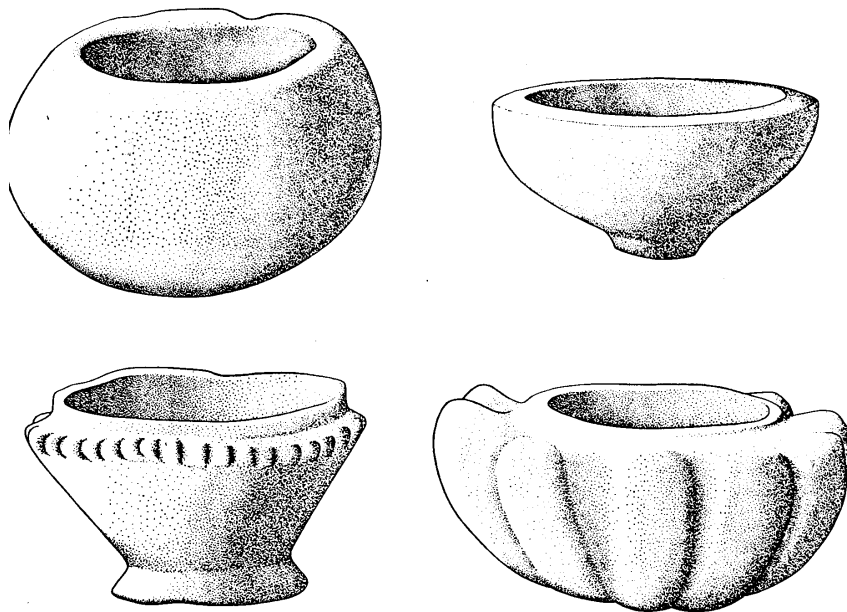


Social and Spiritual Development Strand
Social Science

Unit 3: Transition and Change

Module 3.7 Prehistory and Archaeology



Varieties of stone mortar.

Lecturer Support Material

Acknowledgements

Materials written and compiled by Sue Lauer (PASTEP).

With assistance from Francis Mahap (MTC) and Michael Homingu (HTTC).

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Primary and Secondary Teacher Education Project

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Unit outline

Unit 3 Transition and Change	3.1	Skills for Investigating Change (Core)
	3.2	Independence (Core)
	3.3	PNG History – an Overview (Optional)
	3.4	Power, Control and Change (Optional)
	3.5	PNG at War (Optional)
	3.6	Technological Change (Optional)
	3.7	Prehistory and Archaeology (Optional)

Icons



Read or research



Write or summarise



Activity or discussion



Suggestion for lecturers

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Module 3.7: Prehistory and Archaeology

This module is designed to make students aware of how we know about important changes over the centuries. They will be introduced to the techniques used by archaeologists and others who seek to interpret the past.

Objectives

By the end of this module students will be able to:

- Identify important historical events, sites and people
- Explain the significance of archaeological sites in PNG and other parts of the world
- Understand the importance of historical evidence
- Further understand concepts of time such as recent past, centuries, eras

Teaching Module 3.7

- It is important to read through the module first, to decide what materials you will use, and what tasks and activities you will set for the students. It is also important to see how this module fits within the complete unit.
- The material is written as a resource for the teaching of this module.
- Do not expect students to work through the total module alone. There may be too much material and they will need assistance in determining the tasks required.
- Many of the activities have a number of questions to discuss and tasks to do. They are included to provide some ideas and stimulus, not necessarily to complete every part of each activity.
- The activities provide a focus for learning, and some may be suitable for developing into assessment tasks, but the activities are not written to be used as the assessment program.
- The Lecturer Support Material is the same as the Student Support Material, with additional notes included in the text boxes.
- Materials included as an appendix are included as additional information for lecturers. These may be photocopied for students where appropriate.
- Assessment tasks should be developed at unit level, recognising the development of knowledge, skills and attitudes across this module and others which make up the unit.


i Often history is only recorded from a male perspective, with stories of male achievement in war, exploration, government and development. The role of women is ignored or forgotten. This module provides an opportunity to examine gender roles in class discussions and research activities in each of the sections. It is important also that participants selected for interviews, surveys and as guest speakers are both male and female so that students are aware of different perspectives.

The main emphasis in the teaching of each topic is to include a range of activities and to develop skills which will be useful for beginning teachers in their own classrooms. The strategies and activities listed below may be used instead of those included in the module.

- Time capsules
- Evolution of languages
- Video/ TV documentaries on ancient cultures
- Demonstrations eg how to make a clay pot
- Comparative studies eg artefacts from PNG and Aboriginal Australia
- Time lines
- Models/simulation eg pyramid, burial mask
- Research eg methods of dating

Module 3.7: Content

Topic 1: What is Archaeology?

 For many people archaeology is a fascinating study. Thorough investigation and painstaking attention to detail often leads to remarkable discoveries. Even though PNG does not have exotic ruins such as those found in ancient Greece or Egypt, there is a wealth of material to be unearthed. This is an ideal module from which to develop student interest in the past in PNG and around the world.

All colleges should have adequate library resources for the research activities in this module.

The module also provides opportunities for practical, 'hands on' investigations of local sites.

Definitions

Archaeology is the scientific study of the remains of past human cultures. Archaeologists investigate the lives of early people by studying the objects those people left behind. Such objects include buildings, artwork, tools, bones, and pottery. Archaeologists may make exciting discoveries, such as a tomb filled with gold or the ruins of a magnificent temple in the midst of a jungle. However, the discovery of a few stone tools or particles of hardened grain may reveal even more about early people. Discovering what people ate thousands of years ago makes archaeologists realize that people in the past led ordinary lives, with many similarities to our lives today. Everything that archaeologists investigate, from the most magnificent building to the tiniest pollen grain, helps them to form a picture of ancient societies.

Archaeologists look for information about how, where, and when cultures developed.

Archaeological research is the chief method available for learning about societies that existed before the invention of writing about 5,500 years ago. It also provides an important supplement to our knowledge of ancient societies that left written records. In the Americas, archaeology is considered a branch of anthropology, the scientific study of humanity and human culture. European archaeologists, however, think of their work as most closely related to the field of history. Archaeology differs from history in that historians mainly study the lives of people as recorded in written documents.

What archaeologists study

Archaeologists examine any evidence that can help them explain how people lived in past times. Such evidence ranges from the ruins of a large city to a few stone flakes left by someone making a stone tool long ago.

