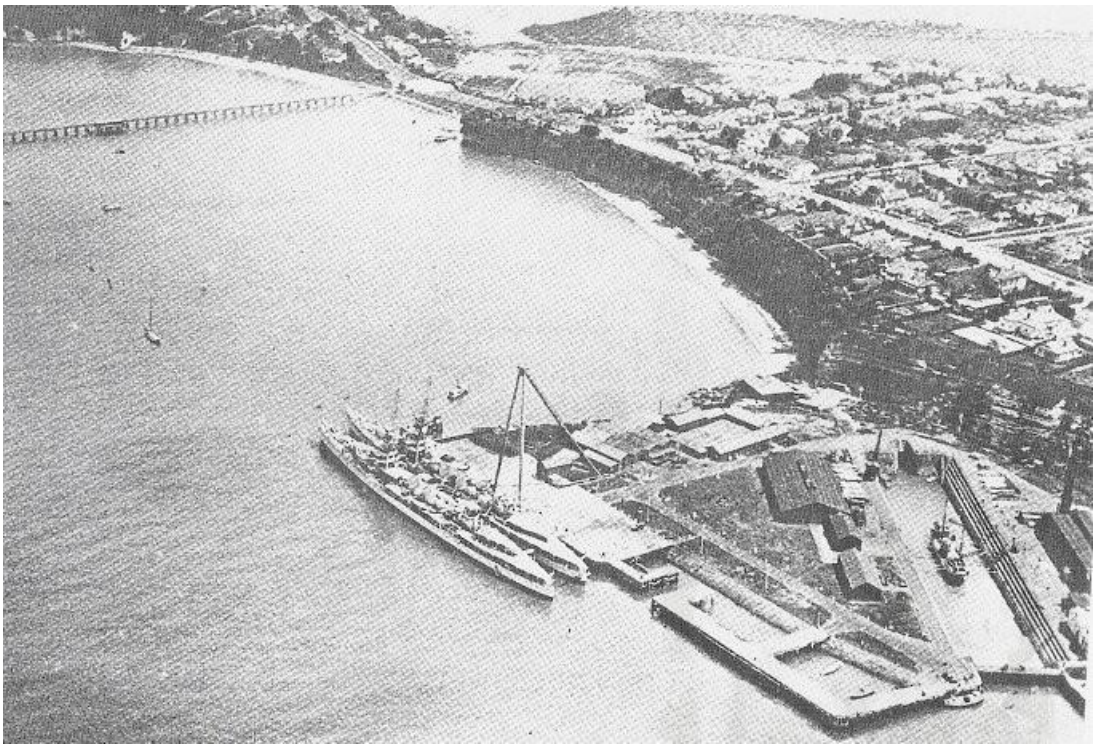
HMS Wakakura

Even prewar in Auckland, pressures were building. The planned replacement of the cruisers Dunedin and Diomede by Achilles and Leander, the reluctance of the Auckland Harbour Board to commit the capital required for expansion and the Royal Navy's demands for additional plant, facilities and administration space within the dockyard were the catalysts for the signing of a new agreement between the Harbour Board and the Admiralty. In this agreement the Harbour Board retained ownership of Calliope Dock but sold all property within the base as well as the sea frontage as far west as Stanley Bay,

This extra plant and machinery being installed within the dockyard area significantly increased the electrical noise levels as well as restricting the space available within the dockyard limits for the siting of antennas. In a three-page appeal, the Captain in Charge, Auckland summarised Auckland's views on the need for a separate northern wireless station. An even earlier request for a new higher power transmitter for Auckland had been declined because "a suitable set is already installed at Wellington."

Probably because war had not been declared the Captain in Charge, Auckland wisely linked communications between Navy Office, Wellington and Auckland naval authorities as one of the prime peacetime requirements with communications

between ships and authorities at Auckland and H.M. ships cruising locally as secondary peacetime requirements.



