

Historic Sites
of the
Easter Group, Houtman Abrolhos, WA



Report prepared for the
Abrolhos Islands Consultative Council

Myra Stanbury
with contributions from
Ross White, Jenni Potts and Caroline Heine

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Report—Department of Maritime Archaeology, Western Australian
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Abrolhos Islands Consultative Council

Myra Stanbury

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Ross White, Jenni Potts and Caroline Heine

Cover illustration:

*The Nautilus at anchor at the guano settlement, Rat Island, 1894
(W. Saville-Kent collection, Batty Library, Perth)*

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Abstract

The following text is extremely faint and illegible. It appears to be a list of items or a table of contents, but the specific details cannot be discerned. The text is organized into several columns and rows, with some items appearing to be numbered or bulleted. The overall structure suggests a formal document, possibly a report or a technical manual, but the content is unreadable due to the low contrast and blurriness of the scan.

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Abbreviations

Technical

AMG	Australian Map Grid
CP	Control Point
FB	Field Book
ft	feet
in	inches
km	kilometres
m	metres
yd	yards
diam	diameter
max	maximum
min	minimum
lat	latitude
long	longitude
MA	Maritime Archaeology
Reg No	Registration Number
RT	Rat Island
AGM	Australian Glass Manufacturers

Organisations

AICC	Abrolhos Islands Consultative Council
AITF	Abrolhos Islands Task Force
BL	Battye Library, Perth
DOLA	Department of Land Administration
GMWDA	Geraldton Mid-West Regional Development Authority
ILIP	Integrated Land Information Program
WAMM	Western Australian Maritime Museum

Newspapers

BH	<i>Bunbury Herald</i>
GE	<i>Geraldton Express</i>
I	<i>Inquirer</i>
PG	<i>Perth Gazette</i>
VE	<i>Victoria Express</i>
WA	<i>West Australian</i>

Archival

CCL	Commissioner for Crown Lands
CSO	Colonial Secretary's Office Correspondance, Western Australia
L&S	Department of Lands and Survey, Western Australia
OD	Official Documents, Hydrographic Department, Ministry of Defence, Taunton, England
SDUR	Survey Department Unofficially Received, Lands and Surveys Correspondance
TCI	<i>Twentieth Century Impressions</i> (Theil, 1901)
V&P	Votes and Proceedings of Parliament

Site types code index

- 1.0 JETTIES AND LANDINGS
- 1.1 TRAMWAYS
- 1.2 RELICS ASSOCIATED WITH THE ABOVE

- 2.0 HISTORIC BUILDINGS
- 2.1 HISTORIC SETTLEMENT AREAS
- 2.2 RELICS ASSOCIATED WITH ABOVE

- 3.0 WELLS [OR WATER HOLES]
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Acknowledgements

This project was funded under the Conservation Incentives Program, a State grants scheme administered by the Heritage Council of Western Australia. The proposal for the project was submitted by Kim Nardie, Research Officer, on behalf of the Abrolhos Islands Consultative Council. The Council has been most supportive during the implementation of the project and this assistance is acknowledged.

The historical research which forms the background to this project was undertaken as a major component of an earlier archaeological investigation into the Abrolhos guano industry, jointly funded by the Western Australian Maritime Museum and the Australian Research Council. The Western Australian Maritime Museum has also made a substantial input into the present project work and this is gratefully acknowledged.

In preparing this report, I am indebted to Sarah Kenderdine (State Heritage Branch, Department of Environment and Land Management, Adelaide) for allowing me to use a design format specially developed for the *Historic shipping on the River Murray* project.

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Jeff Whitehurst—Charter Boat *Force Five*— and Shine Aviation enabled the project team to travel safely to the Abrolhos; fishermen Frank Gregor and Joe assisted with the transportation of field equipment.

Finally, I thank my colleagues in the Department of Maritime Archaeology, Western Australian Maritime Museum for their patience and support, and Jeff Bezzant and Maurice Odgers of the Western Australian Museum for administrative help.

Summary of recommendations

General

- that information contained in this and previous reports be used to develop management strategies for historic sites in the Houtman Abrolhos;
- that further oral historical, pictorial and documentary information be sought for indicated sites so that the cultural significance may be evaluated;
- that a research design be developed for further archaeological assessment of indicated sites on Rat Island;
- that the fabric of culturally significant buildings be recorded architecturally;
- that management and conservation plans be made for the Rat Island stone landing and historic settlement area;
- that code of conduct guide-lines be drafted for visitors to the Easter Group in line with those proposed for other islands in the Houtman Abrolhos with sites of historic significance;
- that consideration be given to the listing of the following sites on the State Register of Heritage Places either individually and/or as a component of Rat Island 'Historic Precinct' (*Heritage of Western Australia Act 1990: 46 ff and 48*).

Rat Island Stone Landing (1640 HA001);

Rat Island Stone Foundations (1640 HA010);

Rat Island Tramway Embankments (1640 HA005).

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TCI	<i>Twentieth Century Impressions</i> (Theil, 1901)
V&P	Votes and Proceedings of Parliament

Project overview

Introduction

The islands of the Houtman Abrolhos have connections with the earliest periods of European history in Australia. During the colonial period, guano mining occurred on several islands at the Abrolhos, initially as a small-scale activity associated with fishing ventures and later as a more organised industry.

In the 1970s, during archaeological investigations of the wreck of the Dutch East Indiaman *Zeewijk* (1727) in the Pelsaert Group, the Western Australian Maritime Museum identified several islands which had been significantly disturbed by the effects of guano and rock phosphate mining, and which had remains of the infrastructure associated with the exploitation of these resources. The archaeology, geology and history of this extractive industry as it pertained to the Pelsaert Group of islands was investigated and compiled into written and photographic reports (Stanbury, 1979 and 1982; Stanbury & Brown, 1979). In 1988, a report (Green & Stanbury, 1988) including reference to these sites was presented as a submission to the Abrolhos Islands Task Force for consideration in the future planning strategy and management of the Abrolhos Islands. Although archival research had produced information relating to Rat Island in the Easter Group and its significance in the guano industry, field investigations of these islands had not been undertaken.

Section 2.2 of the Task Force Planning Strategy recognises the history of the Abrolhos Islands (including guano mining) as comprising part of the 'Social Environment' of the Houtman Abrolhos (Abrolhos Islands Task Force (AITF), 1988:8-9). Initial 'Planning Implications' pertaining to guano mining recognised that:

2. Guano mining has disturbed areas on some islands. These areas and the associated infrastructure that remain have some historic interest (AITF, 1988:9).

Considering the 'Key issues and strategies' pertaining to the Abrolhos Islands the Task Force emphasised that:

Through the fishing industry [the Islands] provide one of the most important economic resources in the Mid West Region. The islands are also the basis of a small, but developing tourism and recreation industry. The status of the area should recognise these values, and emphasise and secure the basis of these industries...

On a Statewide and region basis, the terrestrial and marine areas of the Abrolhos Islands contribute significantly to economic, social and material needs of the community... The most important functions of the area are to provide sustained yields of natural products, and protect natural features and systems (AITF, 1988, Section 3:17).

The development of conservation strategies for the Abrolhos Islands has to take into account a multiplicity of demands and the rationalisation of what may be considered as potentially conflicting and/or damaging activities.

With respect to 'Areas of Historic Significance' (AITF, 1988, 3.2.3:22), conservation issues are identified as:

PROTECTION AND MANAGEMENT

- Management of historic sites.
- Identification of historic values.
- Access to land and wreck sites.
- Promotion and interpretation of sites.

As part of the conservation strategy for these areas the Task Force proposed that site management plans be prepared for historic sites on nominated islands (AITF, 1988, 3.2.3:22) and that 'Further research into archaeological and historical sites on and around the islands... be encouraged'.

This project has been undertaken on behalf of the Abrolhos Islands Consultative Council (AICC). If the islands are to be developed for tourism and recreation, there is a need for cultural sites to be identified and site management plans to be prepared in order to ensure adequate protection of the sites. Given the financial and time constraints of this project, and the complex issues concerning the management of the Houtman Abrolhos, this report is not intended as a final Conservation Plan for historic sites on Rat Island and associated islands in the Easter Group. Rather, it is a preliminary compilation of data and site evaluations which may be used in the development of a more comprehensive management strategy.

Objectives

- to identify and document Rat Island's guano mining archaeological sites (buildings, jetties, man-made features etc.) and similar sites on other islands in the Easter Group and produce a report;
- to identify and document historic sites (buildings etc.) on Rat Island and other islands in the Easter Group which may be associated with the early fishing industry and comment on these in the above report;
- to recommend a management strategy including conservation and public use;
- to liaise with the Abrolhos Islands Consultative Council on the management strategy for historic sites in the Houtman Abrolhos.

Brief

- a) Research and record the physical remains and remnants using written and photographic techniques of:

- (i) The guano extraction industry of the late 19th century, early 20th century and World War II, in particular the industry on Rat Island.
- (ii) The early fishing industries at the Abrolhos Islands (both scale fish and rock lobster).
- (b) Evaluate the significance of these historical remains and develop management criteria for future implementation so these sites and remains are preserved for future generations and are protected from the increasing visitor pressures presently being experienced at the Abrolhos Islands.

Since parts (i) and (ii) of the brief were considered to be relatively discrete research areas, responsibility for the former was given to Myra Stanbury (Western Australian Maritime Museum) and the latter to Howard Gray (Murdoch University). Existing research information held at the Western Australian Maritime Museum as it pertained to part (ii) of the brief was mutually exchanged.

Funding

Funding of for the project was provided by the Heritage Council of Western Australia—Conservation Incentives Program. The Grant of \$5000 was equally disbursed between the two aspects of the project, the Abrolhos Islands Consultative Council and the Western Australian Maritime Museum contributing additional resources.

Method

Sources of information

Archival material consulted during previous investigations of the guano extraction industry in the Pelsaert Group (Stanbury, 1979) and research into the life of Charles Edward Broadhurst (McCarthy, 1989) formed the basis for background research on archaeological sites and the assessment of historical significance. Primary sources include manuscript journals, *Exploration Diaries*, surveyors' Field Books and reports for discovery, assessment and survey of guano deposits. Colonial Secretary's Office Correspondance, Western Australia, Lands and Survey Department Correspondance and *Government Gazettes* provide references to application, terms and granting of guano leases; *Votes and Proceedings of Parliament* provide information concerning disputes, conditions and regulations pertaining to the operation of the industry, in particular operational costs and payment of royalties. Details of on-site mining operations and plant organisation are primarily gleaned from observations made by 19th-century naturalists, notably W. Saville-Kent and R. Helms, and photographic images that derive from these sources. Daily newspapers of the historic period make limited reference to the shipment of guano and availability of supplies for local purchase.

Original documents of General Agents in Fremantle and Geraldton have not been investigated, if indeed such records exist.

Maps, plans and surveys held in the Department of Land Administration, Perth, give details of the surveys of Abrolhos guano deposits in the 19th century (Wells, 1897). The maps assist in delineating the areas on various islands that contained deposits of guano and which would have been subjected to the most intensive mining operations; they also indicate the approximate position of buildings, jetties and tramways. Admiralty charts of the Abrolhos indicate the location of huts and jetties on certain islands. A list of maps and plans relating to the Houtman Abrolhos (and in this instance the Easter Group in particular) is given in Appendix 1 of this report.

Nomenclature for islands in the Houtman Abrolhos has changed over time which creates some confusion when dealing with archival and early literary sources, and in communication with local occupants. Some islands have colloquial names which often have no bearing on names currently recognised by the Surveyor General's department. Admiralty Charts tend to retain names assigned to islands from the first date of survey and therefore do not always agree with names on maps produced at later dates. A nomenclature list for islands in the Easter Group taken from the DOLA database is given in Appendix 5 of this report. Names designated 'A' are archival and not currently in use.

Photographic collections held in the Battye Library of Western Australian History, Perth, were accessed. Images from the late 1890s and early 1900s depict guano miners at work, the jetties constructed to facilitate the transshipment of guano and buildings erected to house employees and bagged guano awaiting shipment. These include the collections of:

- W. Saville-Kent (1894); and
- C. Price Conigrave (1908).

Photographs not accessioned into the State collection are to be found in early literary works such as P.W.H. Theil's *Twentieth century impressions of Western Australia* (1901) and in scientific papers:

- T. Delucy collection;
- R. Helms collection.

Private photographic collections, with copies held in the Department of Maritime Archaeology, WA Maritime Museum, included:

- Broadhurst family (Mrs Marjorie Darling).

A list of photographs pertaining to Rat Island is given in Appendix 4 of this report.

Community members—fishermen and others associated with the islands in the Easter Group—were approached via a circular 'newsletter' about the project with a request for photographs and/or information that may assist in tracing the origins and history of buildings situated on and/or near identified historic sites or which

situated on and/or near identified historic sites or which appeared to be of early construction. To date, no responses have been forthcoming from this inquiry.

Published works on the local history of Geraldton, the Victoria District and Abrolhos Islands by community members and lodged in the Battye Library, Perth, contain some references to persons employed in the guano industry.

Unpublished sources include personal reminiscences held in manuscript form in the Battye Library:

- A. Weldon;
- and private letters
- Broadhurst collection;
- R. Thomas collection (copy in Dept. Maritime Archaeology, WA Maritime Museum).

Site survey

Parameters:

- Geography: archaeological sites on Rat Island, Little Rat Island, Roma Island, Little Roma, Dry Island, in the Easter Group, Houtman Abrolhos;
- Chronology: 1840–1915;
- Theme: guano extraction in the Easter Group, Houtman Abrolhos;
- Culture: European economic development; South-east Asian contract labour.

Procedure

Field-work plan: a proposal for field-work was drawn up with the following objectives:

- to investigate and record the physical structures and remains pertaining to the guano and early fishing industry on Rat Island and associated islands in the Easter Group using written and photographic techniques;
- to carry out a reconnaissance of the island to identify areas of cultural and historical significance;
- to establish a system of survey control points on Rat Island to enable a detailed plan of significant areas to be mapped using aerial photographs and ground survey data;
- to record and photograph structures/remnants of significance;
- to carry out a snorkel survey of the old guano jetty in order to identify significant underwater remains.

Logistics: a total of eight days from 13 to 21 February 1993 was spent in the Easter Group, Houtman Abrolhos, undertaking the proposed field-work. The project team included:

- Myra Stanbury—Supervisor
- Ross White—Licensed Surveyor
- Jenni Potts—Archaeology student
- Bob Richards—Technical Officer/Boatman
- Dee White—Assistant Surveyor

The project team was transported on the outward trip from Geraldton to Rat Island by the Dive Charter boat *Force Five* (Jeff Whitehurst) and returned by Shine Aviation flight charter. Operations on Rat Island were conducted from the Fisheries Research Camp and travel to nearby islands was facilitated by the Fisheries' aluminium dinghy with outboard motors. Since there were no other residents on the islands at the time, visits for reconnaissance and survey purposes were limited to islands within safe reach of Rat Island as a precautionary measure.

Terrestrial sites: archival maps and surveyors' Field Books (Wells, 1897) were researched for locations of sites. A general reconnaissance of Rat Island was made in order to identify and assess the extent of remains. Natural and man-made environmental features were examined and significant sites selected for inclusion in the field survey. Weather conditions—strong winds, currents and low visibility—prevented the snorkel survey of the 'guano jetty' at Rat Island from being carried out. Instead, a random 1 m² surface test spit at the shore end of the jetty was collected for analysis.