The three basic kinds of archaeological evidence are:

- **artefacts** - objects that were made by people and can be moved without altering their appearance. Artefacts include such objects as arrowheads, pots, and beads. Artefacts from a society with a written history may also include clay tablets and other written records.
- **features** - mainly houses, tombs, irrigation canals, and other large structures built by ancient peoples. Unlike artefacts, features cannot be separated from their surroundings without changing their form.
- **ecofacts** - natural objects found with artefacts or features. Ecofacts reveal how ancient people responded to their surroundings. Examples of ecofacts include seeds and animal bones.

Any place where archaeological evidence is found is called an **archaeological site**. To understand the behaviour of the people who occupied a site, archaeologists must study the relationships among the artefacts, features, and ecofacts found there. For example, the discovery of stone spearheads near the bones of an extinct kind of buffalo at a site in New Mexico showed that early human beings had hunted buffalo in that area.

How archaeologists gather information

Archaeologists use special techniques and equipment to gather archaeological evidence precisely and accurately. They also keep detailed records of their findings because much archaeological research destroys the remains being studied.

Locating sites is the first job of the archaeologist. Sites may be aboveground, underground, or underwater. Underwater sites include sunken ships as well as entire towns that have been submerged because of shifts in land or water level.

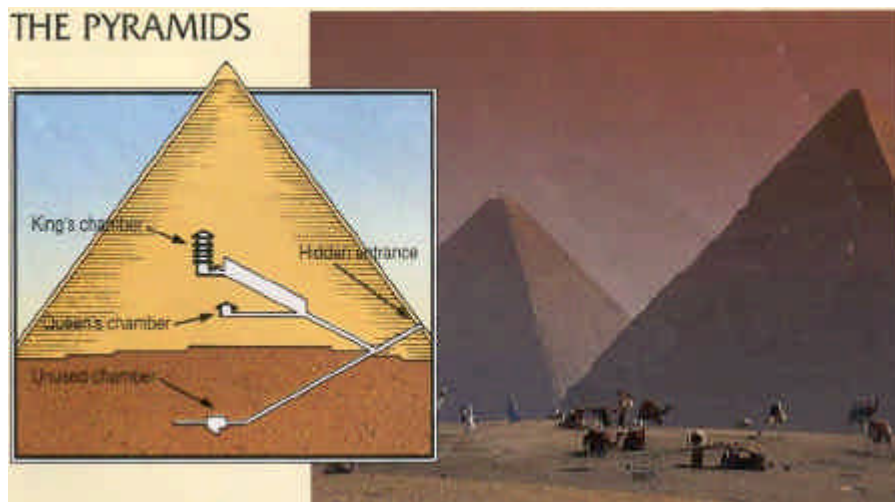


Figure 1: The pyramids. Source: *Into the Mummy's Tomb*

Some large sites are located easily because they are clearly visible or can be traced from descriptions in ancient stories or other historical records. Such sites include the pyramids in Egypt and the ancient city of Athens in Greece. Some less obvious sites have been discovered accidentally by non-archaeologists. In 1940, for example, four children in search of their dog found the Lascaux Cave in southwestern France, which has prehistoric wall paintings. Many

important discoveries have been made by archaeologists who searched tirelessly over many years for a specific site or type of site. Working in this way, an English archaeologist named Howard Carter discovered the treasure-filled tomb of the ancient Egyptian king Tutankhamen in 1922.

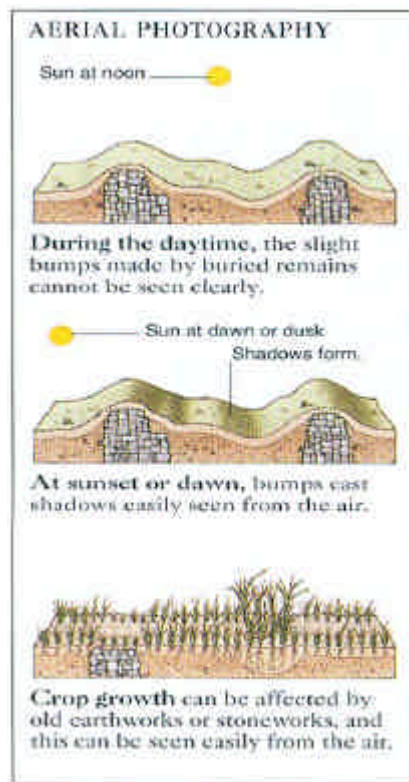


Figure 2: Aerial photography. Source: *The Illustrated Factopedia*

Archaeologists use systematic methods to discover sites. The traditional way to find all the sites in a region is through a foot survey. In this method, archaeologists space themselves at measured distances and walk in preset directions. Each person looks for archaeological evidence while walking forward. Archaeologists use this method when they want to know where sites do not occur as well as where they do. For example, they might use it to confirm that sites in a particular region occur on hilltops but never in valleys.

Archaeologists use scientific methods to help discover underground sites. **Aerial photography**, for example, can reveal variations in vegetation that indicate the presence of archaeological evidence. Plants that are taller in one area of a field may be growing over an ancient grave or irrigation ditch. Plants that are shorter in another area may be growing in shallow ground over an ancient building or road. In addition, simple metal detectors can be used to sense metal artefacts that have been buried as deep as 1.8 metres.

Surveying sites

Archaeologists begin to study a site by describing it. They make detailed notes about the location of the site and the kinds of evidence visible on its surface. They also take photographs and make maps of most sites they find of the site.

After making a map, the scientists collect artefacts from the surface of the site. They divide the surface into small square areas and examine one area at a time. The locations where artefacts

are found are recorded on the map. Some surface artefacts can give information about when or how a site was used.

Excavating sites

Archaeologists dig carefully for buried objects in a process called **excavation**. The method of excavation depends partly on the type of site. For example, archaeologists working in a cave might divide the floor and the area in front of the cave into small square units and then excavate each unit separately. Archaeologists working on a temple platform might dig a trench into the front part of the platform and extend the trench into the ground next to the platform. At large sites, excavation may be limited to certain areas. Other considerations that frequently determine the excavation method include the climate and soil at the site.



Figure 3: The army of terracotta warriors excavated around Mount Li in northern China date back to the third century BC. The first and largest find, Pit No. 1, contained 11 corridors, in which were found figures of more than 3,000 bareheaded foot soldiers (some of which are shown in the picture), all painted in brilliant colours. Remarkably, no two faces are the same.

Source: Quest for the Past.



Figure 4: The earliest Egyptians dug shallow pits in the desert where they buried their dead with just a few jars of food for nourishment in the next world. The hot, dry sand of the desert dehydrated and preserved bodies so well that some of them are still in good condition today. This sand-dried body is more than five thousand years old.