The beginning of the westward expansion of the dockyard showing Veronica and Laburnum at Calliope West and the beginning of the reclamation into Stanley Bay

For wartime conditions, remembering this request was made seven months before the beginning of World War 2, the reasons for a better Auckland station were itemised as:-

[a] To provide a direct ship-shore line of communication on H/F during periods when Wellington Naval W/T Station is working with overseas W/T stations.

[b] To provide an “I” method group with Wellington Naval W/T Stations.

[c] To provide a “Broadcast” service to ships within 300 miles to the north of Auckland.

[d] To provide a “Broadcast” service under the “GBMS” organisation for merchant ships.

[e] To provide a W/T link with Navy Office Wellington.

[f] To permit Auckland Naval W/T station to be considered a “stand-by” station during both peace and war in the event of the failure of Wellington Naval W/T station.

In seeking a new location, it was obvious that there was a considerable body of opinion that any Auckland Naval W/T station could, in the event of a failure of Wellington Naval W/T station, be considered a standby station... In support of the proposal a brief history of the then existing W/T equipment was appended. It told how the equipment then in use may have been considered to have been provided

during and before the period 1933/34 when it was decided to remove the W/T station from onboard Philomel to shore.

The sets existing in Philomel before they were moved ashore were not capable of attaining these objectives. An expenditure of about $3000 was therefore considered necessary for buildings, power supplies, new W/T equipment etc., in order that the Naval command in Auckland could create a reasonably up-to-date W/T station in the Dockyard capable of communicating with Admiralty and other overseas stations and capable also of maintaining constant communications with H.M. ships on the New Zealand station.

Unfortunately at that time the financial state of the country [depression years] called for the utmost economy. Consequently, the total requested expenditure was cut from the requested $3000 to approximately $900. This was to include the cost of the building, running power supplies [an expensive item in that location] and a very small amount of new radio gear.

To obtain the desired results, it was necessary under these restrictions, to drastically improvise. The transmitter and receiver [both singular] were therefore constructed, partly from new gear, partly from used gear, partly from very old and unsuitable components of ship sets and even from home-made gear.

This had all been assembled by the resident telegraphist staff at the time with what success may be judged by the lengthy service [about 5 years] the gear provided.under almost constant day and night use. Faced with increasing communications traffic Philomel resurrected it's earlier campaign for more modern equipment. New Daventry's TRF [tuned radio frequency] H/F receiver, described as not only being a non-service model but built by the radio staff some five years earlier from odds and ends of wireless components had reached the end of it's useful life.

Perhaps the Captain's summary of the reasons for replacement of the radio gear says it all "[a] The present gear is worn out. [b] It was never properly designed nor was it really suitable for the work required, being nothing more than a makeshift of the time owing to financial stringency. [c] It does not conform to the standards pf frequency tolerance required by international agreement and is therefore a source of interference to other W/T stations in New Zealand and in other countries and in addition results in inefficiency from a Naval Communications point of view.....

The Captain concluded ".....having in mind the urgency of the matter and in order to make some financial provision in the forthcoming estimates the sum of $6000 has been provisionally arranged to be put forward as necessary ..... and represents a purely arbitrary estimate of the amount required.."

Bear in mind this figure of $6000 was in marked contrast to the $20,000 quoted earlier by the Naval Secretary as being the cost of new equipment for a replacement Philomel W/T station. Nevertheless, local pride or local price won the day and on the 15th February, 1939, the district engineer of the Public Works Department was tasked with providing a new wireless station in the naval base. Purists may be disappointed to learn that the proposed new wireless station was not for operational or tactical parameters but simply to clear an area of the base for a new central office

block! Even so, the Public Works Engineer was left in little doubt about the urgency of his task.