Artefact samples were collected from some sites for identification and dating purposes in order to assess the relative ages of land sites.

Data on the sites has been compiled in a standardised format which includes:

- general map reference;
- description of site including sketch plans, photographic documentation, artefact descriptions and illustrations;
- historical significance of the site from archival sources;
- recommendations for conservation management and research.

Survey techniques: the lack of a large scale map of Rat Island suitable for accurately mapping the location of historic sites was an initial constraint to the implementation of the project. Given the large ground area of Rat Island, and long distances between National Mapping stations and adjacent islands, it was considered that theodolite surveying techniques to position sites would be extremely time consuming. In 1978/79, the Department of Land Administration assisted the Western Australian Maritime Museum with the production of a 1:2000 scale map of the southern end of Pelsaert Island showing topographic and cultural features. The map was pro-

duced from low-level aerial photography, ground control survey and photo-identification of cultural and other significant sites. A similar technique was proposed for Rat Island.

Consultation with the Department of Land Administration (DOLA) Mapping and Survey section, indicated that existing aerial photography of Rat Island (Abrolhos Island (Easter Group) Run 2 (5052-5063) 1:25000 17.9.87 Job 870079 Film No. WA 2551 (C)) was not suitable for producing a map at the required scale. Further aerial photography at a lower level would be required in conjunction with a series of ground control survey points and photo-identified features.

A submission has been presented to ILIP (Integrated Land Information Programme) for the photography and mapping to be carried out as part of the 1993/94 programme.

One attempt has been made to carry out the photography but was unsuccessful due to inclement weather. Another attempt will be made in August.

Electronic Distance Measuring: equipment was loaned by DOLA to Licensed Surveyor Ross White for the purpose of establishing ground control survey points. Photograph 5075 was marked up by DOLA for the required control point locations. Field survey data was recorded in Ross White's Field Book which was subsequently lodged with DOLA. A copy of the field records is given in Appendix 2 of this report.

Photo-identification: black and white prints of 1987 aerial photographs were obtained for reference and photo-identification purposes (Film No. WA 2551(C)). Significant features and sites located during the field investigations were identified using a stereo viewer. The point was marked on the photograph with a sharp-pointed needle; the pin-prick and relevant details were marked on the reverse of the photograph with a chinagraph pencil. Where photo-identification was dubious and/or unclear, the sites were incorporated into the land survey.

Data organisation

The presentation of data in this report is based on a database format specifically designed by Sara Kenderdine (1993) for the *Historic Shipping on the River Murray* Project. Although the Abrolhos site data has not yet been entered onto a computer database, it is intended that a similar design format be developed using the Apple Macintosh program *Omnis 7* which is currently in use at the Department of Maritime Archaeology, Western Australian Maritime Museum. Data pertaining to sample artefact collections has been entered onto the existing departmental artefact database (*Omnis 7*).

Explanation of field names in data record

SITE NUMBER

Following Kenderdine (1993:7), each site has been assigned a unique 3 digit number prefaced by the map sheet

number and the letters HA to indicate the site locality, in this case Houtman Abrolhos. These reference numbers may need to be updated when a larger scale map is produced and individual sites can be more accurately positioned

RECOMMENDATIONS

The selected fields are again taken from Kenderdine (1993) and are considered relevant for this purpose as they take into account *protection, conservation, public use and interpretation* of sites, and any other recommendations that may be desirable.

It is recognised that many of the sites referred to in this report are still being used by licensed fishermen on an intermittent basis and that this level of use will continue in the future. This factor has thus been taken into account when making recommendations.

Sites recommended as requiring protection offered by the State Register of Heritage Places include only those sites for which sufficient documentation is presently available to enable the cultural significance of the site to be evaluated. Sites referred to under *legislative* protection as 'pending evaluation' are sites which should be considered for inclusion in the Register once the necessary documentation and evaluation is complete.

The term 'conservation' as defined in the *Heritage of Western Australia Act 1990* (1990:2) means, in relation to any place

...the management of that place in a manner that will—

- (a) enable the cultural heritage significance of that place to be retained; and
- (b) yield the greatest sustainable benefit for the present community without diminishing the cultural heritage significance of that place,

and may include the preservation, stabilization, protection, restoration, reconstruction, adaptation, and maintenance of that place in accordance with relevant professional standards, and the provision of an appropriate visual setting;...

The definitions of the different kinds of conservation work—*preservation, stabilization, protection, restoration, reconstruction, adaptation and maintenance*—are specified in the Australia ICOMOS Charter for the conservation of places of cultural significance (The Burra Charter).

The recommendation for 'preservation' made in this report is intended to mean

...maintaining the *fabric* of a *place*, in its existing state and retarding deterioration (ICOMOS Burra Charter, 1981:1.6).

The conservation requirements for sites identified as 'culturally significant' and requiring 'preservation' should take into account the existing level of use and proposed future developments for these sites, particularly where these may impinge on the current integrity of a site.

Legislation

Terrestrial sites

Legislative protection for historic land sites recorded in

this report fall within the provisions of the *Heritage of Western Australia Act 1990*.

Shipwreck sites

Legislative protection for shipwreck sites located in the Easter Group (including maritime archaeological sites on land) is provided by the *Maritime Archaeology Act 1973*.

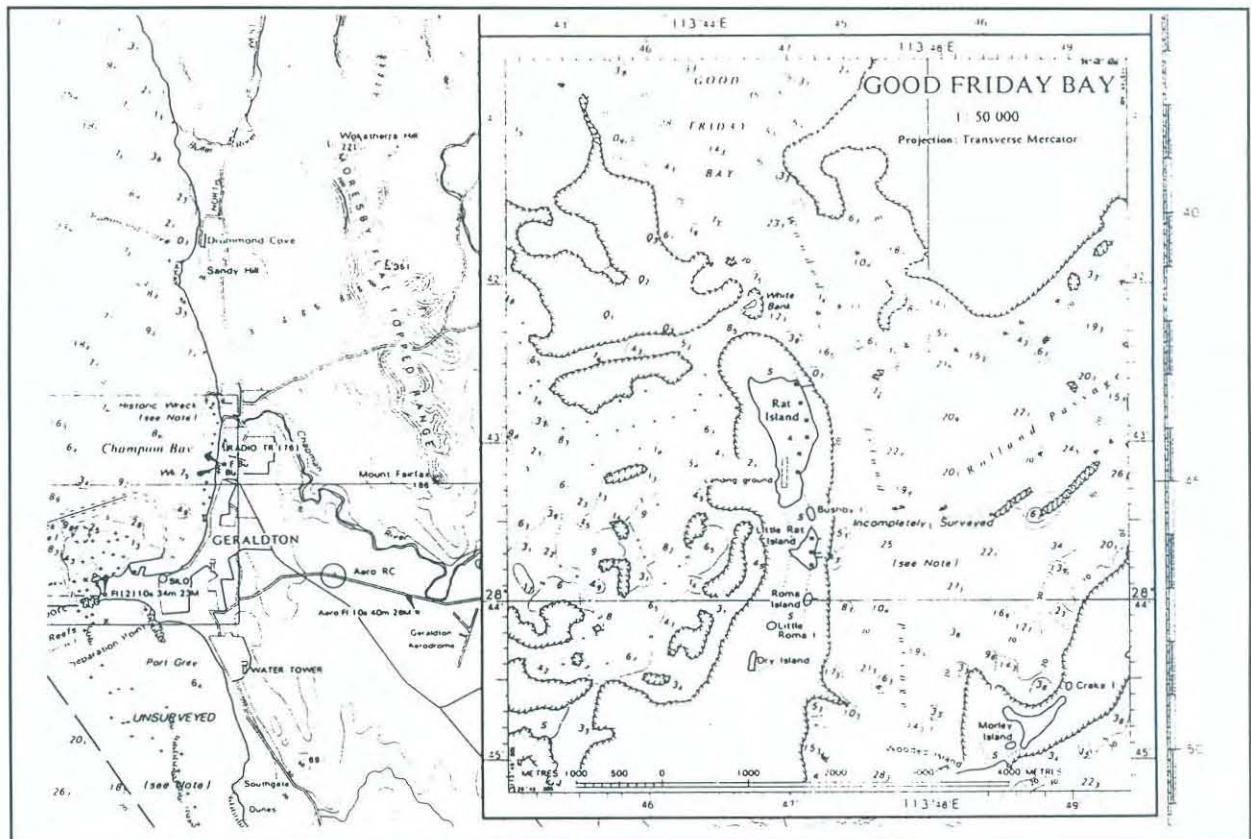


Figure 1. Locality map of the Easter Group.

The Abrolhos Guano Trade

Discovery of guano

Guano is a natural fertilizer, rich in nitrogen and phosphorous, derived from the excreta of sea birds. From prehistoric times, coastal populations of Peru had coveted the deposits of guano found on offshore islands, especially the Chinca Islands (Stanbury, 1982). Exploitation of the resource in ancient times was strictly regulated, infringements being subject to the death penalty. The Peruvians kept their secret well guarded until 1840, when foreign speculators drew their attention to its export potential (Faivre, 1959:118). The 'wonder-producing' deposits of Chinca could not only help to revitalize depleted soil in Europe and America but help Peru to offset its international debts.

British vessels, in 1840, were among the first to enter the 'guano rush' and ship cargoes of the fertilizer from Peru to London and Liverpool (Faivre, 1959:118; Smith, 1984:8). Peruvian guano was one of the most valuable commodities in international trade but high retail prices made it unaffordable for many British farmers. So began the search for new sources of guano to counteract the monopoly of the Peruvian trade.

The first account of guano discoveries in the Houtman Abrolhos was given by Stokes (1846.2:137) who noted its presence during a survey of the Islands in April 1840 in HMS *Beagle*. On the south end of Pelsaert Island Stokes observed

...a layer of a kind of soil, in some places eighteen inches deep, in others four feet, in which the sea birds burrow, and which, from what I have since seen of the much sought after guano, I believe to contain some of that valuable substance. In some of the islands forming Houtman's Abrolhos which we subsequently examined, I found similar signs of the presence of this manure, which I think worthy of being made the subject of inquiry.

On Rat Island—named thus by Stokes on account of 'the quantity of that vermin with which it was infested' (Stokes, 1846.2:145)—he also observed 'a similar soil, mixed with guano, and filled with burrows of the sooty petrel, or mutton bird' (Stokes, 1846.2:146). Proceeding southward, he discovered 'Snapper Bank' with an immense quantity of fish which indicated that

...a lucrative trade might be carried on by the people of Swan River with the Mauritius; for the lake on the island of Rottenest [sic.] affording a large supply of salt, any quantity of fish might easily be caught and cured. The whole group [Abrolhos] is abundantly supplied, though no where so plentiful as at Snapper Bank (Stokes, 1846.2:148).

Early economic exploits and guano shipments from the Houtman Abrolhos

Until 1842, the economic activities of Western Australian colonists were largely devoted to the establishment and supply of local markets. Export trade was minimal, and vessels bringing cargoes of imported goods frequently left the Colony semi-laden or in ballast, to seek

return freight in India, China or elsewhere.

A leading article in the *Inquirer* of 2 March 1842, stressed the importance of export trade to the development of the Colony and blamed its virtual non-existence on the 'invincible apathy' and 'apparent unwillingness' of colonists to do anything for themselves. When a wave of economic depression hit the Colony in 1843, it became obvious that exports were essential if the drain on Treasury funds and specie, caused by the importation of goods, was to be halted (Battye, 1924:167ff). Colonists were urged to look for new avenues of industry and profit that might provide exchangeable commodities to balance the great excess of imports over exports.

Export trade possibilities had already been recognised by Anthony Curtis, who, from 1834 began purchasing his own vessels for this purpose (Cammileri, 1965:36). In 1843, Curtis commissioned the building of the 28-ton cutter *Water Witch* at Fremantle. After a maiden voyage to Tasmania and several coastal trips, Curtis advised the Colonial Secretary in December 1843, of his intention to send the vessel to the Abrolhos for the 'purpose of procuring seal skins and salting fish for export' (Cammileri, B-Cur). This proved to be a profitable business and by 1844 his dried fish was said to be selling well on the Mauritius market. Between 1840–45, Curtis was also involved in whaling (Cammileri, 1965).

Included in the return cargo of the *Water Witch* on 23 March 1844, was guano (Green, 1972:53). This is probably the earliest recorded shipment of the manure from the Abrolhos Islands. Whether Curtis or his employees actually established a base on any of the islands from which to undertake these ventures, is not known.

Added to the efforts of private entrepreneurs, the Colonial Schooner *Champion* was also on the lookout for potential trade outlets. Lieutenant B.F. Helpman, R.N., a former officer of HMS *Beagle*, had succeeded Dring as master on 13 February 1840, and retained command of the vessel for the next twelve years (Halls, 1977:11). Having missed out on the trip to the Abrolhos in HMS *Beagle*, Helpman was obviously anxious to visit the area himself, and re-investigate the findings of Stokes and Wickham.

This he did, and a diary entry dated 19 December 1844 reads:

On my return I visited the South Island [Pelsaert Island] of the "Abrolhos" where from the immense number of birds, I was in hopes of realising the secondary object of my search, viz., the discovery of guano; but although the ground was literally covered with the young birds, and the old ones rose above our heads almost in sufficient quantities to darken the air, I could discern no sign of any such deposits. The only thing having any affinity to this valuable manure being a description of peaty soil, of which I brought a sample away (Helpman, 1844).

Whether this sample of guano was sent to England for analysis is not known, and since official records of guano shipments do not appear to have been kept until 1847 (Maitland and Jackson, 1904; Woodward, 1917) little is known of its commercial exploitation prior to this

date.

Guano was certainly being offered for sale on the local market and the following advertisements appear regularly in the *Perth Gazette*:

Guano — Orders received for the above article - Black Wattle Bark taken in payment! James STOKES (*Perth Gazette*, 9 Jan. 1847; 16 Jan. 1847).

Guano — of a superior quality, on sale in small quantities, by the single bag. Those persons whose orders were received will please send for the same at an early opportunity. Purchasers to send their own sacks or bags. James STOKES (*Perth Gazette*, 23 Jan. 1847).

Regular small consignments of guano were shipped from the Abrolhos from May 1847 by the Pelsart Fishing Company (Stanbury and Brown, 1979: Appendix 2). Care was taken, however, to limit the quantity of guano removed 'a few tons' only, so as not to impede the fishery, which was the Company's prime economic concern.

The guano was sold locally, but some, at least, must have been exported. Woodward (1917) reports that the earliest official record of guano being exported was in 1847, the consignment apparently being sent to the United States of America (Woodward, 1917:10). This leads him to attribute the discovery of guano to the American Whalers who fished the Western Australia coast in the early 1840s (see Heppingstone, 1966 & 1969). Certainly, American ships at this time would probably have been aware of the discovery of guano deposits on the Chinca Islands off South America and of its demand by British farmers (Faivre, 1959; Rhodes, 1937).

The small-scale removal of guano from the Houtman Abrolhos appears to have continued until the mid 1870s as an adjunct to fishing, sealing, and other maritime ventures, whilst major commercial activity focussed on richer deposits on islands along the north-west coast. Only when these supplies showed signs of diminishing and the Government sought to exercise greater control over the removal and export of guano did attention centre on the Abrolhos.