Source: Into the Mummy's Tomb.

Tools used in excavation range from tractors and other heavy equipment to small picks and paint brushes. In some cases, the scientists strain soil through wire screens to recover extremely small objects. In other cases, they analyse soil in a laboratory to detect either grains of pollen or chemical changes caused by human remains.

Working underwater

Archaeologists who work underwater use many methods adopted from land archaeology. Aerial photography over clear water may reveal the outlines of sunken harbours and towns. A method called **sonar scanning** helps detect underwater objects by the reflection of sound waves. In addition, divers use metal detectors to uncover metal objects.

Photographic maps of sites can be made from submarines or by divers carrying underwater cameras. Archaeologists work at underwater sites in submersible decompression chambers. They use balloons to raise large objects to the surface for further study.

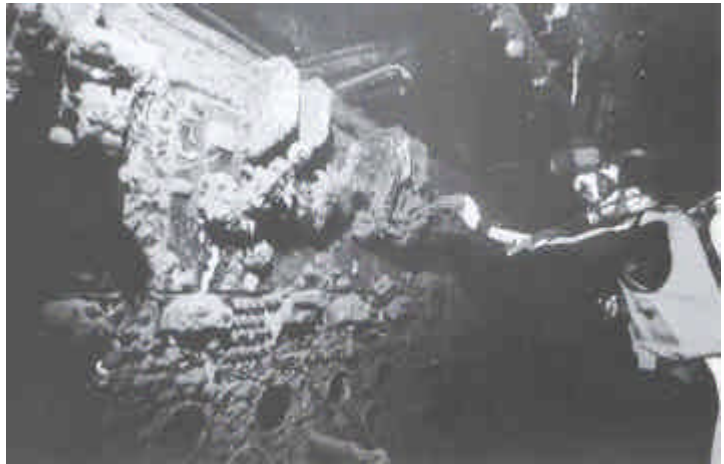


Figure 5: Underwater diver inspects sunken ship in Rabaul Harbour. Source: Rabaul's Forgotten Fleet.

A dive into the past

Standing in the stern of the boat, the olive-skinned trader was feeling pleased. The voyage had been profitable. He had taken aboard a ton of bronze and copper ingots at his last port of call on the island of Cyprus and he was making good time on his voyage to the Aegean, where he hoped to sell the cargo to Greek metal-workers. A strong, westward current was carrying the 10 metre planked boat along the southern coast of Turkey and he would soon be dropping anchor at the harbour of Finike to take on fresh water for the final leg of the journey.

But the trader never reached Finike. In the island-studded waters off Cape Gelidonya, the vessel suddenly struck a reef of jagged rocks just under the surface. Its bottom was ripped open, and weighed down by the metal ingots, it sank like a stone in 27 metres of water.

For 3,000 years the wreck remained hidden there until the 1950s when sponge divers from the Turkish fishing village of Bodrum, 290 kilometres west of Cape Gelidonya, came across it.

In 1959, Peter Throckmorton, an American diver and writer, and his team, pinpointed the site of the wreck and collected enough evidence to persuade the University of Pennsylvania to sponsor a full-scale archaeological expedition. Up to that time, most undersea excavations had been undertaken by professional divers, while the scholars waited impotently on the surface. In 1960, however, the expedition's leader, a 27-year-old American archaeologist named George Bass, adopted a new approach: Instead of trying to turn divers into scholars, he trained archaeologists to dive and in doing so pioneered an exciting new branch of practical scholarship.

Using the same painstaking techniques that archaeologists use on land, measuring and recording the precise positions of everything they found, Bass's team pieced together a picture of life aboard an ancient eastern Mediterranean trading ship.

The results were astounding. Most perishable goods and much of the boat itself had disintegrated. But the boat had sunk so fast that much of the cargo, though concreted together by limestone deposits and marine organisms, was still stacked in neat piles. And fragments of matting, in which the rough-edged ingots had been wrapped, had also survived.

Over several months, the team found the remains of tin and copper ingots (the earliest evidence of industrial tin), stone anvils, hammers and "rubbers" (used for beating the cast metal into polished sheets), the merchant's seal, an elegantly carved stone cylinder that may have been a family heirloom, and several sets of weights that were used by traders. The divers also brought up scrap metal consisting of broken pieces of bronze tools and weapons, including axes, adzes, knives, and spearheads, which were obviously intended to be melted down for reuse. The ingots and scrap metal would be exchanged for Greek wine, olives, and oil.

Once all the artefacts were salvaged, they were studied. Each item had to be matched against similar artefacts from around the Mediterranean. They were dated by laborious comparisons of styles, particularly of pottery, and the results were cross-checked against other dating techniques, such as carbon-14 analysis of fragments of wood. Piecing the jigsaw together took seven years. Such painstaking work was ultimately rewarded as Bass's team established that the shipwreck had occurred during the late Bronze Age in about 1200 BC and that the trader was a Phoenician, who bought and sold metal and cast his own ingots from fragments smelted in temporary kilns he built ashore: the team had found the world's oldest known shipwreck.

In doing so the archaeologists also overturned some long-cherished beliefs about the ancient world. Most significantly, classical historians had long believed that Homer's *Odyssey* - set in the 13th century BC but written several hundred years later - was completely inaccurate when it stated that Phoenician traders were operating at the time. Evidence from the shipwreck, however, proved these historians wrong. Not only did the finds from the shipwreck confirm that as early as 1200 BC there was Phoenician activity in the Mediterranean but also it confirmed certain technical aspects of Homer's writings as they relate to ship-craft of that time.

(Condensed from: *Quest for the Past.*)

Topic 2: How archaeologists interpret findings

Archaeologists follow three basic steps in interpreting the evidence they find:

- Classification
- Dating
- Evaluation

Classification

Archaeologists can interpret their findings only if they can detect patterns of distribution of artefacts in space or through time. To find these patterns, archaeologists must first classify artefacts into groups of similar objects. The two main systems of classification are typology and seriation.

In **typology**, objects are grouped according to what they look like, how they were made, and how they were used. Each group of objects is called a type. For example, all the pottery jars from a site that look alike represent one type, and other jars represent other types.

In **seriation**, all objects of one type are arranged in a series that reflects changes in style. These changes developed gradually either as time passed or as a culture spread to other areas. In many cases, the age of the objects must be known to determine which is the first and which is the last member of a series.