He was told, “In connection with this task to provide new office accommodation it is necessary to resite the W/T station of HMS Philomel, bearing in mind that:
[1] Approval has been obtained for this to occur under the provisions of job 513.
[2] A site has been selected and overall dimensions have been communicated to your representative. The proposed building should be of re-inforced concrete with a wood floor.
[3] The existing masts will work in the new position.
[4] The station should be operational by the end of March 1939

To meet this six-week deadline it was necessary to find a new home for the proposed Auckland Naval Radio and to find it quickly. Valuable time was lost canvassing sites on Mt Victoria and at Whangaparaoa before the Naval Secretary was told “With reference to NA1011414 of 4th May 1939, [1] Enclosed herewith is a plan of the eastern end of [the] Naval Base showing the site of the new W/T station, W/T masts and stays and proposed new road, guard houses and fence. [2] The erection of W/T building and foundations for masts and stays are being done by Public Works Departrment at an estimated cost of $1600. [3] The dismantling, removing to new sites and re-erection of the masts is being carried out by naval personnel of H.M.S. Philomel as is also the removal and re-erection of the W/T equipment. [4] Base labour is being used for plumbing work, rigging work on masts, running temporary electricity supply cables, overhaul of W/T machinery and carrying out all other electrical work in the new building. This involves additional expenditure estimated at $200 Labour and $300 materials.

Before the transfer could take place it was considered necessary for the antennae to be examined to determine their fitness for their new environment. This task fell to a Royal Navy Warrant Shipwright who,” Had the honour to submit the following report on the wood masts and rigging of the shore wireless station New Daventry:
[a] Both masts and yards are in a very sound condition and are satisfactory. [b] Masts are not fitted with lightning conductors. This omission should be rectified before the masts are re-erected.”

The two masts were shifted and it may be of interest to report that the concrete block base of one of the masts is still clearly visible outside the door of the Philomel Library. Unfortunately though, the time spent finding a new home significantly delayed the 31 March operational deadline to the extent that on 24 April, Messrs Winstone Ltd were advised that their quotation to supply and lay flat roofing to the wireless station at the Devonport Naval Base for the sum of $151.40 had been declined in favour of a more satisfactory price. A separate memo disclosed that the successful tender was a whole $7.40c cheaper, at $144.00. This specification for concrete roofing was to have later repercussions.

The completed building contained four rooms. The entrance door was in the centre of the North face of the building, leading directly to a hallway running North and South. Inside the door the office on the right was the officer-in-charge or senior rate’s office while the larger room on the left was the main W/T office. At the end of the hallway on the right was a small storeroom and toilet while on the left, running along the South face was

the battery room with a long lead bench and sink. Apart from its concrete roof the building did have another distinguishing characteristic in that the entrance door was at the back of the building. As built, the northern face of the building did face the road but three years later the road was re-aligned to the South to better align with the guardhouse erected at the entrance gate.

The Port Wireless Building alongside the R.C. Chapel. Those with a keen eye will note that when this picture was taken the building was no longer in use as a wireless office as the two historic masts had already been removed. Also clearly visible in the picture are the famous green huts, two of which played a significant role in the training of many communicators.

The other distinguishing feature mentioned was the concrete slab roof. This later led to the claim that the building was “bomb-proof” though just how small any bomb would need to have been to be repelled was fortunately, never put to the test. Later, when the W/T station had to be re-sited from North Head [for the first time] the possibility of placing the radio station above the Radio Workshops (which had taken over the ground floor) was explored at some length before being dismissed on the grounds of cost.

Delayed Delivery

With the station built there was still no consensus on the equipment it was to use. The only option was to continue to use the original equipment, the two type 37 transmitters from New Daventry which were carried strapped to a door balanced on the back of Leading Telegraphist Jack Williamson’s motorbike. Unfortunately the speed of the new buildings erection had not been matched by the provision of equipment.
The paper war regarding the search for new equipment took six months before Admiralty finally agreed on what they considered the minimum outfit necessary to meet their requirements in NZ. These were for a type 57 H/F and a type 59 M/F transmitters, {identical to the equipment fitted in the cruisers Bellona and Black Prince, later to figure prominently in the RNZN] a B28 and a B29 receiver together with associated wavemeters at a total cost of

$10722. It was also significant that although the installation was at this stage still for the N.Z. Division of the Royal Navy, the Admiralty saw fit to include their Admiralty Percentage Charge of $1062. Approval for the purchase was finally issued on the 21st of September 1939, just 18 days after Britain (and New Zealand) had declared war on Germany.