In March 1876, John Wesley Bateman applied for a lease to remove guano from Rat Island in the Easter Group and sought advice regarding the terms (Bateman to Col. Sec., 6 Mar. 1876, SDUR/B10/1063 a-b). It was suggested that a 12-month term would give him time to test the value of the guano; royalty of 2/6d on 100 tons was to be paid at once and thereafter 2/6d a ton on all guano supplied. Declaration of the quantity was to be made with payment to the Collector of Revenue either at Geraldton or Fremantle, whichever was convenient (Note by Malcolm Fraser dated 7 Mar. 1876 on Bateman's letter of 6 Mar. 1876, SDUR/B10/1063 a-b). Bateman accepted the terms of the lease on the condition that if the quantity of guano did not equal 100 tons he should receive a refund for the deficit at the end of the 12-month period. He then requested access to the whole of the

Easter Group on the above terms on the condition that the right to remove guano from these islands would be solely his. This request was approved, but reductions in the terms offered was not. Bateman consequently deposited a sum of £12.10.0 into Treasury as a guarantee (Bateman to Commissioner for Crown Lands, 11 May 1876, SDUR/B10/1142 e).

The Bateman family had a long history in the import/export business. John Bateman senior was engaged in whaling in the mid 1840s and established a whaling station at Port Gregory in 1857 (Heppingstone, 19**). In the early 1860s, his sons John and Walter were involved in lightering and the coastal trade, and had vessels engaged in general foreign trade (Theil, 1901:472). Constantly on the lookout for new export commodities, Bateman inquired on 9 September 1876 whether the deposit lodged for the Easter Group could be appropriated to cover the Royalty for any new deposits of guano that the Company's 70-ton schooner *Star* might discover on islands within the limits of the Colony which were not already leased. They considered that it would take about four years to collect the required quantity (i.e. 100 tons) of guano from the Easter Group. The cutter *Water Lily* had allegedly obtained a cargo of guano from the Easter Group a short time after Bateman had paid his deposit and this, he argued, had considerably reduced the quantity to be obtained during each summer, the only time at which the guano could be obtained (Bateman, 9 Sep. 1876, SDUR/B10/1105).

In May 1877, Malcolm Fraser reported to the Commissioner of Crown Lands that:

Rat Island is the principal one of the Easter Group... three quarters of a mile long by one third broad. The soil is reputed to be partly composed of guano thickly burrowed by the petrel and mutton birds. That which is collected is the fresh which is annually deposited; of which Mess^{rs} Batemans only managed to get 18 tons last year for which a royalty on rent of £12.10.0 was paid by them. They are not willing to pay so much again, and offer the sum of £5 as a guaranteed rental. The royalty being taken as 10/- on each ton shipped beyond ten tons. If they are to have this monopoly it will be desirable that a formal declaration of exports be provided for as was done last year (Fraser to CCL, 11 May 1877, SDUR B/10/1142f).

Tenders for the sole rights and licence for Rat Island for a period of three years were called for on 17 May 1877 (*Government Gazette*, 17 May 1877; SDUR B/10/1142h). The annual rent was payable in advance and the island was not to be sub-let.

J. and W. Bateman submitted a tender for Rat Island, including the whole of the Easter Group, and were granted a license on the basis of 10 shillings paid on each and every ton and £5 to be paid as royalty for 10 tons or any less quantity first shipped (SDUR B/10/1142A-D).

Charles Edward Broadhurst was also interested in obtaining a lease to remove guano from the Abrolhos in May 1876, but finding that Bateman had already applied for the Easter Group, he tendered for the Pelsaert Group on the same terms (Broadhurst to Surveyor General, 5 May 1876, SDUR B10/1071b). Permission to ship a load

of guano from the Pelsaert Group was granted on condition that Broadhurst pay half-a-crown a ton on the amount taken away into the Treasury. His application for a 'Monopoly to ship guano would be given every consideration and, in the meantime, he had the opportunity to test the value of the deposits (Fraser to Broadhurst, 16 May 1876, SDUR B10/1071a).

Clearly, as a letter dated 13 June 1876 from L.A. Manning and Company to the Commissioner for Crown Lands indicates, supplies of guano were not to be found in abundance in the Abrolhos: indeed, it was a matter of chance whether any deposit was found at all. He writes that:

Under the present circumstances a boat will occasionally visit the group and 10–15 tons of guano may be procured while at other times no collection will be found and very rarely have more than 25–30 tons been obtained in anyone year from the ENTIRE Abrolhos (Manning to CCL, 13 June 1876, SDUR M6 795f).

For some time, the question of granting monopolies or sole rights to persons for the removal of guano from Crown Lands had caused some dissent between the Imperial and Local Governments (Grey, 31 Dec. 1850).

One of the biggest problems facing the Colonial Government in terms of establishing a regular export trade in guano was their lack of knowledge as to the existence of deposits and the extent to which such deposits could be made available. The problem, together with the 'monopoly' question were discussed by Malcolm Fraser, Commissioner for Crown Lands, in a memorandum to the Governor on 12 June 1876 (CCL to Governor, SDUR/M6 795e).

In principle, the granting of monopolies or sole rights was good as it encouraged

...the outlay of capital necessary to properly carry on with the economy of collecting and shipping the guano, by which a higher rate of royalty should be obtained and probably a larger quantity go into the market.

On the other hand, it excluded all other persons, unless they consented to the terms laid by the monopolists.

An alternative proposal was to issue shipping permits at a fixed rate to all applicants. However, since the Government could not guarantee shipowners a cargo from a given spot, and since there were no means to prevent vessels (if undetected) from removing cargoes from any island illegally, a lessee would seem preferable. If annual tenures were given, with a right of renewal, but on terms of a royalty being periodically adjusted, Fraser could not see how the Government revenue could suffer. Given the known market value of the product the rate of royalty could be established with safety because 'if A of this colony will not give what is demanded, B from somewhere else will if he knew there [was] a margin of profit to be secured and that margin is a sufficient one' (Fraser, 12 June 1876 SDUR/M6 795e).

The Governor concurred with these remarks and agreed that leases should be granted to individuals on yearly licences. During a 12 or 18 month term, the lessees

should pay 10 shillings per ton on each ton supplied.

Government Surveys and control of the guano industry in the Houtman Abrolhos

In order to secure Government interests in the guano trade, an Act of Parliament was passed on 12 September 1876 to make further provisions for the punishment of persons trespassing on certain portions of the Crown Lands in Western Australia (40 Victoriae, 1876, No.IX).

Essentially, the Act prohibited the removal of guano by unlicensed people and provided power to certain persons to seize ships engaged in such activity. The vessels, plus their contents, were to be brought to Fremantle and held for six weeks. Ships could be condemned and forfeited for the payment of any costs was given on behalf of the owners. Appropriation of forfeitures became the property of the Crown, for the public use of the Colony but if seizure of vessels was deemed unjustified, compensation should be paid to the owner.

The Government also commissioned a number of surveys to be undertaken to assess the available deposits of guano. In April 1879, John Forrest, Deputy Surveyor General was dispatched to the Houtman Abrolhos for this purpose.

A note in Forrest's Field Book dated 10 April 1879 reads:

Sent the following telegram to the Governor in cypher. April 10th 1879.

Have examined the Abrolhos. The only island on which I am certain Good Guano exists is Rat Island on which there may be from two to four thousand tons, there are other spots where a little exists. Will send report and maps by *Planet* to sail tomorrow.

The entry for 1 April 1879 reads:

Anchored in Good Friday Bay on the east side of Rat Island. At once proceeded on shore & walked all around the Island which I was glad to find consisted of Guano soil, though the Southern & by far the greater portion was so Rocky as to be valueless for export—about 7 acres of the Eastern North of the Island now covered with a beautiful description of Guano say of 2 to 4 thousand tons. The Guano seems very pure and good but is covered with more bushes than the Lacepede Islands, but few birds...on this Island but a small sandy islet to the north was covered with birds and seals.

The following day, Forrest visited 'South Rat Island' where he reported 'a little Guano but altogether too rocky to be useful' (Forrest, 1879).

When tenders for the sole rights of removing guano from the Abrolhos were called for in June 1880, they were based on new terms of contract (*Government Gazette*, No. 28, 1880:219). Having had his tender accepted, the contractor was required to deposit with the Western Australian Government 10 per cent of the value tendered as security for the due performance of the contract, this sum to be retained by the Government until the contract was terminated. No guano was to be removed until the

royalty payment agreed upon had been paid and all vessels employed were to be licensed.¹

Contractors were permitted to erect on any or all of the islands any buildings jetties or tramways and, subject to conditions of forfeiture, to remove the same within six months of the termination of the contract. They were to work the beds of guano 'in a regular and systematic manner, in accordance with instructions that may from time to time be issued by the Government' (*Government Gazette*, No. 28, 1880:219). All guano removed would be at the contractor's risk after payment of the royalty and any breach of conditions would render the contract null and void.

Accompanying the notice in the *Government Gazette* was a report on 'Houtman Rocks' by Captain W.E. Archdeacon, R.N. Admiralty Surveyor, confirming the safety of approaches to the Pelsaert and Easter Group.

Archdeacon advised that the chart and sailing directions compiled by Stokes and Wickham should be sufficient to satisfy Lloyds' Agent or any careful shipmaster as to the safety of the anchorages (*Government Gazette*, No. 28:1880).

The initial tenders submitted for the Abrolhos guano were unfavourable to the Government and therefore rejected (CSO 1880. File 1324/8). The offers made were low i.e. 5 shillings per ton royalty, which was hardly surprising, given the relatively small quantities of guano reported by Forrest, uncertainty as to its quality and difficult shipping conditions. These represented considerable risks to the contractor.

More enterprising speculators, such as Charles Broadhurst, decided to assess the situation for themselves.

Charles Edward Broadhurst and his involvement in the Abrolhos guano trade.

Charles Broadhurst was described by Kimberley (1897) as a 'capitalist and trader who would go out of the ordinary grooves in search of wealth' (1897:97). He initiated the pearling industry in Shark Bay in 1872, established fish preserving works, and procured land for coconut plantations to cater for the needs of the growing Malay population (Weldon, 1965).

The prominence of the Abrolhos guano industry was certainly achieved through his efforts and later, those of his son Florance Constantine Broadhurst.

Following a visit to the Abrolhos in December 1882, Broadhurst informed the Colonial Secretary that two considerable sized guano deposits were located on 'Pelsart Island' in addition to the one found by Forrest. Depths varied from 6–18 in and the quantity was estimated at 20 000 tons. The quality, however, was not uniform, so Broadhurst proposed that royalty should be assessed on the commercial value of the guano of say 10 per cent on its net proceeds.

Shipping facilities from Rat Island were reasonable and arriving at nesting time, Broadhurst had no problem in locating the guano deposits. Without fixity of tenure, however, he saw no point in mining: wells needed to be

sunk; 'Chinamen' imported to do the work; and carts procured, all of which entailed considerable capital outlay (CSO Files 82/2014, 26 Dec. 1881; 82/2044. 27 Dec. 1882).

Nevertheless, in 1883 Broadhurst obtained the lease of twenty islands in the Houtman Abrolhos and by December had settled there to work. New regulations had come into operation at the end of November and were published in the *Government Gazette* on December 4, 1883 (*Government Gazette*, 57, 1883). These related to the discovery, disposal and removal of guano from islands or coasts within the territorial limits of Western Australia. Various types of licenses were defined and royalty pre-payment set at 13 shillings per registered ton of the vessel specified in the license.

Broadhurst complained that this fixed royalty was more than the profit from the trade would warrant. Guano could only be removed during summer months, and because of strong winds, ships were prevented from carrying their registered tonnage. He requested that royalty be paid on the actual tonnage discharged either at Geraldton or Fremantle and his case was put to the Governor in a letter dated 12 December 1883 from the Court of Crown Lands (Lands & Surveys, File 2859/83).

It was suggested that since Broadhurst seemed to want to work the trade in a very small way, the Government could assist him by issuing special licenses so that if a ship did not carry the required quantity of guano, a refund would be allowed on the certificate of a collector or sub-collector of Customs. A request was also submitted that Broadhurst be allowed to reside on the island² and prepare his cargo for shipment. By the above means, the new regulations would be adhered to and Broadhurst not be given any exclusive rights to either the 'live' or 'dead' guano (L & S File 2859/83).

Whilst granting him permission to reside on the islands under his lease, the Government was not willing to alter the terms of royalty payments and these remained fixed at 13 shillings per ton until 1888, when, in a *Government Gazette* Notice, they were reduced to 10 shillings per registered tonnage (*Government Gazette*, 8 Dec. 1888).

Broadhurst, MacNeil and Company, Guano Contractors

The firm of Broadhurst, MacNeil and Company was established in 1884 and continued operating under this name until 1904. MacNeil appears to have been a 'sleeping partner' since he receives little mention in documents and living members of the Broadhurst family have few recollections of him (Darling, 1980 pers. comm.; see also McCarthy, 1989:298–324).

With an initial lease for five years the company established a plant and residential facilities on Rat Island in the Easter Group. Tramways were laid and a stone jetty 85 yards (77.7 m) long was built into seven feet (2.1 m) of water so that vessels could be loaded even at low water. Accommodation was provided for 35 hands and a stone building erected to hold 1500 tons of guano (CSO 29 June 1886).

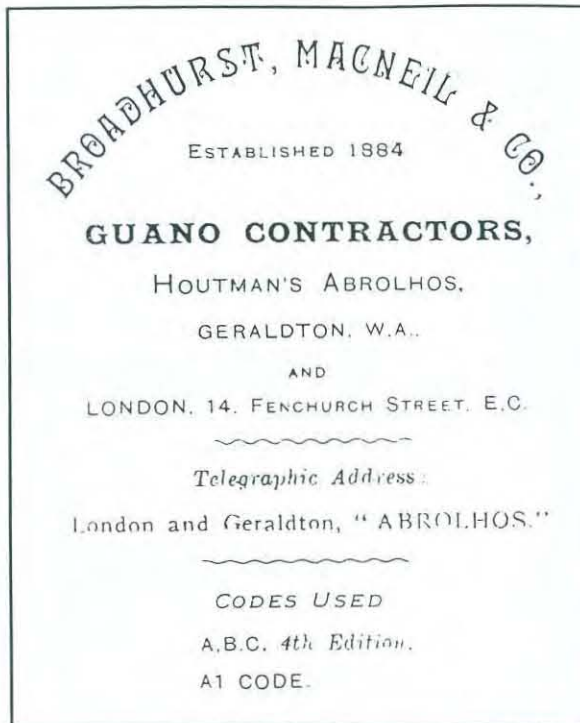


Figure 2. Company letterhead of Broadhurst, Macneil & Co.

During these early years, however, profits were hard to realise. Shipments were made on consignment and until contacts could be made, people in London, Mauritius and Fremantle financed them heavily in order to create trade. Through lack of experience, several cargoes were shipped which only yielded 30–40% tri-calcic phosphate and consequently sat unsold in Mauritius and Hamburg. To assist in these financial difficulties, the firm was taken over for three years from 1886 to 1888 by Messrs J.W. Bateman, during which time 5 900 tons valued at £4.10.0d a ton, were shipped to Europe, mostly to Hamburg and some to Antwerp (Woodward, 1917:16).