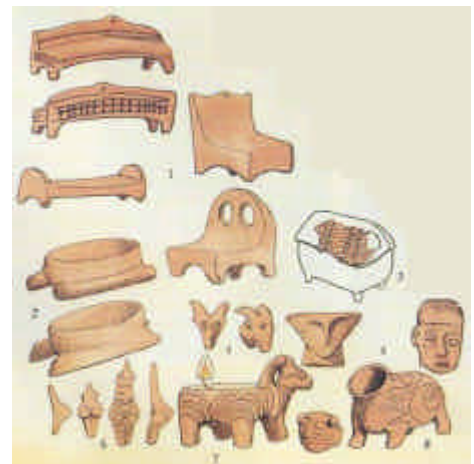


Figure 6: Miniature clay models and figurines from Copper Age Europe
Source: *Quest for the Past*.

Dating

Archaeologists use various methods to determine the age of ancient objects. These methods can be divided into two major types:

- Relative dating - gives information about the age of an object in relation to other objects. Thus, relative dating methods produce only comparisons, not actual dates. For example, archaeologists can determine the relative ages of bones found at a site by measuring their fluorine content. Fluorine from underground water gradually replaces other elements in bones, and so older bones contain more fluorine.
- Absolute dating - determines the age of an object in years. There are many absolute dating methods. The method used in a specific case depends mainly on the type of object being dated.

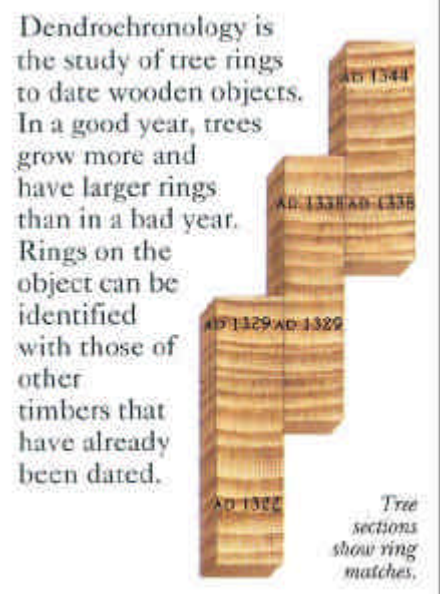


Figure 7: Dendrochronology can only be used to date wooden objects. Source: *The Illustrated Factopedia*.

The most widely used method of dating the remains of ancient plants, animals, and human beings is **radiocarbon dating** which is accurate up to 60,000 years even with the tiniest specimens. Other techniques include **potassium-argon dating** and **dendrochronology**. Dendrochronology is the most accurate of all dating methods, but it can be used only with wooden objects up to about 8,000 years old

Evaluation

Archaeologists evaluate artefacts and features to learn such information as how and where the objects were made and used. In some cases, the scientists learn by direct experiment. In the mid-1980's, archaeologists from Cambridge, England, reconstructed and sailed a classical Greek ship called a trireme. In this way, they learned more about ancient shipbuilding and seamanship.

The evaluation of ecofacts reveals such information as what food people ate and whether they grew crops or gathered wild plants. Ecofacts can even explain ancient migration patterns. A seed of grain not native to the area where it is found may reveal how and when eating habits were carried from one place to another.

3.7 Activity 1

Explain the likely role of one of these specialists in archaeological research - zoologists, botanists, geologists, architects, engineers, or anthropologists

Provide a brief description of one of the following processes utilised by archaeologists

- *Sonar scanning*
- *Radio-carbon dating*
- *Dendrochronology*
- *Potassium-argon dating*

Developments in archaeology

The idea of studying the past through ancient objects has developed gradually, but the most intense interest has occurred in the past 200 years. During the 1700's, some wealthy Europeans began to study and collect art objects from the times of ancient Greece and Rome. These first diggers looked only for treasures and threw away ordinary objects. Also, during the 1700's, European scholars began to debate how long human beings had lived on the earth. Their interest resulted partly from recent discoveries of primitive stone tools together with the bones of extinct animals.

The 1800's brought a more scientific approach to the study of the past. The great length of human prehistory became widely accepted due to advances in geology and biology. By the mid-1800's, archaeology had become a separate field of study, and evidence of human prehistory was accumulating rapidly. Important discoveries included prehistoric lake dwellings in Switzerland, ancient cave paintings in France and Spain, and part of a prehistoric human skull found in Germany. In the late 1800's, archaeologists began to use techniques of excavation that made it possible to determine sequences of cultural development.

European archaeologists of the late 1800's focussed their studies on the ancient European and Middle Eastern civilizations described by classical and Biblical authors. American archaeologists, however, could find almost no written records of the civilizations they studied. Partly for this reason, they turned to anthropology for methods of interpreting their discoveries. For example, they studied artefacts produced by contemporary American Indians to help interpret objects from past societies.

The scope of archaeology expanded greatly during the 1900's. Howard Carter's discovery of the tomb of Tutankhamen in 1922 brought the study of Egyptian archaeology to popular attention, but archaeologists also began to explore the past civilizations of Central and South America, China, Japan, Southeast Asia, and other areas.

Great advances in underwater archaeology also occurred during the mid-1900's. Previously, underwater excavation had been both difficult and expensive. The aqualung and other diving devices invented during the 1940's enabled divers to move more freely when carrying out archaeological investigations under water.

Since the 1950's, the primary aim of archaeologists has been to develop general theories that explain the changes in human societies revealed by archaeological evidence. For example, archaeologists today look for reasons behind the development of farming in Mexico about 7000 B.C. and the growth of cities in the Middle East about 3000 B.C. Many archaeologists undertake projects to study a problem rather than just a site. In Australia, archaeologists have sought to chart the history of the Aborigines. In 1984, researchers from the Australian National University reported on plant remains and charcoal fragments recovered from the bed of Lake George, near Canberra, over the previous ten years. The charcoal fragments indicated burning, and the experts examining this evidence suggested tentatively that Aborigines might have been living in Australia 130,000 years ago, 80,000 years earlier than people had previously thought.