On the 21st of January, 1941, the Superintendent, H.M. Dockyard, Auckland was told by the Navy Secretary, "I am to inform you that information has been received to the effect that owing to enemy action three cases of W/T equipment recently issued from H.M. Dockyard, Portsmouth have been lost. Full details will be transmitted with the relative shipping documents but the High Commissioner has arranged the necessary replacement of all the items.

This took some time. The equipment ordered on 21 September 1939 did not reach New Zealand until July 1944, when the then Port Wireless Officer, Senior Commissioned Telegraphist E.H. Biggs reported to the Naval Stores Officer, "With reference to NA101719 of 21 September 1939, the following items have been received complete:
HF/LF/MF Receiver B28 (CTS)
LF Receiver B29 (CNS)
Wavemeter GH
One each of type 57 and 59 have been partly received and are at Cornwall Park, the 57 being in course of installation."
What is not clear is whether the 57 and 59 at Cornwall Park were in satisfaction of the demand raised in 1939 or formed part of the base spares.

Returning to 1940, the absence of the new equipment gave rise to serious concern being expressed about the inadequacy of local radio communications. Writing to the Naval Secretary, the Naval Officer in Charge at Auckland drew attention to the fact "that the number of local patrol craft and outlying coastwatching and Radio .Direction Finding stations was increasing to the point that it was no longer possible to obtain efficient communications through the medium of ZLD [Musick Point Radio]. There were 8 patrol launches and 3 port sweepers operating between Russell and Auckland and coastwatching stations at Cape Reinga, Cape Brett, Bream Head, Tiri Tiri and Port Jackson as well as the Radio Direction Finding stations on Moko Hinau and Cuvier Islands.

"Exhaustive tests have been made in the Naval Base and along the clifs overlooking the base in order to test the reception and it has been established that reception generally is unsatisfactory within the Naval Base area.....due in a greater degree to the very high noise level which is common to all parts of the base.

Further tests were then carried ot at points approximate to the base on Mount Victoria and North Head. "At both these points good reception was obtained from patrol launches operating as far north as Russell [that is about 100 miles away].which could be heard clearly during day hours. It has been suggested that certain equipment could be utilised at Browns Bay. This point however is 12 miles from the Base and would require to be adequately guarded in addition to separate staffing. The difficulties of accommodation and victualling apart from the distance from the Base preclude the consideration of this point except as a last resort.

The report went on to say that "further examination has been given to Mount Victoria and North Head as possible points for siting the station. The local army authorities have been consulted on the matter and it was ascertained that certain difficulties would be encountered if the station were to be established on Mount Victoria but that there would be no difficulty in arranging for such a station at North Head. A conference was held at North Head and a site has been selected. The Battery Commander has made available a site underground for housing the equipment.

This proposal was significantly endorsed by a separate report from the Superintendent at Musick Point complaining about interruptions to the 500kHz headphone listening watch during the periods that the Musick Point operator was engaged in working the [naval] patrol launches on 2940kHz

The Superintendent reported that “the outer patrol launches are equipped with low power radio telephone transmitters operating on 2940kHz. It is understood that they operate at distances up to approximately 200 miles from Auckland when on patrol duty. At present there are five of these vessels engaged on this work and ZLD has four one-hourly routines with the launches commencing at 0030 NZST..

In order to carry out the routines it is necessary to put a loudspeaker on the 500kHz receiver, the launches are then worked in rotation and as a general rule are very difficult to work. During the hours of darkness, atmospherics are usually of maximum intensity on 2940kHz and during daylight the signals from the patrols are weak and subject to fading. In view of these conditions it sometimes takes about twenty five minutes to receive and repeat a short message. As it is necessary to exchange signals with five different launches during each routine, a period of forty five minutes usually elapses before the 500kHz routine is returned. Even then, the traffic has to be sent on to the Naval Base per land line.