Florance Broadhurst and the expansion of the Abrolhos guano trade

In 1888, Florance Broadhurst took over the sole control of the company's export trade and expanded operations considerably. He made careful studies of the bird life on the islands and realized that the quantity of guano available was more extensive than previously supposed. To improve export sales and create new markets, he travelled widely throughout the United Kingdom, Europe and elsewhere appointing agents in leading cities (Kimberley, 1897:98). The build up of trade, however, was to some extent compulsory as, under the terms of the contract, Broadhurst was required to export not less than 1500 tons per annum (V & P, 1901–2.4: A21).

During his overseas travels, Broadhurst was fortunate in procuring the services of Gilbert Beddoes, a skilled surveyor and engineer to organize the construction of plant facilities on islands in the Pelsaert Group. In a letter to the Honorable John Forrest dated 9 May 1890 Broadhurst informed him of plans to move from Rat

Island to Pelsaert Island (CSO File 840/90).

The question of royalties was again raised, Broadhurst pointing out that to date, the company had paid £8656.10.8d in royalties on a sliding scale e.g. according to the phosphate of lime content. Mr Warden indicated that competition with other importers was difficult as guano from Australia or the Pacific islands was of better quality, being without the 'objectionable Oxide of iron and Alumina' (CSO File 2044/89).

It was considered unprofitable to ship guano with less than 70% of phosphate of lime, and since most of the deposit on Rat Island was around 50–60%, it could not be sold on the European markets at the royalty levied by the Government. Broadhurst suggested that royalty should be levied according to the market price of the guano or on Swan Account Sales and that royalty should be paid after a vessel was loaded and not before. He pointed out that Broadhurst and MacNeil were among the main exporters of guano to Europe, yet other exporters such as Messrs Holden Brothers and Messrs Gryce Summer and Company who held leases of the Phoenix Group in the Pacific and Malden Islands respectively, paid no royalties to the Imperial Government and only a nominal rental. Both firms exported more guano than his company which made it difficult for them to compete (CSO File 840/90, 9 May 1890).

In a letter dated 16 August 1890, Broadhurst offered the Government £4 000 cash down for the sole right to ship guano from the Houtman Group, this payment to be in lieu of royalty of 10/- per registered tonnage of the vessel as currently paid (CSO File 16 Aug. 1890). Whether this offer was accepted or rejected has not been confirmed.

Conditions for export were such that the cargoes of guano should not contain less than 70% tri-calcic phosphate, but this was later reduced to 68%. It was stipulated that the material should not contain more than 2% of iron, which suggests it was intended for use in the manufacture of superphosphate (Woodward, 1917:16). A reduction in price was made if much limestone was present, while no increased value was allowed for water or citric soluble phosphates. The price was 1s.3d. per unit of $\text{Ca}_3\text{P}_2\text{O}_8$, determined after boiling in concentrated nitric acid for 15 minutes (Woodward, 1917:16).

The uncertainty as to whether the Government would renew their lease on termination of existing contracts, was a major problem for Broadhurst as it interfered with the firm's European relations. Contracts needed to be made 18 months in advance, and chartering done several months ahead if they were to be certain of obtaining vessels to take on a cargo. Ships were chartered from anywhere they could get them and often came in ballast from South Africa (V & P 1901–2.4: A21). At times, up to 90 vessels were under charter to take guano to Mauritius, London, Hamburg, Antwerp, New Zealand, Java, Tasmania or to Fremantle (Kimberley, 1897:98).

Chartering always involved a element of risk for in fixing freight rates no account could be taken for fluctuations in guano prices on the European market. As a

result, profit margins were often minimal. In 1894, there was a marked decline in guano exports, brought about by decreased demand in Europe resulting from unsatisfactory prices regulating the market (Calvert, 1894:149).

By 1895, bad prices abroad and 'private reasons', led Broadhurst to offer the Abrolhos concession and all but the floating plant, to the Bureau of Agriculture for the sum of £7000. He felt 'some slight feeling of patriotism' at having paid the Government over £16 000 in royalties, by which the Colony had benefitted accordingly from what he ventured to term 'hitherto unknown guano deposits' (CSO File, 4216/95, 9 Sept. 1895). He estimated that 20-30 000 tons of guano remained and proposed that the aboriginal convicts from the Rottneet Island Settlement could be profitably employed in the work of collection.

The Government was urged to purchase the lease as it was feared that the continued exportation of guano from the Colony would mean a serious loss to local agriculturalists. After a hearing, however, the Government decided to reject the offer and informed Broadhurst that they could not 'understand that the lessees would not be prepared to sell the guano at Fremantle if there [was] a market' (CSO File 3546/95, 5 May 1896).

Broadhurst objected to the inference that he was not prepared to supply the local market and pointed out to the Government that they had always been willing to sell guano delivered to Fremantle or anywhere in the Colony, on the basis of £1.10s per ton in bulk at the Abrolhos, plus the expense of delivery at the particular town required. However, since there was no holding depot in Fremantle or any other port for dealing direct with farmers and in view of the high rail costs in Western Australia, it was better financially to sell large quantities rather than small lots.

In May 1897, Licensed Surveyor A. J. Wells was dispatched to the Abrolhos to officially estimate the quantity of guano remaining. After surveying islands in the Wallabi, Easter and Pelsaert Groups he estimated that a total of 101 500 tons of guano remained.

In the Easter Group, Wells (1897) found guano on four islands—Rat Island, 'Third' (Little Rat Island), 'Beacon' (Dry Island) and Wooded Island. The guano on the 'West Central Field' of Rat Island, was 6.2 in deep over an area of 4.3 acres, giving an estimated total of '2.800 tons'; the 'central field' of 'Third' Island had 1.6 acres of guano, 16 in deep, amounting to '2.656 tons' and the 'south field', 2.6 acres, 4 in deep, giving 1.128 tons. 'Beacon' (Dry) Island had 1.03 acres of guano, 15 in deep, totalling 1.680 tons while Wooded Island had 2.2 acres, 17 in deep, giving 5.680 tons. In total, the Easter Group was expected to yield 13 944 tons of guano.

Wells obtained duplicate samples of Abrolhos guano for analysis, one batch being sent to the Government Analyst Mr S.S. Dougall and one to Prof. John Hughes of London, Analyst for Broadhurst and MacNeil and Company (Wells, 1897).

Hughes' report was publically advertised and stated that:

The agricultural value of ABROLHOS GUANO is now well recognised and depends upon its richness in PHOSPHATE OF LIME, which, though not soluble in water, is, I find, gradually dissolved by vegetable acids such as citric acid. Consequently on rich vegetable or peaty soils this guano can be USED AS IT IS (without any chemical treatment) with advantage as manure for root crops; also, upon grass lands deficient in lime and where the quality of the herbage is coarse and rank, and therefore, not at present of much use either for cattle or sheep. The effect of this guano on such grass land will be found very beneficial, as it will improve and increase the growth of the fine grasses.

The mean results of the 22 samples were 58.7% of phosphate of lime and of the gypsum sample, Hughes was 'of the opinion that this [was] a specially valuable deposit, containing nearly a quarter of the total phosphate at lime in a form readily soluble in water' (Woodward, 1917:18).

Wells was impressed by the improvements on Rat Island, Gun Island and Pelsaert Island and was surprised to find the firm had expended such a large amount of capital in carrying out their business. He estimated the value of the improvements thus:

Rat Island houses	£500 — jetty	£600	=	1,100
Gun Island houses	£800 jetty	1,200	=	2,000
Pelsart houses	£1,100 - jetty & approaches	1,500	=	2,600
Lighters, gear, moorings etc.			=	1,000
Tramways, sleepers, trucks, fittings			=	800
& sundries				
	Total			\$7,500

Decline of the guano industry

By the end of the 19th century, world prices for guano and phosphates had dropped considerably owing to very rich deposits being found in the Christmas and Pacific Islands. Importers complained that the Abrolhos guano was too dear, supplies uncertain and the quality such that it was almost an adulteration to mix it with the higher quality material.

With Broadhurst's lease due to expire in 1904, and having received a request from Messrs Cuming, Smith and Company of Melbourne for support in their plan to establish a chemical and artificial manure works in Western Australia, the Government was prompted to appoint a Select Committee in 1902 to inquire into the advisability of renewing existing leases of the Houtman Abrolhos guano deposits (V&P, 1901-02 A21). The question under debate was whether or not the export of guano should be continued, or whether greater facilities should be offered to the local agricultural community to obtain Abrolhos guano in quantities required and at a reasonable price.

It was argued by Mr W. Paterson, Manager of the



Figure 3. Charles Edward Broadhurst and family (photo: courtesy of Mrs Marjorie Darling. Copy in MA coll.).

Agricultural Bank, that the usefulness of the guano was questionable since 'too much of the island comes with it'. Farmers had a regular way of gauging the value of the guano, by the weight of the bags; 'the heavier the bag, the lower the value of the guano' (i.e. the sand content was higher). Consequently, many farmers now preferred to use the more expensive but soluble superphosphates which were being imported into the State. He felt that even if prices were equitable,³ imported products would still be favoured as being 'better' than local manures.

Mr L.L. Cowen, Secretary of the Department of Agriculture, stressed that quality variation of Abrolhos guano affected both its agricultural and commercial value. Areas where it could effectively be used were limited to the South West region where the land is moist and rich in humus whereas other forms of manure were more universally applicable.

These views were supported by Mr Adrien Despeissis a viticultural and horticultural expert to the Department of Agriculture who added that the value of Abrolhos guano as a raw form of superphosphate and not as a manure.

From Broadhurst's point of view, he felt that it would be impracticable for them to chemically treat the guano and turn it into superphosphate. According to his London agent this would involve a capital outlay of £15 000 and financial success would not be guaranteed. Furthermore,

there was the problem of producing sufficient quantities of sulphuric acid in the State. Nevertheless, he would be prepared to supply raw guano to works if they were set up.

Broadhurst argued that whilst the firm had made every effort to expand local trade, it was difficult for them to be both retailers and wholesalers as this meant selling against their own agents. Exports had certainly dropped, no guano at all being exported in 1900, but Tasmanian trade had been increasing gradually over the past 7 years and he saw no reason why exports should cease.

The only reason why countries such as South Africa prohibited the export of guano was because the deposits were located in practically rainless latitudes. Owners were therefore able to collect the whole of the annual bird droppings i.e. 'live' guano, which was high in nitrogen content. In the Abrolhos, however, the annual rainfall was sufficient to leach out the ammonia from the 'live' guano leaving only the 'dead' guano i.e. the phosphatized limestone, which was obviously a more enduring, if less valuable resource.

A feeling was expressed that whilst a lease could impose conditions that guano was to be used locally, legislation prohibiting export would contravene the principle of inter-State free-trade as provided for by the Commonwealth *Constitution Act*. The regulations gov-

erning the working of guano deposits were duly changed, every license issued being for the removal of guano for use in the State, and not for export. The Minister for Lands could request the licensee to enter into a bond, with one or more sureties, to ensure observation of the Regulation (Woodward, 1917:27).

An agreement was entered into by Broadhurst and the Government in 1903 whereby the former was to supply the latter with 2 000 to 3 500 tons per annum for a period of five years, the standard of which was not to be less than 58.17% phosphate of lime, and not to exceed 2.50% carbonate of lime (Woodward, 1917:18). It appears that the agreement was never carried out, as considering the matter more closely, Broadhurst found he could not supply the quantity of a higher standard than 50% of phosphate of lime.

Limited by the ban on exports, Broadhurst forfeited his lease to the islands in 1904. The concession was taken up by Messrs Fallowfield and Davis of Geraldton who continued operating in the area in a small way until 1923.

Messrs Fallowfield and Davis

To date, very little has been gleaned about the operations of the Geraldton firm of Fallowfield and Davis. The firm held leases to remove guano from the Houtman Abrolhos from 1904 to 1923 (see Appendix 6 of this report) and in 1929, William Fallowfield acquired a whaling lease for 60 square miles around East and West Wallabi, Rat Island and Wooded Island (excluding the islands) and 75 square miles in the Pelsaert Group (excluding the islands) (L&S File 3756/29, Vol. 1).

When W.B. Christie visited Rat Island in 1908 he reported that:

...extensive deposits of guano have been worked and a large stone shed for sorting in, besides huts and tramlines were erected, but the islands having been worked out everything worth taking has been moved to the Pelsaert Group. Only the walls of the buildings remain. What was once a good stone jetty runs a few chains out into fairly deep water. A few Italian fishermen reside here. Low shrubs, wild oats and silver grass and ice plant, indicating soil rich in nitrogen. Plenty of birds (Christie, 1909:20-21).

On 'Woody' Island too, he noted that 'considerable quantities of guano [had been] secured, but the island [was] now worked out (Christie, 1909:24). Wooden piles that once formed a jetty were still there.

By the time Dakin visited the Abrolhos Islands in 1913 and 1915, guano mining was a sporadic operation. He states:

The islands would be quite uninhabited were it not for a few guano workers who come over for the summer months only, and frequent some small island or part of a larger one. The fishing luggers are, however, very frequent visitors. These boats are chiefly manned by Italians or Scandinavians and sail from Fremantle or Geraldton. They may fish in the deeper waters round the islands, or send one or two small boats amongst the reefs, whilst keeping the lugger off during the day. At night, the numerous sheltered regions between the islets are available, and in case of storms a ready harbour is at hand... (Dakin, 1919:135)

It would appear that guano mining 'ceased soon after Dakin's visit' (L&S File 3756/29 Vol. 3:207).



Figure 4. Florance Broadhurst (photo: courtesy of Mrs Marjorie Darling. Copy in MA coll.).