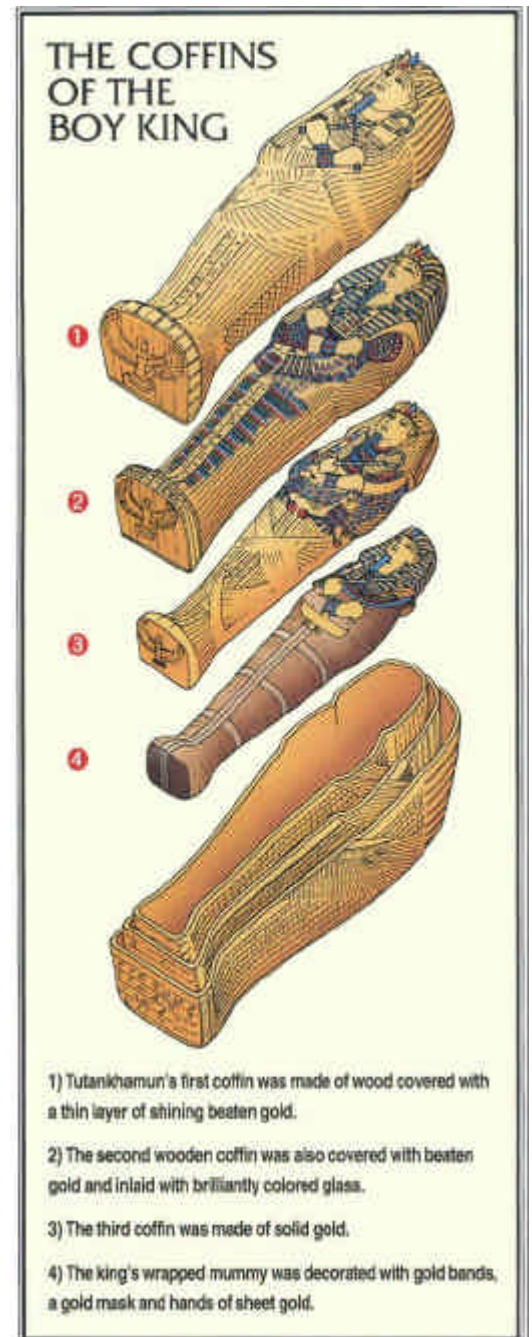



Figure 8: Coffins of Tutankhamun.
Source: *Into the Mummy's Tomb*.

A major concern among archaeologists today involves the preservation of archaeological sites that have not yet been studied. Many such sites are threatened by construction projects, the expansion of agriculture, and other types of development. Many countries have passed laws that seek to identify and preserve places that might be of historic importance. On an international scale, archaeologists seek to halt the illegal sale of archaeological objects. They urge that developed nations enact and enforce laws to prohibit the import of ancient objects unless an export certificate has first been obtained from the country of origin. They also seek to limit the activities of treasure hunters who damage archaeological sites.

 The activities below enable students to apply a number of skills – research and summarising, layout and design, profiles, and drawing and labelling.

3.7 Activity 2

Why do archaeologists classify the artefacts they find?

What is the primary aim of archaeologists today?

Choose one of the archaeologists listed below and do a one page profile including background information and major discoveries

- *Howard Carter*
- *Sir Flinders Petrie*
- *Sir Austen Henry Layard*
- *Heinrich Schliemann*

Choose one of the sites listed below and provide details of its location and what was found there OR prepare four annotated sketches of objects found at the site.

Valley of the Kings (Egypt)

Lascaux Cave (France)

Naqada

Nineveh

Troy (Turkey)

Athens (Greece)

Knossos (Crete)

Pompeii (Italy)

Lake Mungo (Australia)

Watom Island (ENB)

Talesea (WNB)

Kuk (WHP)

South America

Topic 3 – Practising archaeology

When a site is found, the archaeologists carefully record location of all artefacts in a site. If the site is stratified with more than one layer of occupational debris, an excavation will be carded out and the precise position of each artefact is recorded. It can thus be determined which artefacts are associated with each other and to which layer or **archaeological horizon** they belong. The relative age of the artefact is established by the law of **superposition**, the principle that the lowest occupational debris in a site is older than that accumulated on top of it.

Analysis of an artefact can tell us a great deal about the past cultural systems, pre-historical technological skills, diets, settlement patterns, seasonal movements trading partners, cultural groupings, religions practiced and social systems. By studying remains of different periods, archaeologists can also uncover cultural changes through time.

Coins

The most common everyday article that people tend to drop, either from their pockets or purses, are coins. Most coins have dates on them, so if you drop a coin dated 1994 in your garden and leave it there, the soil and grass and leaves will gradually cover it. In a few hundred years time an archaeologist digging in the same area will find your coin and because of the date on it, will know that s/he has reached a level of approximately 1994. The coin would then be useful in helping to date other artefacts found on the same level of digging. For instance, if the same archaeologist found a badge that had fallen from your jacket in the same level as the coin, s/he could say that the badge comes from a time around the year 1994.



Figure 9: Old coins and a medal.

My brother and I collect coins ...and so far we have found about 25 coins. We have found a dime, a sixpence, a hapney (half-penny), one penny, a florin and lots of rubbish like cans and other stuff. We have found some war helmets. Some of these have three-inch holes in them. My friend Malcolm found a Japanese helmet at Wewak. We also found coke bottles with New York on the bottom, and Oakland.

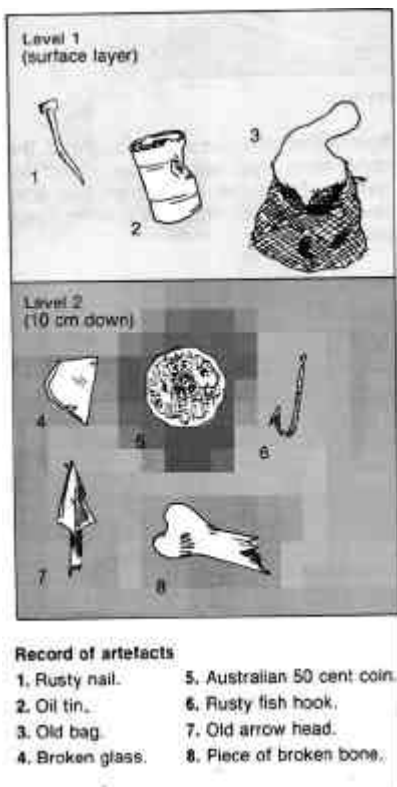
From Carl, aged 8, Grade 3, Gordon Primary School. Source: Paradise No. 145, May-June 2001.

Coins are so useful to the historian and especially the archaeologist that they are not very happy about people using metal-detectors on archaeological sites just for fun. These people find coins and other metal objects and dig them up, usually without making any note of exactly where they were found. When dug up in this way the coins are no longer useful as an aid to dating other artefacts and material on the site.

3.7 Activity 3

There are many sites in PNG which contain artefacts such as World War 11 wrecks. There are also museums in many towns. Visit a site or museum and examine at least two artefacts. Sketch them and answer the following questions.

- *What is it?*
- *What is it made of?*
- *How big is it?*
- *How old is it?*
- *What was it used for?*
- *Who might have used it?*
- *Is it genuine?*



An archaeological dig

Divide into groups. Each group will need 4 small sticks or markers, string, forks or other digging implements, a small brush, paper, a container.