On the subject of the disposition of the received traffic, the Post Office Director General sought instructions from the Naval Secretary regarding copies of received traffic at Auckland Radio where, “for some time past it has been the practice at Auckland Radio to supply to Commander Bingley at the Naval Base, Auckland, copies of all messages received relative to shipping. Initially, these messages were forwarded through Chief Petty Officer S---- but owing to the unsatisfactory arrangements for the disposal of the copies it has recently been arranged for copies of the messages to be enclosed in an envelope and forwarded to Cdr Bingley by registered post!!. In view of the fact that these messages are transmitted direct to the Naval Base over the buzzer circuit the necessity for the procedure indicated is not apparent and I should be glad of your instructions regarding its continuance.”

Six weeks later, on the 30th of October, 1941, the Naval Officer in Charge was instructed “to proceed forthwith with the installation of the Port Wave W/T station at North Head, Auckland. Approval was also given for the Navy to arrange with the Officer Commanding Northern Military District for the victualling and sleeping accommodation of one Leading Telegraphist and four Telegraphists at North Head. Other problems were soon to arise.

The Brigadier Commanding Northern Military District reported, “when North Head was selected as a site for the Naval Station it was not known that two Army wireless stations would also be located in the same area. On the north slope of the hill about 20 yards from the old 6” B.O.P. is the home of the Army base used for communication with Whangaparaoa on 2560kHz but located only 20 yards from the Naval aerial while in the night F.C. Post, the Tactical Net on 4800kHz is only 50 yards from the Naval set.”

The problem was resolved when,the construction of a radio receiving station was authorised at Purewa on Melanesian Trust Board land leased to R. & W Hellaby for grazing stock. The work comprised the provision of station buildings, hutted temporary quarters for 60 men, a galley, mess hall and toilet facilities for 30 together with permanent facilities for 60 men, including radio receiving rooms. Altogether seven buildings were built at a cost of $43,000.

Just why or how the station came to be known as Purewa with its grave connotations remains unclear. The cluster of buildings were not built on any of the PurewaTrust Board land but were located nearer St Johns Wood on the western end of what is now Gowing Drive. After the commissioning of Purewa it was decided “To close down the auxiliary Port

Wave station at North Head which will provide a reduction in complement of four telegraphists. To gain a clearer undersanding of the effect of this development It will be necessary to look a little more closely at the forced expansion in communications activity occasioned by the development of the war in the Pacific and the arrival of the significant number of U.S. forces in New Zealand.

Fortress Hauraki.

At the beginning of the war in 1939 telephone communication between the various points of the Hauraki Gulf Fortress Area was by means of land lines and submarine cables. Regimental Headquarters at North Head were connected to the Battery at Whangaparoa by landline, to Rangitoto fire control post by submarine cable and thence to Motutapu battery by landline. Whangaparao had a single core cable to the observation post on Tiri Tiri Island while the Waiheke Island observation post was served by portable Army radio telephone sets as occasion demanded.

Later in 1940, the Post Office was asked by Army to supplement these wire circuits by a number of radio-telephone channels to act as emergency circuits against the possible failure of the normal outlets. Specific requirements were:-

Three channels from Whangaparaoa to Tiri Tiri Island.
One channel from North Head to Rangitoto.
One channel from Rangitoto to Whangaparaoa.
Three channels from Rangitoto to Motutapu.
Two channels from Motutapu to Waiheke.

In view of special wartime requirements, it was decided that the use of very high frequencies was essential. Owing to the difficulty or perhaps impossibility of obtaining early delivery of such equipment from overseas it was considered best to develop the sets in New Zealand, using what components were available from existing stocks. This work was put in hand as soon as the staff position and progress of higher priority work allowed. Prototype sets operating in the 50/60 megaHertz band were made by the ost Office and the manufacture of about thirty-six complete sets was undertaken by Messrs Philips Lamps Ltd. These comprised 10 watt transmitters, 8 valve receivers, modulator units, power supply units, hybrid units and jack fields. Antennas were half wave horizontal dipoles with parasitic reflectors.