Database and Management Recommendations

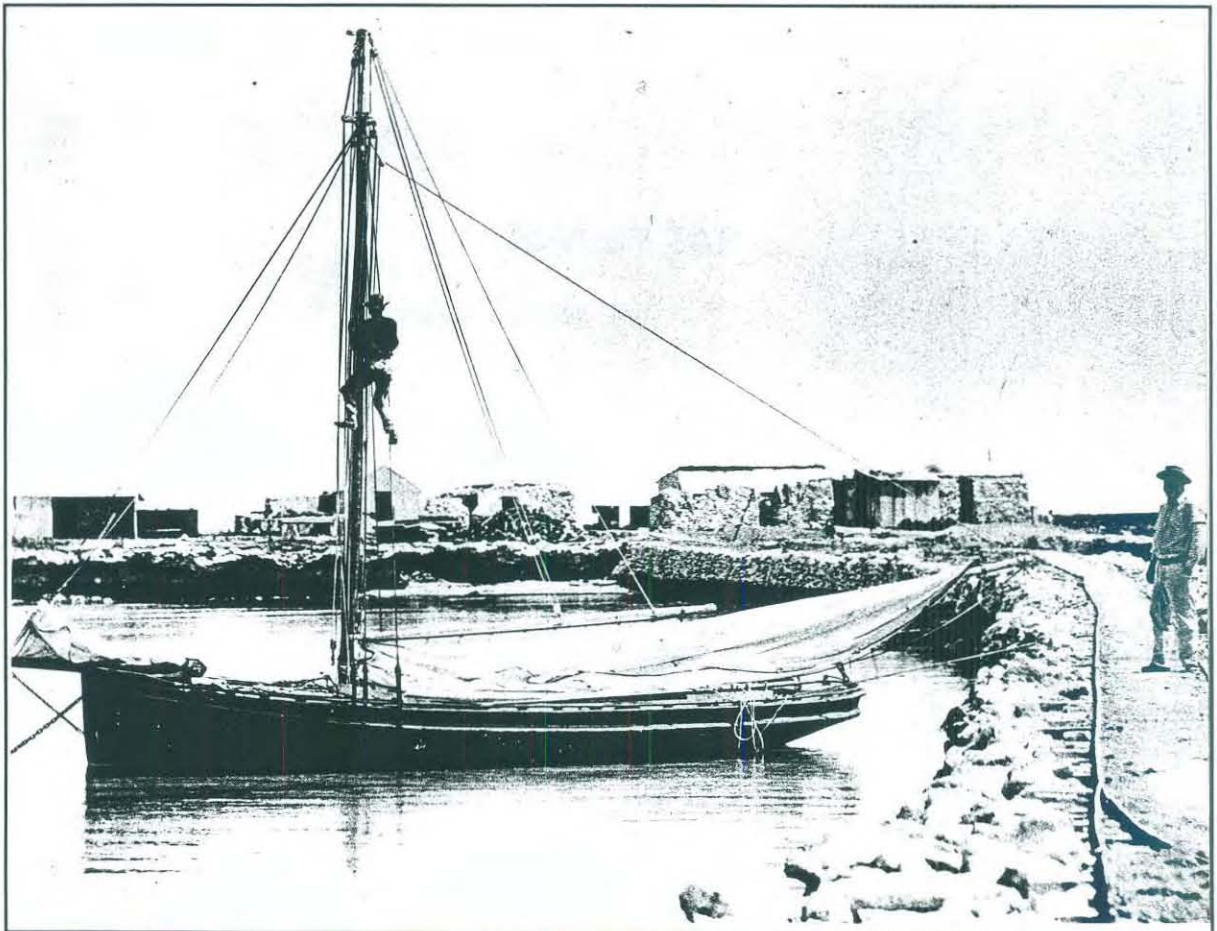


Figure 5. The *Nautilus* at anchor at the guano settlement, Rat Island c. 1894 (photo: W. Saville-Kent coll. BL 1786B/37).

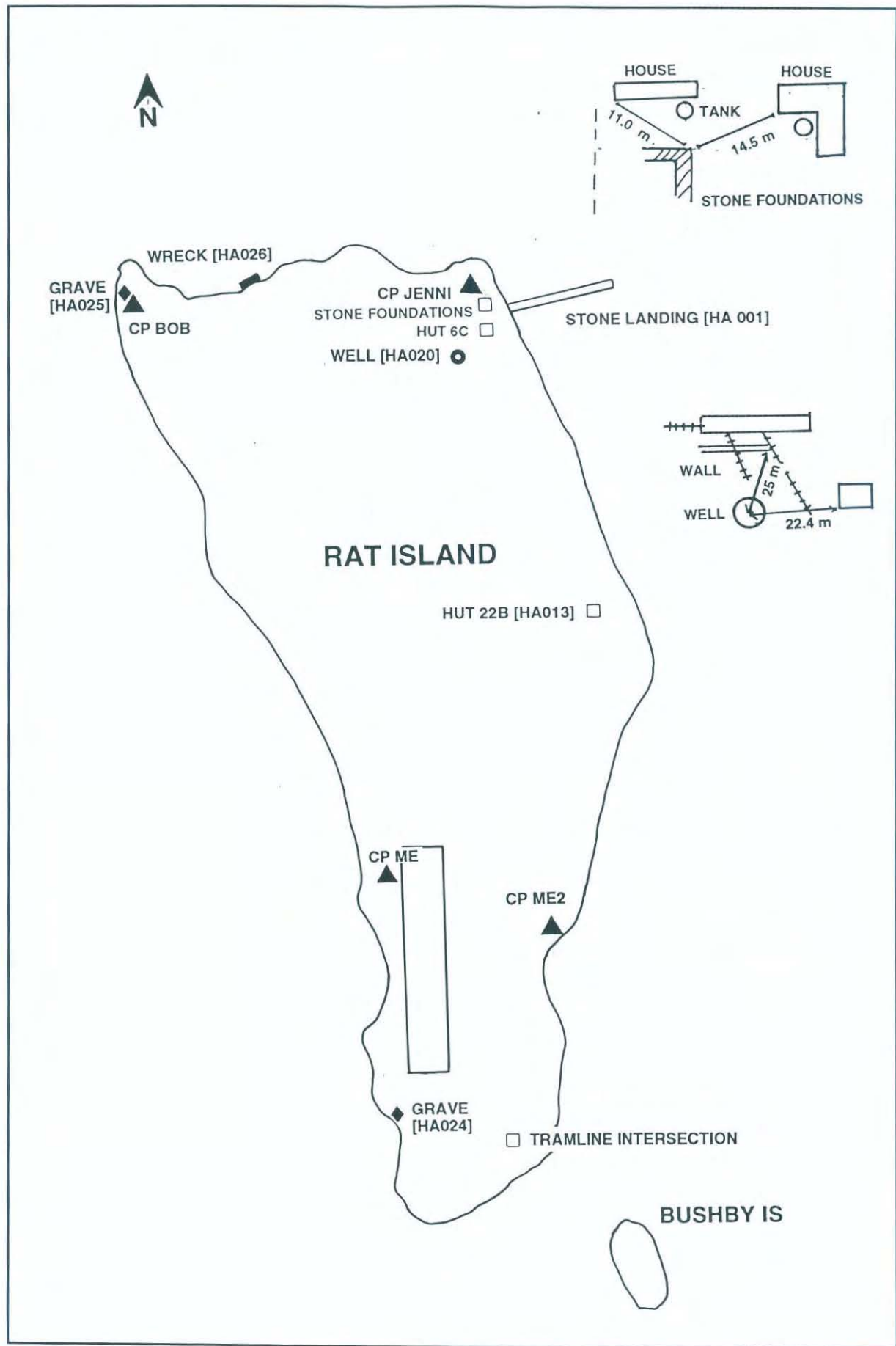


Figure 6. Rat Island: site location map.

Ref Number: 1	Site Number: 1640 HA001	Site Type: 1.0
Site Name:	RAT ISLAND STONE LANDING	
Location:	North-east point of Rat Island, Easter Group.	
Map Series No.	ABROLHOS SHEET 1640 (EDITION 1) SERIES R611	
Zone:	49J	
AMG Coordinates:	GJ	Easting: 721 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Historic landing constructed of coral limestone boulders infilled with coral rubble; intrusive timber decking, mooring facilities, storage sheds etc. in use by local fishing industry. Extends from cement slab marked with names—Lee 62; Tracey 64; Shane 66; Darryl 71—and dated 9.3.90 at beginning of path leading to Hut No. 5, to deep water edge of Wooded Island Passage. [Howard Gray saw a possible survey mark in this location.] Part of inshore end of landing has collapsed to about high-water mark (possibly due to natural erosion or intervention to facilitate water flow) and is traversed by a wooden 'bridge'; terminal end of jetty has collapsed substantially but remains are visible underwater. Length: not measured; breadth c. 2.5 m; height c. 1.5–2 m.	
Assoc Features:	Broken glass, ceramic and miscellaneous occupation material (1640 HA002; 1640 HA003).	
Integrity:	What is left of the limestone landing displays reasonable integrity. Intrusive jetty decking and modern wharf facilities.	
Public Access:	RESTRICTED	
Threats:	Continued erosion due to wave and current action; further development of wharves and jetties.	
REFERENCES:		
Documentary:		
<i>6.3.1876, SDUR/B/10/1063</i>	From March 1876 to May 1880, John Wesley Bateman held a licence to remove guano from Rat Island, and the whole of the Easter Group.	
<i>11.5.1876 SDUR/B10/1142 e</i>	There is no indication that he resided on Rat Island at this time or constructed a jetty.	
<i>17.5.1877, SDUR B/10/1142h</i>	Abrolhos guano deposits were examined in 1879 by John Forrest, Deputy Surveyor General. At Rat Island he noted the shipping facilities were 'reasonable', vessels being able to come within 1 mile or less.	
<i>SDUR B/10/1142 a-d</i>		
<i>Forrest, 27.6.1879</i>		
<i>Broadhurst to Surveyor General, 27.12.1882, CSO 82/2044 BL</i>	Charles Edward Broadhurst visited the Abrolhos to assess guano deposits; found more than Forrest had estimated. Broadhurst applied for and was granted a lease of 20 islands (including Rat Island) in the Houtman Abrolhos. In 1883 he settled in the Abrolhos and requested permission to reside on 'the island' and prepare his cargo for shipment.	
<i>12.12.83Gov. to CCL</i>	By July 1884, Broadhurst had established a residence, storeroom and accomodation for his 'agent' and seven 'Chinamen' on Rat Island. He built a stone landing from which to load the lighters used to ship the guano to larger vessels off shore.	
<i>WA 29.7.1884</i>	Two tramways—one of 800 yards (731.2 m) and one of 600 yards (548.4 m)—were built by 1886 and a	
 	...stone jetty 85 yards [77.69 m] had been erected into 7 feet [2.1 m] of water enabling shipment at low water. There was good accommodation for 35 hands and a store building that will hold 1500 tons of guano, but still unroofed.	
 	[Note: 1500 tons was the minimum amount of guano that Broadhurst was expected to export per year.]	
<i>25.9.1841 Good Friday Harbor Houtmans Abrolhos</i>	From Stokes' 1840 survey of Good Friday Bay (the chart available at the time the landing was constructed), it is clear that the north-east promontory	



Figure 7. Modern wharves and jetties constructed over the old stone landing at Rat Island (photo: M. Stanbury, 1993).

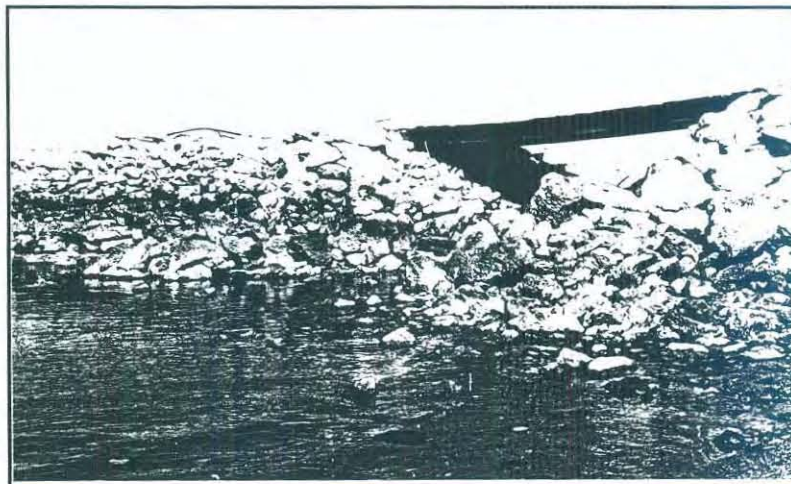


Figure 8. Wooden bridge over collapsed part of stone landing (photo: J. Potts, 1993).

of Rat Island was the most suitable place to build a landing, being the closest point to deep water (20 m).

3.7.1980, M. Darling, pers. comm. WAMM File 110/80.

BH 16.10.1897
I, 2.5.1890
7.9.1980, B. Groom, pers. comm. WAMM File 110/80
Saville-Kent, 1897:152.

In 1888, **Gilbert Beddoes**, a civil and marine engineer and one time Harbour Master in Durban, South Africa, where he built the North pier and a temporary bridge over the Umgerri river, came to Western Australia as Engineer for Florance Broadhurst at the Abrolhos. He was recognised as a 'skilled surveyor and engineer' and 'pilot'. Beddoes and his family lived in Geraldton. He died in Western Australia, but the date and circumstances have not been determined. He is believed to be buried in Geraldton.

Beddoes was probably responsible for extending the stone landing in order to accommodate Florance Broadhurst's efforts to expand the Company's business.

WA 25.3.1890

In 1889, A.J. Campbell visited Rat Island and commented on the harbour

	facilities:
	The Harbour at Rat Isle is Good Friday Bay. According to the Admiralty guides Good Friday Bay (the guano station) "is a secure harbour affording anchorage for a large number of vessels of any draught", while all captains of vessels who have loaded there report most favourably on the port.
<i>VE 3.5.1890 p 5c</i>	Arriving in Geraldton from the Abrolhos, Florance Broadhurst and Beddoes announced that guano shipments would cease during the winter months but a few hands had been kept on to assist in moving the plant from Rat Island to Pelsaert Island where new wharves and jetty and accommodation were to be erected.
<i>See also I 2.5.1890 and Broadhurst to John Forrest, CSO 840/90, BL</i>	
<i>WA 24.5.1890 p 2d</i>	Charles Broadhurst announced his retirement from the partnership, leaving the business under the management of Florance Constantine Broadhurst.
<i>Saville-Kent, 1897:146</i>	In 1894, W. Saville-Kent, Director of Fisheries, visited the Abrolhos and took many photographs. In the course of his study of the corals he noted that: ...various species of Madrepora have already established themselves upon the basement of the stone jetty constructed by Messrs. Broadhurst and Co. on Rat Island, in the Easter Group, for the shipment of guano.
<i>BL 1786B/20 & 37</i>	Two photographs taken by Saville-Kent give a good idea of the extent of the jetty at this time.
<i>Letter dated 9.9.1895 CSO 4216/95</i>	In 1895, Broadhurst offered his concession to the Bureau of Agriculture for £7000. By this time there were quarters for 50 men on each of the three different islands—Rat Island, Gun Island and Pelsaert Island—and 'stone jetties' at Rat Island, 'all with sufficient water alongside to load local craft'.
<i>Wells, A.J., 5.6.1897 Field Book No 23</i>	On 5 June 1897, Surveyor A.J. Wells carried out a survey of Rat Island and others in the Easter Group to assess the guano deposits. Sketch maps in his Field Book show the landing extending for 310 links (68.13 yd; 62.3 m) on a bearing of 62°7' and a further 436 links (95.1 yd; 87 m) on a bearing of 85°41' giving a total length of 746 links (163.28 yd; 149.3 m). This indicates that the initial landing (1886) had been extended to almost double its length by 1897.
<i>Wells, 1897b:2</i>	Commenting further, Wells notes in his report that: The jetties at Pelsart and Gun Islands are made of jarrah, and are solidly built—(more especially the former)—the jetty at Rat Island being entirely constructed of stone—and tram lines are laid to the end of each. The 'improvements' at Rat Island were estimated to be £1100—£500 being for the houses and £600 for the jetty (Wells, 1897b), not including the tramways or floating plant. The landings and jetties were essential in order to systematically work the guano deposits and facilitate the transshipment of cargoes. Visiting Rat Island in the same year (1897), Helms noted that:
<i>Helms, 1902:35</i>	The building of the jetties and the erection of houses in these out-of-the-way places must have been a specially expensive undertaking. In 1904, Broadhurst forfeited his lease to the Abrolhos Islands. The concession was taken up by Messrs Fallowfield and Company of Geraldton.
<i>Christie, 1909</i>	Subsequent visitors to Rat Island noted that: ... the island having been worked out everything worth taking has been moved to the Pelsart Group... What was once a good stone jetty runs a few chains out into fairly deep water. A few Italian fishermen reside here.