- *Draw up a square grid pattern on a sheet of paper*
- *Choose an area of the grounds close to buildings or the site of an old rubbish dump.*
- *Mark out an area about 30cm square and carefully remove layers of soil. Brush the soil away from any objects found. Sketch the location of the object on the grid sheet before removing it from the soil. Continue the digging process carefully to a depth of 15cm, recording and removing objects as they are discovered.*
- *Fill in the hole*
- *Wash the objects gently and choose two to sketch and describe in more detail.*
- *Describe what the objects may have been used for.*

Source: Early Times.

Topic 4: Prehistory

i Students should be encouraged to investigate the prehistory of the local area. Investigating oral histories is one way that information may be obtained about special locations or traditional practices which provide valuable archaeological knowledge.

Site visits are to be encouraged if possible.

The earliest evidence of human occupation in Papua New Guinea comes from Huon Peninsula on the north coast of the mainland between 40,000 and 45,000 years ago. Significant studies are being done in Papua New Guinea. Current evidence suggests early settlements in the islands are about 32,000 years old. Evidence of the first settlement in the highlands comes from 30,000 ago. It is believed that these first settlers came from South East Asia and that they came in small numbers, involuntary, as it is thought that their watercraft were probably made of solid logs and bamboo rafts, too primitive for them to have considered a deliberate crossing.

In all areas so far investigated, these earliest inhabitants were hunters and gatherers of wild plants and animals but it is not known which of the important plants and animals in Papua New Guinea were available to these people and which were later introduced from outside Melanesia. Important food plants at the time of European contact include sago palm, taro, yams, cassava sweet potatoes, breadfruit, coconut, bananas, and green leafy vegetables. Few of those were likely to been available in their present form.

The first evidence of gardening comes from the way in which people established systems to manage water. In particular it is of interest how the swamps were drained to bring in water to grow crops at Kuk near present day Mt. Hagen in the Western Highlands about 9,000 before present (BP). If this evidence is accurate, it seems likely that this highlands people were amongst the first gardeners in the world.



Figure 10: Aerial views of Kuk show the patterns of ancient drainage channels, unrelated to later patterns of land use. Excavation of the swamp uncovered a complex of old drainage channels, extending back thousands of years. Source: Early Times.

There is evidence of contact between Australian Aborigines and New Guineans. This can be seen in Arnhem Land for example painted grave posts, wooden gongs, painted skulls, string figures, arrow like reed spears and bark mourning armlets and belts. In Cape York there is undoubted Papua New Guinean influence on technology, language, ritual, art, mythology, language and physical characteristics. The Cape York Aborigines possessed skin drums, bamboo smoking pipes, tobacco and double outrigger canoes like Papua New Guineans.

Topic 5: Archaeological discoveries in PNG

Archaeological investigations indicate that a constant flow of hardy, adaptable peoples have streamed into Papua New Guinea from various parts of Asia and that the complex process of displacement and assimilation has led to exceptional diversity in all areas of art and culture.

In the Eastern Highlands there is cave art, stone artefacts and large-scale terracing of hill slopes for agricultural gardening, dating back tens of thousands of years. In Enga and the Southern Highlands, stone mortars and pestles have been unearthed, probably used for crushing and powdering nuts. Coastal civilisations at Balof Cave and on New Ireland are more recent. Lapita pottery has been found on Mussau Island, New Ireland and Manus Province. However, the most obvious difference between the development of civilisation in Papua New Guinea and that in many other parts of the world is that the former never developed into city-states.

3.7 Activity 4

Brainstorm why there was no development of towns or cities in PNG before European settlement?

Like the ancient cultures of Central and South America, the Papua New Guineans did not have the wheel. Nor did they have looms. But excavations reveal that they had a rich material culture. Chinese glass beads and the remains of bronze drums on Lou Island are testament to international trade links over 2,000 years old. Obsidian tools carved in Talasea in West New Britain in 1500 BC have been found nearly 4,000 kilometres away in Fiji. There were complex trading networks around the coast and between the coastal and highland regions. Often the goods travelled circuitous routes to their destinations since the tribes would only trade with their immediate neighbours. Valuable commodities such as salt, obsidian, shells, oil, pigments, pottery and stone were traded around the country.

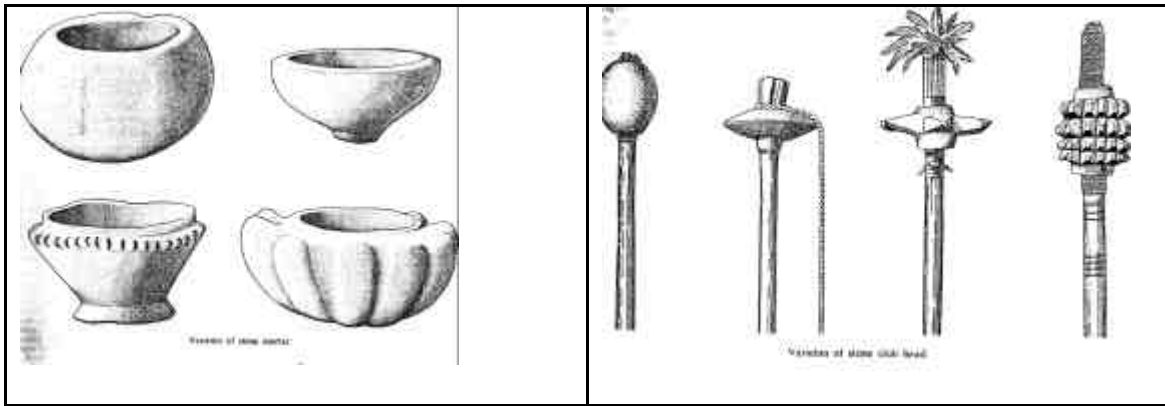


Figure 11: Stone artifacts –mortars (left) and clubs (right). Source: Unknown.

The first excavations took place in 1959 in the Central Highlands. We know from radio-carbon dates that humans were already settled in New Guinea ten thousand years ago. One date is from charcoal associated with stone tools at 141 feet depth in the deposits at the Kiowa rock shelter of the Chimbu area; others are from animal bones and charcoal at about 10 feet depth in the Kaflavana rock shelter some twenty miles away to the east near Goroka. These dates from the eastern interior of the country are hardly likely to be the earliest for New Guinea people when the colonization of Australia was affected at least twenty-five thousand years ago. Indeed, current investigations at the site of Kosipe, more than 6,000 feet up in the mountains of the Central District, suggest that people were living there when ash from an eruption of Mt Lamington was falling 15000 -18000 years ago.