The installations at North Head and Whangaparaoa were operated from the public supply mains, supplemented by standby petrol alternator sets. At all other installations a 110-volt battery composed of a number of six volt motor car batteries, was used to drive rotary converters, which supplied A.C. power to the radio equipment. Battery charging was by means of petrol engine alternator sets.

The first installation was commenced at Tiri Tiri in November 1942 and all installations were completed by May, 1943. The scheme functioned very satisfactorily. The radio circuits were often used in preference to the wire circuits which in some cases suffered from significantly higher attenuation.

RADAR.

Though obiously no longer a Comms Branch responsibility, historical records reveal that most, if not all, the initial coastal and island radar operators were either serving or former V/S or W/T ratings or Post Office telegraphers. This brief history is included to highlight their efforts and some of the measures used to safeguard New Zealand's coastline during the second World War

Before the declaration of war on Germany, which occurred on 3rd September, 1939, scientific representatives of several Empire countries were called to London to learn of a new secret weapon. New Zealand's representative was Dr E. Marsden, Secretary of the Department of Scientific and Industrial Research, and the new weapon was R.D.F. (Radio direction finding), later re-named radar.

At that time the first installations for the detection of hostile aircraft were being made round the coastline of Great Britain and sets for installation in ships and aircraft were in the development stage. It was realised that a considerable period of time must elapse before England's development and production would reach the point where complete sets would be available to Empire countries; therefore all current information was given to the countries concerned with the idea that they might, by their own local efforts, be able to bridge the gap, and derive some early benefits from the new invention.

Dr Marsden was faced with a formidable task. Single-handed, he had to absorb, in a short time, all available information concerning the new secret technique, purchase in England sufficient radio components and testing instruments to enable work to start in New Zealand, and arrange for the transmission of technical reports covering subsequent progress in England. He arrived in New Zealand, towards the end of 1939 bringing with him complete plans of a high power 5 meter set known as the Navy type 279A, and an experimental model transmitter and receiver for an ASV (air to surface vessel) set.

A decision was at once made that the work would be undertaken in the Post Office by reinforcing existing Post Office staff with scientific personnel from the Department of Scientific and Industrial Research, the whole working under the direction of Dr Marsden, and using existing Post Office organisation. Fortunately, the Post Office Radio Section had moved from the small wooden building in Whitmore Street to the modern seven-floor Wellington East Post Office Building in September 1939, and so was in a better position to meet the large expansion in staff and activities which ensued.

By the beginning of 1940 the plans of the Type 279SA set had been thoroughly analysed and an order placed with Messrs Collier and Beale Ltd., Wellington, for a similar complete installation. The experimental ASV set had been put in operation, and the first echoes obtained from the shipping and hills round Wellington Harbour, the set operating from the seventh floor laboratory at Wellington East. This set was demonstrated to all interested parties and plans were made to improve its technical performance. Visits were made early in the year to Motutapu Island, in the Hauraki Gulf Fortress area, where it had been decided to install both the Type 279SA set and the improved A.S.V. set, both on an experimental basis.

The latter set was modified and added to with the object of making it suitable for gun ranging (Coastal Defence) purposes. By June 1940,the installation of the CD set was sufficiently advanced for testing and towards the end of the month it was used in a night exercise with H.M. ships "Achilles" and "Hector". The ships attempted to enter Auckland harbour undetected during darkness, but were picked up by the experimental coastal defence while in the vicinity of Tiri Tiri island, from whence their courses were plotted to Takapuna. This was a combined Navy and Army exercise which was of great value in demonstrating to both Services something of the potentialities of the new weapon.