- Oral:** Marjorie Darling (granddaughter of C.E. Broadhurst).
Brenda Groom (granddaughter of Gilbert Beddoes) .
- Pictorial:** Saville-Kent collection, 1894, BL 1768B/20/37.
Department of Maritime Archaeology, WA Maritime Museum (WAMM)
MA 4950/22-24.
- Maps and Plans:** Wells, A.J., 1897, Field Book No 23: 4; L&S, Victoria 326 (1898); Aus 751.
- Existing survey:** Wells, 1897.
- SIGNIFICANCE:** The Rat Island stone landing was constructed by Charles Edward Broadhurst in 1884 for the purpose of loading bagged guano onto lighters for transshipment to larger vessels anchored off shore. By 1897 it had been extended from 85 yd (77.69 m) to 163.28 yd (149.3 m). Light tramline ran along the extent of the jetty for the passage of trucks bearing guano. The site is of historical significance as it demonstrates through physical evidence the need for effective loading/unloading facilities as an aid to commercial transportation and communication in the Abrolhos Islands. The landing has been intermittently used up to the present day and is still an important facility for the rock lobster and fishing industry in the Abrolhos.
- RECOMMENDATIONS:**
- Legislative:** REGISTER ON STATE HERITAGE LIST
- Conservation:** PRESERVATION
- Public Use:** RESTRICTED
- Interpretation:** THIS SITE SHOULD BE INCLUDED IN AN INTERPRETIVE BOOK-LET/ PAMPHLET/MAP
- Other:** THIS SITE REQUIRES FURTHER SURVEY TO DETERMINE ASSOCIATED UNDERWATER REMAINS



Figure 9. Group of Italian fishermen and C. Price Conigrave's party, Rat Island 1908 (photo: BL 2908B/162).

Ref Number: 2	Site Number: 1640 HA002	Site Type: 1.2
Site Name:	RAT ISLAND STONE LANDING—SPIT	
Location:	Rat Island stone landing—mid-way between cement slab and 'wooden bridge'.	
Map Series No.:	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 721 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Assorted glass, ceramic, bone, metal, marine and miscellaneous sherds/artefacts recovered from 1 m ² surface spit. Registration number RT 84.	
Assoc Features:	Other artefacts 1640 HA003, 1640 HA004	
Integrity:	Small broken sherds.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:	As for 1640 HA001	
Oral:		
Pictorial:	MA 4950/25	
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	Small sample of predominantly modern glass sherds and miscellaneous material associated with occupation of Rat Island and use of the stone landing over a period of time.	
RECOMMENDATIONS:		
Legislative:	NIL	
Conservation:	REGISTER AND CATALOGUE	
Public Use:		
Interpretation:	INCLUDE IN THEMATIC DISPLAY	
Other:	FURTHER ANALYSIS REQUIRED	

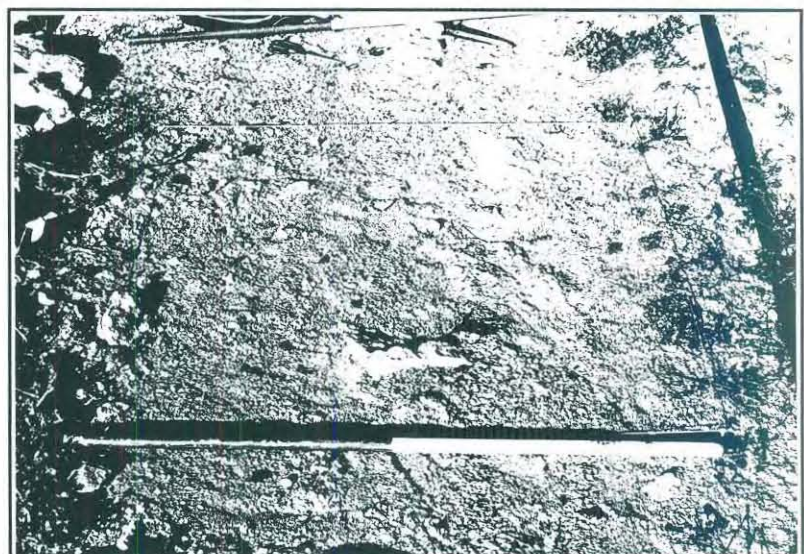


Figure 10. Stone landing surface spit (photo: J. Potts, 1993).

Ref Number: 3	Site Number: 1640 HA003	Site Type: 1.2
Site Name:	RAT ISLAND STONE LANDING—SURFACE	
Location:	Inshore end of Rat Island stone landing	
Map Series No.	ABROLHOS SHEET 1640 (EDITION 1) SERIES R611	
Zone:	49J	
AMG Coordinates:	GJ	Easting: 721 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Random collection of buttons, ceramic sherds, nails and wire, case shot etc. from surface of stone jetty (Reg. Nos. RT 4–9; 37–44). Some printed earthenware sherds could possibly be associated with shipping company's (RT 40 is similar to wares used by the Adelaide Steam Ship Company and RT 41 has a ship as part of the printed maker's mark).	
Assoc Features:	Other jetty artefacts (1640 HA002 and 1640 HA004)	
Integrity:	Sample collection of intact buttons and broken sherds.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:		
Oral:		
Pictorial:	1:1 scale drawings: Caroline Heine, 1993(see Appendix 3).	
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	The sample of artefacts is representative of the use of the stone landing over time and may provide chronological information concerning shipping activities.	
RECOMMENDATIONS:		
Legislative:	NIL	
Conservation:	REGISTER AND CATALOGUE	
Public Use:		
Interpretation:	INCLUDE IN THEMATIC DISPLAY	
Other:	FURTHER RESEARCH AND ANALYSIS REQUIRED	

Ref Number: 4	Site Number: 1640 HA004	Site Type: 1.2
Site Name:	RAT ISLAND STONE LANDING—UNDERCUT	
Location:	Rat Island, inshore end of stone landing, under cliff overhang, north side.	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 721 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Random collection of assorted artefacts which have been discarded and/or washed up under the cliff overhang; the area appears to be a collecting point for discarded material which has possibly been washed along the stone landing with the incoming tide. (Sample: Reg. Nos. RT 54–72). Assortment of glass bottle sherds representing modern and older liquor bottles, food containers—pickle, sauce etc.—and other domestic products, e.g. polish; patterned earthenware and other ceramic sherds representing a variety of utilitarian domestic crockery.	
Assoc Features:	Other artefacts (1640 HA 002 and HA003). Historic and current occupation area (1640 HA015)	
Integrity:	Minimal integrity; mainly broken and/or incomplete discarded objects.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:		
Oral:		
Pictorial:	1:1 scale drawings of some objects: Caroline Heine 1993 (see Appendix 3)..	
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	The sample is representative of occupational refuse discarded over a period of time and may be useful in developing a chronological interpretation of domestic living patterns and shipping activity associated with the stone landing.	
RECOMMENDATIONS:		
Legislative:	NIL	
Conservation:	REGISTER AND CATALOGUE	
Public Use:		
Interpretation:	INCLUDE IN THEMATIC DISPLAY	
Other:	FURTHER INVESTIGATION OF THIS SITE COULD PRODUCE USEFUL INTERPRETIVE MATERIAL	



Figure 11. Undercut at inshore end of stone landing, north side (photo: J. Potts, 1993).

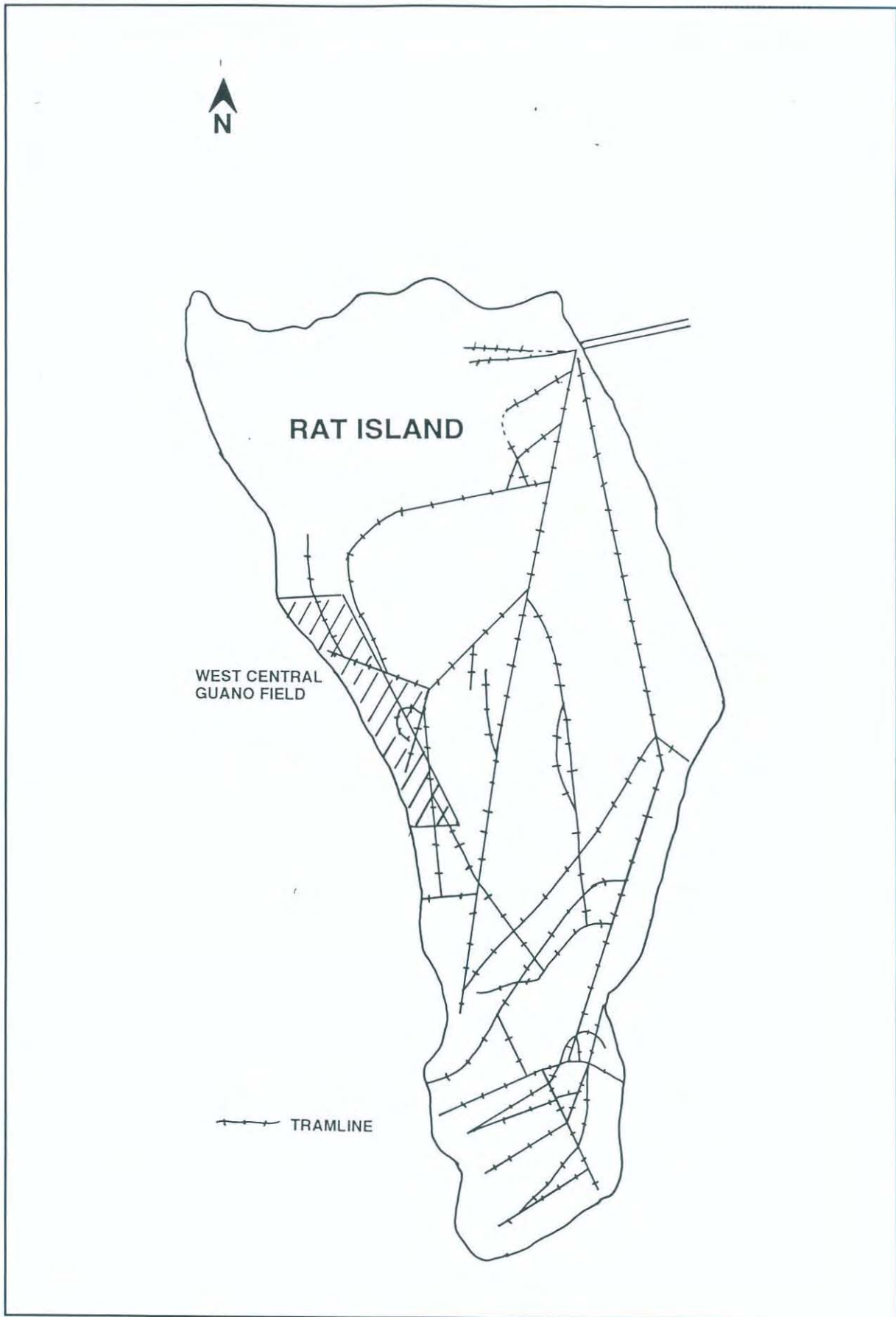


Figure 12. Preliminary plan of tramline embankments from aerial photography (drawing: J. Potts, 1993).

Ref Number: 5	Site Number: 1640 HA005	Site Type: 1.1
Site Name:	TRAMWAY EMBANKMENTS	
Location:	Rat Island	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 719 Northing: 203
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Embankments for railway tramline representing several kilometres of track, originate from the stone landing (1640 HA001) and pass primarily to the west and south of the island (see Fig. 12). Constructed of parallel lines of large coral boulders about 1 m apart infilled with compacted small coral rubble (Fig 13). On parts of the island, the embankments are barely raised above ground level; in other places they are up to 0.5 m above ground—possibly reflecting original surface height of the ground.	
	At the south end of the island several sections of railway embankment had pairs of rock piles—2 or 3 flattish rocks placed one on top of the other—approximately 0.35 m high, set approximately 0.9 m apart and at intervals of approximately 1 m; appear to be supports for wooden railway sleepers.	
	Many of the embankments are overgrown with saltbush and other intrusive vegetation—wild oats etc.. Embankment on east side, south of intersection to 'Orbit Inn' has excavated rocks over the embankment.	
	Walls surrounding Hut 2/2A (1641 HA011) have been constructed over an intersection of former tramways.	
	Hut 12A is built over tramway embankment; Hut 8 also built over continuation of above embankment, which then passes under Hut 7), behind Huts 7A and 6C and under Hut 6A. An embankment passes alongside the west wall of Hut 6A.	
Assoc Features:	Tramline (1640 HA005); bale straps (1640 HA007).	
Integrity:	Moderate integrity; intrusive huts built over old embankments.	
Public Access:	RESTRICTED	
Threats:	No immediate threat.	

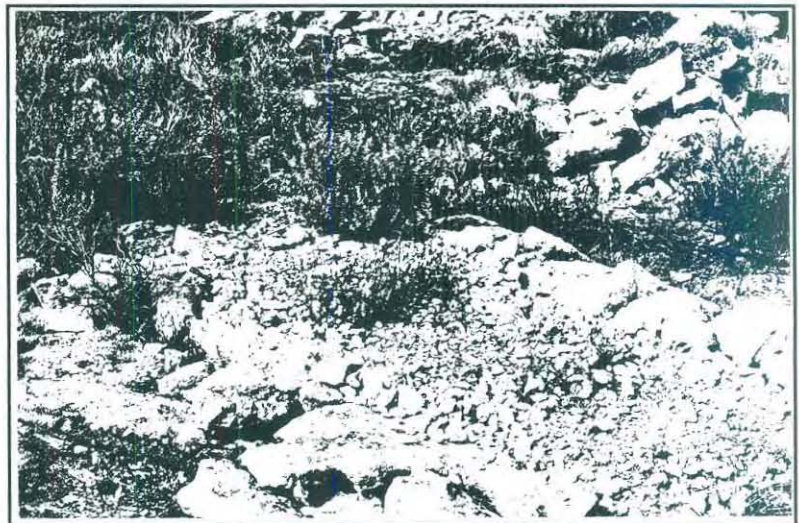


Figure 13. Section of tramline embankment north of 'Orbit Inn' (photo: M. Stanbury, 1993).

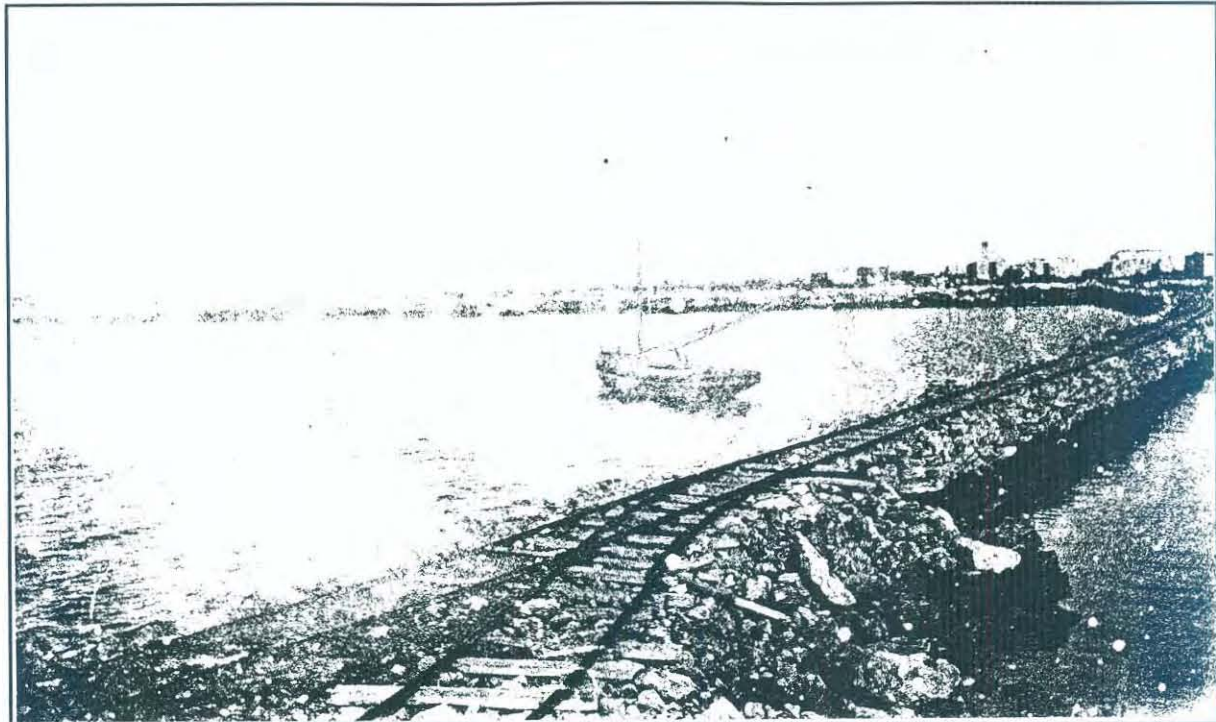


Figure 14. Tramline extending along the length of the Rat Island stone landing in 1894(photo: W. Saville-Kent coll. BL 1786B/20).