The accepted view about the earliest New Guineans for whose existence we have direct evidence is that they were hunters and gatherers, practising an economy similar to that of the Australian Aborigines. The evidence for hunting is to be found in the bones of wild animals accumulated as food refuse in the successive levels of Kiowa, Kafiavana, and other Highlands rock shelters where excavations have taken place. The remains include local macropods such as tree kangaroos and wallabies, possums, bandicoots, and rats, together with occasional reptiles, birds, and fish. In an early level at Kiowa, dated about ten thousand years ago, a jaw fragment of *Thylacinus*, the Tasmanian wolf, was found, the first record for this animal in New Guinea.

The stone industry associated with these food remains is in the main unspecialized, characterized by chunky scrapers with steep working edges commonly of concave shape, unifacially flaked from a flat base and exhibiting step-flaked retouch. It is probable that these tools were used for making hunting weapons and other implements in wood, though any such articles would not, of course, have survived. The remarkable thing is that, except for a progressive tendency to abandon retouching of the working edge, this basic technology survived through the entire prehistoric period and was being practised when Europeans first penetrated the Highlands a generation ago.

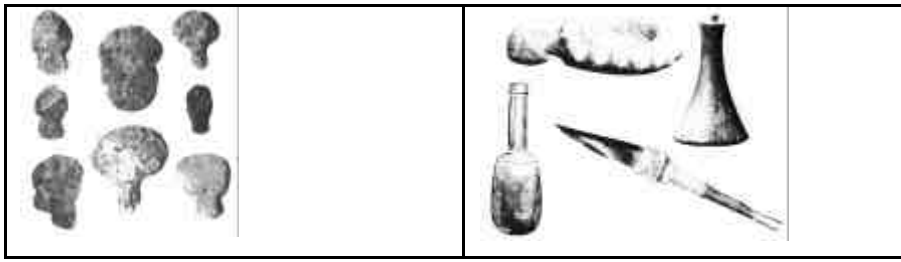


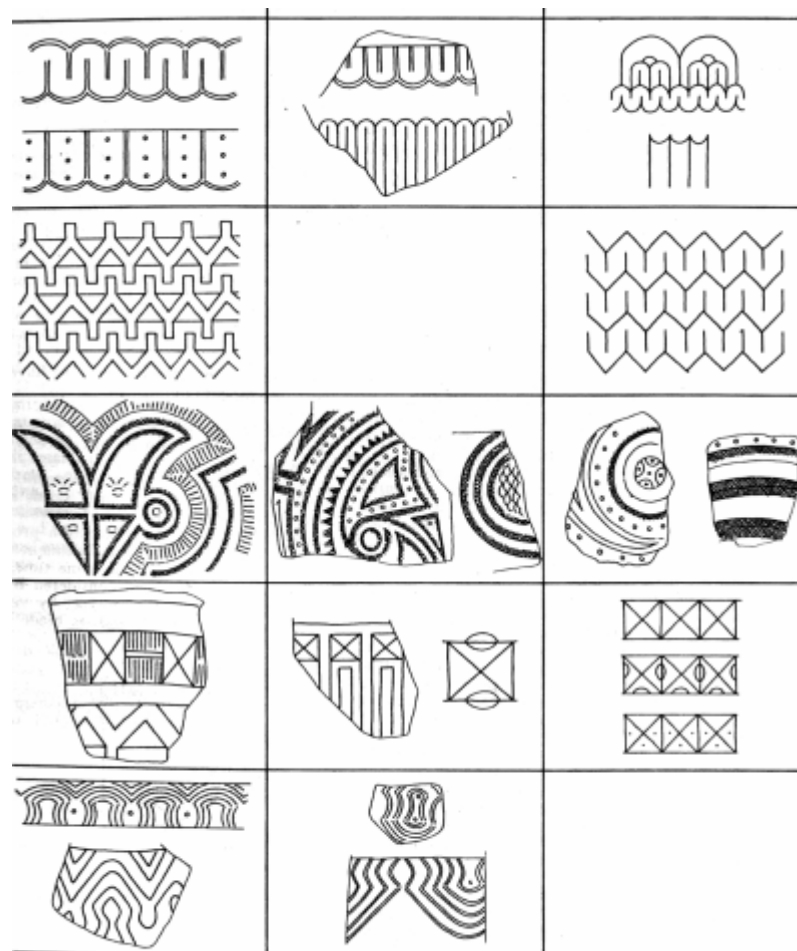
Figure 12: Stone PNG artifacts – axe heads (left) and containers and spear tip (right).
Source: *Colonial Intrusion PNG*, 1884.

Amongst the best-known items of the New Guinea archaeological record are stone mortars and pestles, truly prehistoric objects, of whose manufacture and use the present populations are ignorant. Early discoveries of these were made on the Huon Peninsula during the German period and in the gold-mining areas in the mountains of south-eastern Papua, where they were sometimes reported as coming from considerable depths. With the opening up of the Highlands following World War 11 the distributional record has been significantly extended. Here mortars and pestles, together with other striking productions of prehistoric stone working, have found a secondary use amongst the inhabitants as magical stones.

At Collingwood Bay, in the course of building Wanigela mission in the early years of this century a remarkable example of pottery was unearthed in quantity, quite unlike that produced in the area today and unrecognised by the modern population. It consists of large-bellied pots and bowls, often thick-walled and with heavy rolled-over rims. Decoration is varied and

includes deep grooving of the surface in the form of arcs, parallel lines variously disposed, concentric circles, and spirals. A number of decorated *Conus* shells with scrolls of returning spirals incised or in relief and at least one example of an incised *Conus* arm-ring were also discovered. Identical pottery has been found further up the Papuan coast at Dyke Ackland Bay and similar material in the Trobriands. These islands are of coralline formation and do not possess clay, and so must have received their pottery by way of trade.

The circular and spiral motifs of the Collingwood Bay pottery and the grooved execution prompt comparison with certain decorated stones and slabs in the same general area, on Normanby Island and in



Designs on Lapita pottery (left) from Watom Island near Rabaul, (centre) from New Caledonia, (right) from Tonga.

Figure 12: Lapita pottery designs. Source: Unknown.

Goodenough Bay. These have designs in concentric circles, circles with internal spokes, spirals, and a distinctive heart-shaped human face. The same patterns, similarly engraved, are known in the Bismarck Archipelago. This design, which turns up as an element in facial tattooing and modern pottery decoration at Collingwood Bay, is widely distributed in rock art.