Concurrently with the progress of the CD set, the 279SA set was being installed on a nearby site. The performance of this set was gradually improved until about October it followed a Trans-Tasman flying boat out to a distance of one hundred miles. At the end of 1941 this set was transferred to Mokohinau Island as an early warning set against the possible approach of hostile aircraft.

In Wellington, despite the small staff available for the work, considerable progress had been made in the first six months of the year 1940. Plans had been made for the installation of sets at Palmer Head, Godley Head, Taiaroa Head, Bluff, Cuvier Island and Mokohinau, These locations had been reconnoitred and a building programme started. At the same time continuous research and development was proceeding with a view to producing an efficient CD set from the ASV development set. A second ASV set was built and installed in a "Waco" plane at Rongotai. This set was demonstrated to interested parties. Shortly afterwards, the development and production of ASV sets was handed over to Dr White at Canterbury University College. Dr White also developed the first 60 cm set which was installed on H.M. ship "Achilles".

Assistance to Dr White was provided from Post Office staff in Wellington, and the Christchurch Post Office organisation provided the necessary purchasing and accounting services. Fitting of planes was carried out in conjunction with R.N.Z.A.F. at Wigram. In December 1940, plans were in hand for the production of twenty aircraft sets.

The second CD (coast defence) set for gun ranging purposes was installed at Palmer Head, Wellington, about September 1940. From this date onward it was planned to develop two different sets for coastal defence purposes, an accurate set for warning against the approach of hostile craft. By May 1941, the Radio Section was becoming overloaded with work and the facilities at Wellington East were taxed to the utmost by the large staff employed. A decision was therefore made that from 31st May the Department of Scientific and Industrial Research would be solely responsible for research and development of prototype models while the Post Office would assist in production of equipment and ordering of materials. Space in Wellington East Building continued to be occupied by Scientific and Industrial Research Department to whom a limited number of Post Office staff were seconded. By August 1942, the Scientific and Industrial Research Department was established in its own laboratory in Majoribank Street, thus releasing valuable space in Wellington East Post Office building. From this date until the end of the war the Post Office took a gradually decreasing part in radar activities.

As soon as the work commenced in 1939 it was realised that lack of trained staff would be one of the main handicaps to progress. A scheme of training was therefore arranged in conjunction with Canterbury and Auckland University Colleges. Selected students were given one year's training in Radio-physics during which time they were paid by the Post Office. At the conclusion of the training they became members of the staff employed on radar or allied activities. During the year ended 31st March, 1941, £5,000 was expended on this scheme while the estimated expenditure for the following year was £6,400. The scheme concluded after the second year.

The administration of radar activities in New Zealand was the responsibility of the Radio Development Board. Members of the Board included the three Chiefs of Staff, the Director-General and the Chief Engineer of the Post Offfice and Dr Marsden as Chairman.

Some idea of the magnitude of the work during the first two years may be gauged by the expenditure figures. During the year ended 31st Mach, 1941, the total expenditure was just over £27,000, while the estimate for the following year was £63,500.

Even after the responsibility for the radar work was transferred to the control of the D.S.I.R. the Post Office continued to undertake construction and assembly work on prototype and production equipments at its workshops, and to make available its stores organisation for the supply of materials. This arrangement continued for approximately 12 months.

In addition to the radar programme as it affected the mainland of New Zealand, the entry of Japan into the war made it imperative to immediately establish such stations in the Fijian

Group at Suva, Mololo and Mbanga. Although this work became the responsibility of the Department of Scientific and Industrial Research, the Post Office were asked to make available experienced personnel to supervise the installation of the radio stations. Two officers who had previously been engaged on this type of work in New Zealand were seconded to the D.S.I.R. for the duration of the work, and were mainly responsible for the installation of the costal defence station at Suva and the air warning station at Mololo.

The arrangements for the assembly and despatch of the materials and equipment for this expedition were handled by the stores organisation of the Post Office, storage officers working throughout the Christmas period 1941/1942 to complete the work.