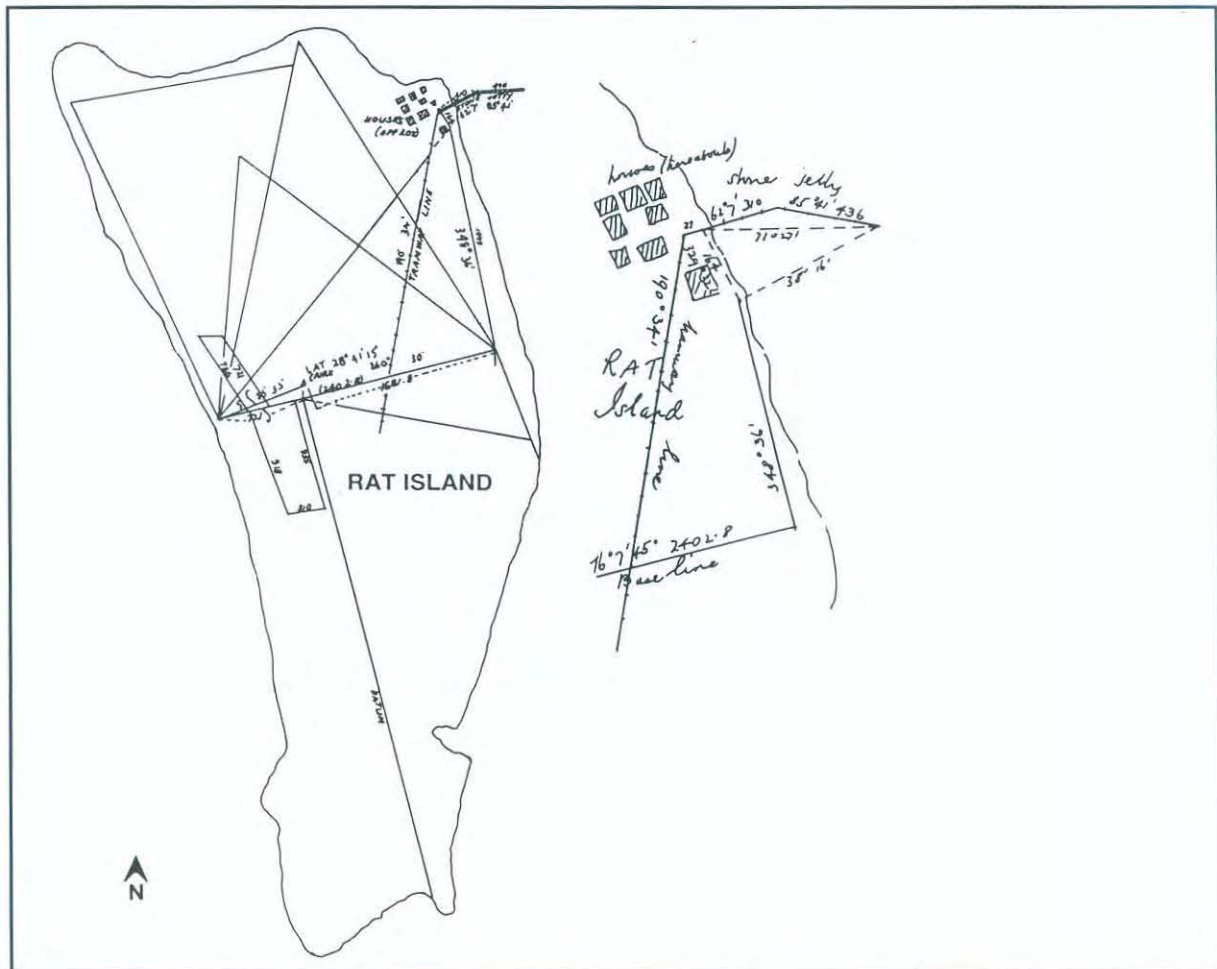


Figure 15. Survey of Rat Island by A.J. Wells 1897 (redrawn from Victoria 326 and Field Book No. 23).

REFERENCES:

Documentary:

*Government Gazette, No. 28,
22 June 1880:219*

Tenders for removal of guano from 'Houtman's Rocks' stated that the contractor could erect on any or all of the islands 'any buildings, jetties or tramways' subject to conditions of forfeiture—that the contractor should 'remove the same at any time within six months of the termination of the contract'. Contractors were also required to work the deposits in a 'systematic' way.

*Broadhurst to CCL
29.6.1886 CSO*

Two tramways—one of 800 yards (731.2 m) and one of 600 yards (548.4 m)—making a total of 1.3 km of tramway had been constructed by Broadhurst by 1886. [Rat Island is approximately 0.75 miles (1.2 km) long and 0.5 miles (0.8 km) wide.]

Saville-Kent, 1894:137

In order to profitably work the guano deposits, tramways for land carriage and jetties for its convenient shipment have been constructed on several of the larger islands...

12.5.1890

Horses were used for dragging guano down tramways.

Thiel, 1901:618.

The fine guano was put into bags and conveyed on trucks running on light rails to the jetties.

Helms, 1902:36.

Only one tramway is shown on Wells' map of 1897 passing from the stone landing to the central western part of Rat Island. The only source of guano located by Wells was on the 'West Central Field' of $4 \frac{3}{10}$ Acres which contained 2800 tons.

Oral:

Nil.

Pictorial:

Saville-Kent collection, 1894, BL 1768B/20/37. Delucy, in Thiel, 1901:618; MA 4252/2-6.

Maps and Plans:

Potts, 1993, Sketch plan from aerial photograph; Wells, A., 1897: Field Book No. 23; Victoria 326. Houtman Abrolhos, Easter Group Sheet 3 Scale 1:75 000 (AITF, 1988, FIGURE 4 (c)).

Existing survey:

SIGNIFICANCE:

A system of tramways was established on Rat Island in 1884 (and following) as a means of conveniently transporting guano overland to the stone landing for shipment. The sites are of historic significance as they demonstrate through physical evidence the need for effective land transportation in order to profitably work the guano deposits.

RECOMMENDATIONS:

Legislative:

INCLUDE AS PART OF RAT ISLAND HISTORIC PRECINCT PRESERVATION

Conservation:

UNRESTRICTED

Public Use:

Interpretation:

THIS SITE SHOULD BE INCLUDED IN AN INTERPRETIVE BOOK-LET/PAMPHLET/MAP

Other:

The coral boulders associated with the railway embankments on various parts of the island exhibit differing degrees of weathering (i.e. dark grey colouration caused by exposure to sunlight), and density of lichen growth. Investigation and analysis of these variations may provide information concerning the relative ages of the rocks and thus provide some clues as to the sequence of tramline construction and guano extraction on the island.

Ref Number: 6 **Site Number:** 1640 HA006 **Site Type:** 1:2
Site Name: TRAMLINE
Location: Rat Island, south tramline intersection.
Map Series No. ABROLHOS SHEET 1641 (EDITION 1) SERIES R611
Zone: 49J
AMG Coordinates: GJ Easting: 719 Northing: 195
Council: MINISTER FOR FISHERIES
Tenure: A CLASS RESERVE
DESCRIPTION: Sections of T-headed steel tramline with fastening holes (see Fig. 16).

Assoc Features:
Integrity: Moderate integrity; corroded.

Public Access: RESTRICTED
Threats: Further corrosion.

REFERENCES:
Documentary:

Wells, 1897b:3-4.

The rail used on the tramways are light and easily portable, while being sufficiently strong for the traffic required...

Wells estimated the asset value of 'Tramways, sleepers, trucks, fittings and sundries' in use by Broadhurst at £800.

Foster, 1897:348.
Hughes, 1896:179.
V&P, 1901-02, 4.A21:17

Tramlines were simply spiked to wooden sleepers with 'dog' nails.

Tramways were laid in the winter in off period.

Oral:
Rigg, E. (WAMM)
Pictorial:
Maps and Plans:
Existing survey:

Confirmed that this is tramline. Light rail weighed 8-12 lb/yd.
 Potts, 1993: 1:1 scale drawing.

White, 1993, FB:5.

SIGNIFICANCE:

The tramline is historically significant as it demonstrates through physical evidence part of the infrastructure of the guano extraction industry.

RECOMMENDATIONS:

Legislative:
Conservation:
Public Use:
Interpretation:
Other:

INCLUDE IN RAT ISLAND HISTORIC PRECINCT

INCLUDE IN BOOKLET/PAMPHLET
 OBTAIN SAMPLE FOR PRESERVATION

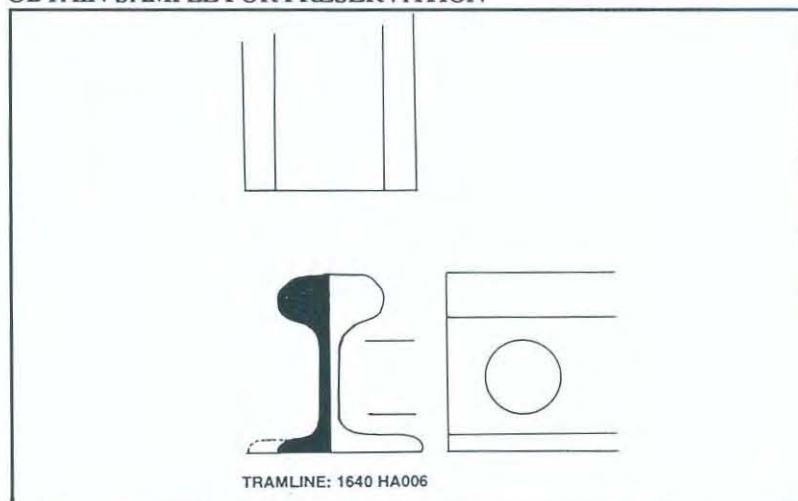


Figure 16. Section of tramline. Scale 1:2 (drawing: J. Potts, 1993).

Ref Number: 7	Site Number: 1640 HA007	Site Type: 1.2
Site Name:	BALE STRAPS	
Location: (1640 HA011).	Rat Island, south tramline intersection—other fragments near stone walls	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 719 Northing: 195
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Several lengths of flat steel strap fastened around circular rod (or pin) at one end. Two straps with 'pins' found in association with square iron keeper (see illustration). Strap: Length: 127 mm (max. observed); 96 mm (min.); width 25 mm; thickness 2 mm. Pin: Length: 59–62 mm; diameter: 7–8 mm. Sample: RT 82	
Assoc Features:	Other bale straps (1640 HA 011); tramline (1640 HA006)	
Integrity:	Incomplete, corroded.	
Public Access:	RESTRICTED	
Threats:	Further corrosion.	
REFERENCES:		
Documentary:		
<i>Broadhurst to CCL</i> <i>27.12.1882 CSO 83/2044</i>	After checking the availability of guano in 1882, Broadhurst felt that there was no point mining without fixity of tenure. Wells would need to be sunk through solid rock on Rat Island (and Pelsaert Island) which would be expensive. 'Chinamen' would have to be imported to do the work and 2–3 sheds erected, each capable of holding a cargo of guano, besides 'horses and carts would be indispensable'.	
<i>Helms, 1902:36</i>	The fine guano was put into bags and conveyed on trucks...	
Oral:		
<i>Rigg, E. (WAMM)</i>	The straps were used as lashings to secure wool bales. Jute bags were imported from Pakistan and were very heavy. After filling, the bags were sewn together and secured with steel straps. The steel 'pin' is spot-welded in place. Date of earliest use in Western Australia not known—probably early 1900s.	
Pictorial:	Bagged guano on horse-drawn truck shown in Theil, 1901:618.	
Maps and Plans:	Potts, 1993: 1:1 scale drawing.	
Existing survey:	White, 1993: Point 5.	
SIGNIFICANCE:	The association of the steel bale straps with sections of tramline suggests contemporaneous use. They are significant inasmuch as they provide evidence of the types of bags used to prepare cargoes of guano for shipment and reflect the use of imported products as part of the infrastructure of the guano extraction industry.	
RECOMMENDATIONS:		
Legislative:		
Conservation:	REGISTER AND CATALOGUE	
Public Use:		
Interpretation:		
Other:	FURTHER RESEARCH AND DOCUMENTATION TO CONFIRM THE USE OF WOOL BALES FOR PACKING GUANO. OBTAIN MORE COMPLETE SAMPLE FOR PRESERVATION.	

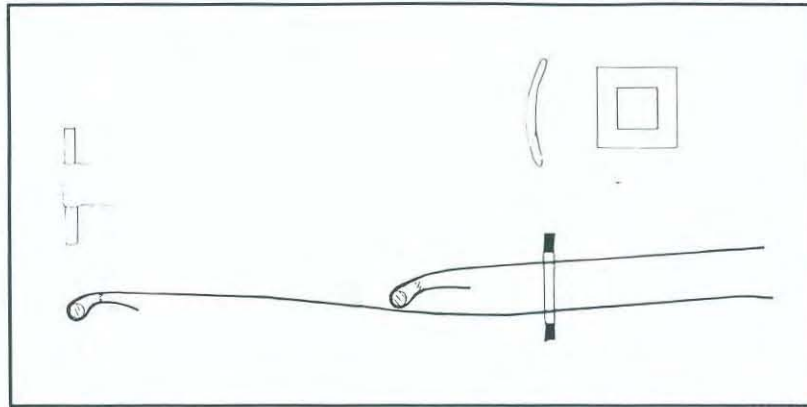


Figure 17. Section of steel bale strap. Scale 1:4 (drawing: J. Potts, 1993).