On Watom Island, near Rabaul, a site with pottery first put on record as long ago as 1909, has been the subject of recent study. The pottery in question bears a distinctive geometric decoration impressed into the surface by a toothed comp. Closely related pottery is now known from the New Hebrides, New Caledonia, Fiji, and Tonga. It is called Lapita ware from the New Caledonian site where it was first systematically studied. The makers appear to have been original colonists of the south Pacific islands. They had settled New Caledonia and Fiji by 1000 BC and Tonga by 500 BC.

Pottery has been found at various sites on Bougainville and Buka. Here the ornamentation of gashes and gouges and of multiple wavy lines executed with a toothed comb is identical with that on material excavated at certain New Caledonian sites. In New Caledonia the tradition dates back as far as about A.D. 1000. We have no idea how old the related pottery in the northern Solomons is, but the style seems to have lived on there into modern times.

Many archaeologists accept that the sites with Lapita pottery beyond the large islands of the South East Solomon's, especially in New Caledonia, Fiji, Tonga and Samoa represent the earliest human colonisation of those islands. Thus 3,500 years ago the cultural boundary between Melanesia and Polynesia did not exist. Distinctive Polynesian cultures developed only in the last 1,000 years.

Excavating in New Ireland

During the mid 1980s archaeological research in New Ireland revealed that people had been living there for at least 35,000 years. A recent archaeological expedition by Matthew Leavesley (of the Australian National University) and Nick Araho and Herman Mandu (of the PNG National Museum) to Buang Merabak, a central New Ireland cave site, unearthed more evidence of human occupation going back into the depths of time.

During excavation, the ground was carefully dug away, taking care not to break any of the artefacts. Archaeologists dug the ground in units that are five centimetres deep (called spits), so it can easily be determined from what depth in the ground each artefact was found. Once the soil was removed from the ground it contained many thousands of tiny shells, bone and stone. The soil was weighed (and then sieved so the artefacts could be collected. The artefacts were collected and placed in labelled bags indicating the exact location from which they were collected. They were then returned to the laboratory for closer inspection, analysis and interpretation.



People first entered New Ireland 35,000 years ago. It is generally accepted that they came from the Papua New Guinea mainland via New Britain. Recent excavations at Buang Merabak show that people first visited the cave 32,000 years ago.

They were hunter-gatherers who ate both marine and land animals and used stone tools. They ate shellfish and bats while they were at the cave. The shellfish are similar to species that live on the nearby reefs today, and the bats were thought to have lived in other parts of the cave.

Twenty thousand years ago the introduction of two things into New Ireland had a major impact on life. Cuscus were brought in for the first time ever, probably from New Britain, and the trade or exchange of obsidian began. Prior to the introduction of the cuscus the only land-based mammals on New Ireland were bats and rats. Therefore, the cuscus would have dramatically increased the availability of land-based animals for prehistoric people to eat.

Obsidian only occurred naturally at a few locations in the region including Mopir, Talasea, the Fergusson Islands and the Admiralty Islands. It is therefore considered to be exotic to New Ireland. Obsidian was highly valued because when fractured it could produce an extremely sharp blade-like edge that was highly sought after for the production of stone tools. Twenty thousand years ago, obsidian was brought to Buang Merabak from West New Britain, a distance of approximately 150km across the sea. The New Ireland evidence of trade or exchange is the earliest in the world.

At present there is a lack of data representing behaviour during the last global Ice Age covering the period from 19,000 years ago to 15,000 years ago. This is an unsatisfactory state of affairs and highlights the need for ongoing research in New Ireland.

Eight thousand years ago the Common Pademelon was introduced to New Ireland. This further expanded the number of land-based animals in the diet of people. Also at this time, New Irelanders were eating more shellfish from beach environments in preference to those from reefs. Soon after, we see the greatest use of Buang Merabak as a place to eat cuscus and shellfish before the cave was finally abandoned around 6,000 years ago.

In New Ireland, agriculture was thought to have begun up to 6,000 years ago and with it, a whole new way of life ensued. 3200 years ago a new wave of people, bearing a unique style of pottery, known as 'Lapita', entered the Bismarck Archipelago. The most famous site for Lapita pottery is located on Babase in Anir.

From article and photo by

M. Leavesley in *Paradise* No.145 May-June 2001

War sites



Figure 13: Large cooking pots on the Hakkai Maru. Source: Rabaul's Forgotten Fleet.



Figure 14: A lighter, buckle, button and fob watch found on the Hakkai Maru. Source: Rabaul's Forgotten Fleet.

In 1942 Japanese troops invaded Rabaul. The town was converted into a naval base providing facilities for navy and army transport ships, two airstrips and support for over 100000 people. Over six hundred new buildings were built but in late 1943 the Japanese realised that existing buildings provided insufficient protection for vital supplies so they commenced construction of over three hundred miles of underground tunnels. These tunnels eventually housed hospitals, accommodation, stores, workshops and military installations.

For the next two years Rabaul was bombed heavily by Allied forces. By the end of January 1944, Rabaul was finished as an effective Japanese base. Almost all buildings had been knocked flat and ships and grounded planes were especially vulnerable to bombing raids. According to the US Strategic Bombing Survey, The Allied campaign Against Rabaul, 154 large freighters, 70m small cargo ships, 517 barges and four submarines were sunk in Rabaul waters during the war.



Figure 15: Wreck locations around Rabaul. Source: *Rabaul's Forgotten Fleet*.

War relics are scattered throughout PNG, not just in Rabaul. Much has been salvaged as scrap metal. The deadliest legacy of the war is the vast amount of unexploded ordnance still to be found, much of it underwater and on shipwrecks, but also in densely forested regions. Wartime wrecks in PNG are protected under the War Surplus Material Act and souveniring is discouraged. Sunken vessels are considered war graves and salvage of any item is prohibited by law.

3.7 Activity 5

Make a list of historic sites in your local area. Describe what is at the site and why it is of interest historically.

What steps could or should be taken to preserve historical sites?

Glossary

Aerial photography	Photographs taken for the air. These photos can be used for map-making, environmental evaluations and looking for archaeological sites.
Artefacts	Objects that were made by people and can be moved without changing them. Examples of artefacts include arrowheads, pots and coins.
Excavation	The careful process of digging up buried objects.
Features	Are the remains of objects and structures. They cannot be separated from their surroundings without changing their form. Examples of features include houses, tombs and irrigation canals.
Horizon	A horizontal layer in an excavation.
Site	A place where archaeological evidence has been found. Sites may be aboveground, underground or underwater.
Superposition	The principal that the lowest level in an archaeological site is the oldest.

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