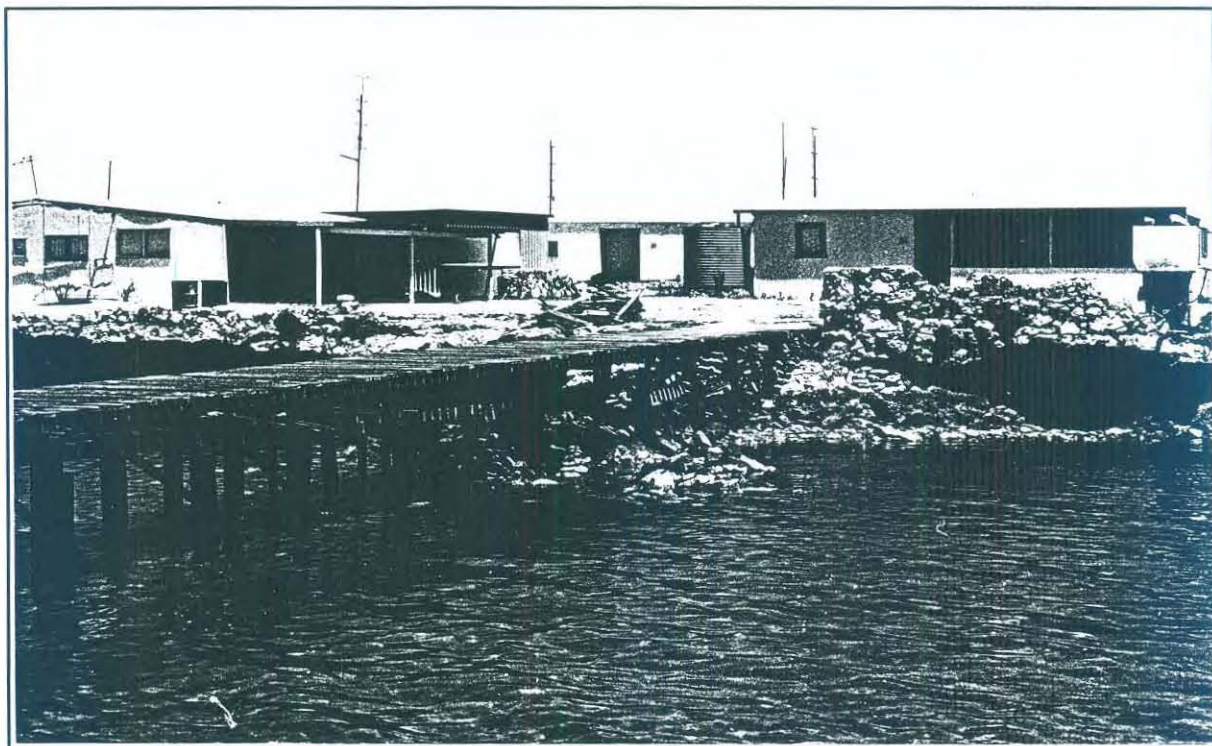


Figure 18. Remains of possible old stone landing with collapsed wooden jetty underneath new wooden jetty in line with stone hut 22B (photo: J. Potts, 1993).

Ref Number: 8	Site Number: 1640 HA008	Site Type: 1.0
Site Name:	STONE JETTY	
Location:	Rat Island—in line with Hut 22 B	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 722 Northing: 203
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Remains of stone landing and collapsed timber jetty underneath new timber-decked jetty.	
Assoc Features:	Steel bollard (1640 HA009).	
Integrity:	Minimal; intrusive modern jetty and decking.	
Public Access:	RESTRICTED	
Threats:	Natural erosion by water action.	
REFERENCES:		
Documentary:	Nil.	
Oral:		
Pictorial:		
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	Not yet determined.	
RECOMMENDATIONS:		
Legislative:		
Conservation:		
Public Use:	RESTRICTED	
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED.	

Ref Number: 10	Site Number: 1640 HA010	Site Type: 2.0
Site Name:	STONE FOUNDATIONS	
Location:	North-east Rat Island, east of Hut 5 adjacent to NS pathway.	
Map Series No.	ABROLHOS	SHEET 1641 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 721 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Remains of rectangular limestone foundations. North and South walls: length 4.5 m. East and West walls: length 5.45 m Width of walls 0.8 m. Two lines of large limestone boulders consolidated by small rubble. Central mound overgrown with low shrub.	
Assoc Features:	East wall: copper and brass nails. North wall, west end: butchered mammal bones. Central mound: scattered charcoal fragments; iron nuts and bolts; corrugated iron and miscellaneous debris.	
Integrity:	Minimal.	
Public Access:	RESTRICTED	
Threats:	Digging or other physical interference.	
REFERENCES:		
Documentary:		
<i>1872 36 Vic. No 8</i>	<i>The Waste Lands Unlawful Occupation Act 1872</i> imposed a penalty of £100 for the unauthorized occupation of 'Waste Lands' which included 'depasturing stock, residing, erecting a hut, clearing...'	
<i>1876 40 Vic No 9</i>	To further prevent the illegal removal of guano from Crown Lands, an Act was passed making 'further provision for the punishment of persons trespassing on certain portions of the Crown Lands in Western Australia'. Unlicensed ships could be seized.	
<i>Govt Gazette, No. 28 June 22 1880</i>	The call for tenders for Abrolhos guano leases stated the 'Contractor may erect on any or all of the islands any buildings, jetties or tramways and subject to conditions of forfeiture, to remove the same at any time within six months of the termination of the contract'.	
<i>Broadhurst to CCL 27.12.1882 CSO 83/2044</i>	After checking the availability of guano in 1882, Broadhurst felt that there was no point mining without fixity of tenure. Wells would need to be sunk through solid rock on Rat Island (and Pelsaert Island) which would be expensive. 'Chinamen' would have to be imported to do the work and 2-3 sheds erected, each capable of holding a cargo of guano, besides 'horses and carts would be indispensable' (see 1640 HA007).	
<i>CCL to Governor 12.12.1883 L&S 2859/83</i>	Wishing to reside on the Abrolhos for the purpose of preparing guano cargoes for shipment, Broadhurst's application for a 'special licence' was referred to the Governor.	
<i>WA 29.7.1884</i>	By July 1884, he had established himself in the Abrolhos and constructed a residence, storeroom and accommodation for his agent and seven 'Chinamen' on Rat Island. [Most of his contract labourers were Malays, Javanese, Indians and Mauritians from British and/or Dutch occupied colonies.]	
<i>Broadhurst to CCL 29.6.1886 CSO</i>	After mining for 3 years, Broadhurst complained that Royalties were making trade prohibitive. On Rat Island he had erected a stone jetty (1640 HA001), good housing accommodation for 35 hands and a stone	



Figure 21. North-west corner of Rat Island stone foundations looking east to stone landing (1640 HA001) (photo: M. Stanbury, 1993).

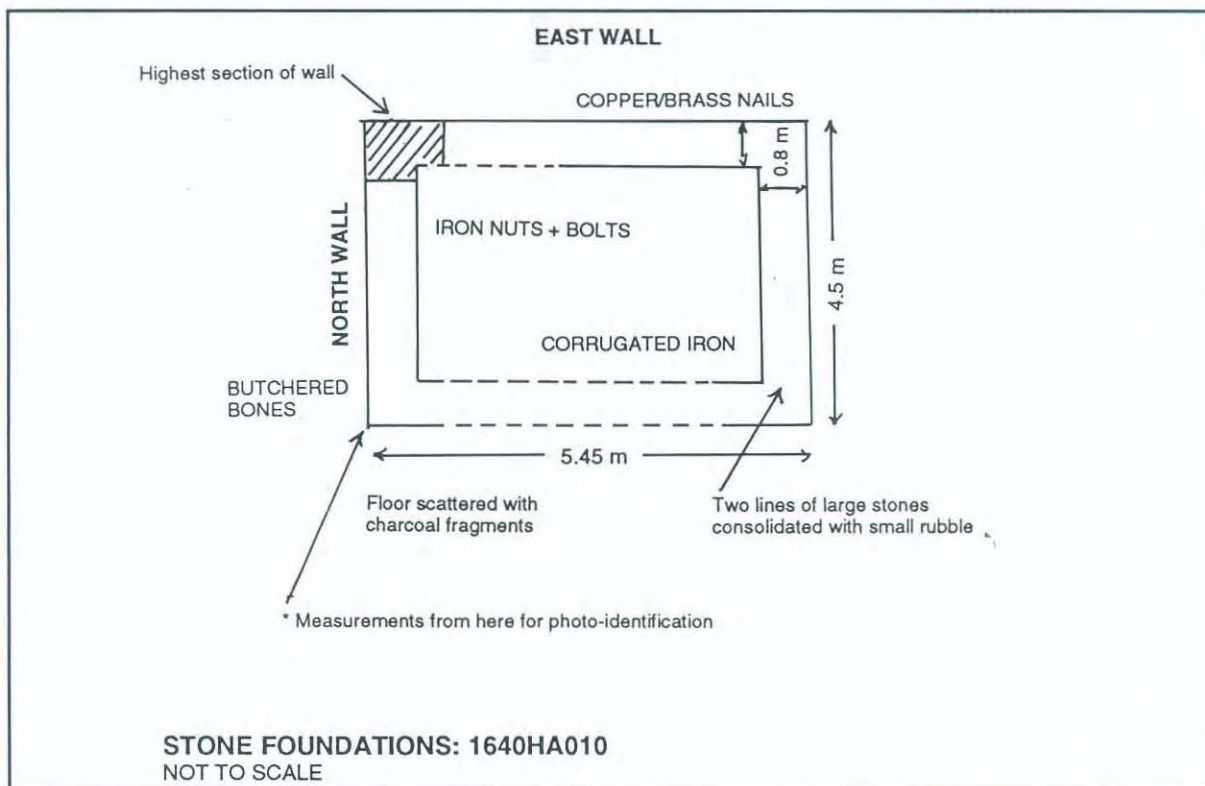


Figure 22. Sketch plan of stone foundations (drawing: J. Potts, 1993).

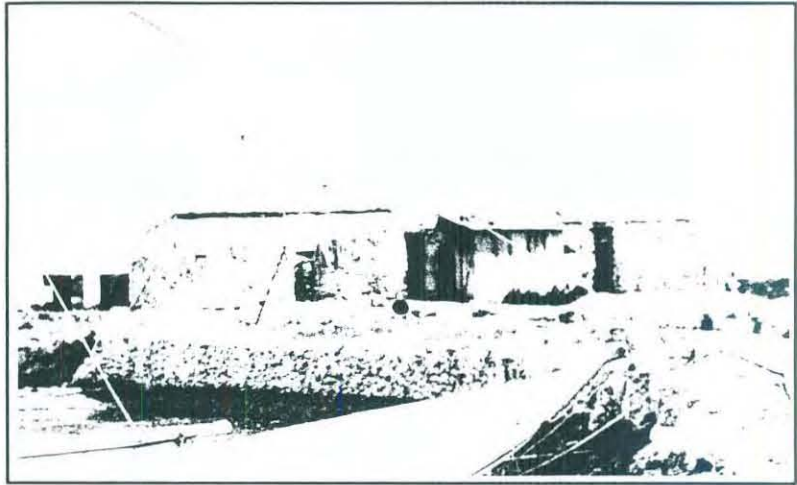


Figure 23. Detail of guano sttlement buildings c. 1894 from W. Saville-Kent photograph BL 1786B/37.

*Letter dated 9.9.1895
CSO 4216/95*

Wells, 1897b:2

Wells, 1897a: FB 23:4

Helms, 1902:35

Christie, 1909:20–21

Oral:

Pictorial:
*Saville-Kent, 1894
BL 1786B/12–14, 20, 37*

BL 2908B/162

building that will hold 1500 tons of guano but still unroofed.

In 1895, Broadhurst offered his concession to the Bureau of Agriculture for £7000. By this time there were quarters for 50 men on each of the three different islands—Rat Island, Gun Island and Pelsaert Island—and stone jetties at Rat Island and all with sufficient water alongside to load local craft.

They were described 3 years later by surveyor Wells:

...the houses are all strongly constructed of timber and galvanised iron and at each place there are quarters for 40 men besides kitchen and private residence.

The 'approximate location' of the buildings are indicated in Wells' Field Book and shown on the map Victoria 326 (see Fig. 15).

The building of the jetties and the erection of houses in these out-of-the-way places must have been a specially expensive undertaking. Besides these permanent works, which will almost lose their entire value when the islands have been worked out, several lighters and boats had to be provided, and for all this, together with other working plant, the capital sunk in the enterprise amounts to over £10,000.

...extensive deposits of guano have been worked and a large stone shed for sorting in, besides huts and tramlines were erected, but the islands haveing been worked out everything worth taking has been moved to the Pelsaert Group. Only the walls of the buildings remain. What was once a good stone jetty runs a few chains out into fairly deep water. A few Italian fishermen reside here. Low shrubs, wild oats and silver grass and ice plant, indicating soil rich in nitrogen. Plenty of birds.

Nil.

Photographs taken by Saville-Kent in 1894 provide visual information on the types of buildings erected at the Rat Island settlement.

A photograph of 'C. Price Conigrave's party and Italian fishermen on Rat Island–1908' shows a group of people outside a makeshift hut consisting of limestone walls roofed over with sheets of corrugated iron; two exposed lengths of tramline are seen to be supporting the sheets over the wooden doorway.

MA 4252/21

Maps and Plans:

Abrolhos Islands, Victoria 326. Potts, 1993: Sketch plan.

Existing survey:

White, 1993 FB:6.

Distance: from NW corner to SE corner of Hut 5 = 11 m; and to SE corner of Hut 3 = 14.5 m.

SIGNIFICANCE:

Documentary and archival photographic evidence suggests that these foundations were part of one of the guano settlement buildings constructed c. 1884 and used at least until 1904 and possibly later. The remains are historically significant as they demonstrate through physical evidence the location of the original guano settlement, the method of building construction and may contain other material remains which could add to the interpretation of the site.

RECOMMENDATIONS:

Legislative:

REGISTER ON STATE HERITAGE LIST AND/OR INCLUDE IN RAT ISLAND HISTORIC PRECINCT

Conservation:

PRESERVATION

Public Use:

RESTRICTED

Interpretation:

INCLUDE IN INTERPRETIVE BOOKLET/MAP

Other:

THIS SITE WARRANTS FURTHER ARCHAEOLOGICAL INVESTIGATION



Figure 24. Guano miners at work on Rat Island with settlement buildings in the background to the north-east (photo: W. Saville-Kent coll. BL 1786B/13).

Ref Number: 11	Site Number: 1640 HA011	Site Type: 2.0
Site Name:	STONE WALLS	
Location:	Perimeter of Hut 2/2A, north-east area of Rat Island.	
Map Series No.	ABROLHOS	SHEET 1641 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 719 Northing: 208
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Substantial limestone perimeter walls around fishing camp 2/2A. Both south and east walls have been built over old tramline embankments. Construction of walls inconsistent: south section of East wall and east corner of South wall appear to be original; these sections are straighter and of similar construction to stone foundations (1640 HA010). Large coral limestone boulders form the outer sides of the wall, with smaller rubble in-fill; relatively compact and neatly made. Older sections of the wall characterised by darker slabs of coral with some lichen growth. Newer sections of wall are not so compact or neatly made; coral slabs lighter colour. West wall consists of a 'double' rubble wall; an 'inner' wall appears to be part of original wall, while the 'outer' wall consists of banked up pile of rocks. The South wall also has a pile of rocks at the mid section, over the old tramline.	
Assoc Features:	Other stone foundations and buildings. Various artefacts—glass bottles, ceramic sherds (notably remains of a stone bottle marked 'Cuming Smith...Proprietors, Perth), miscellaneous metal—inside the walls, in rubbish dump immediately outside South wall, in bushes along West wall and on surface of internal 'yard'. [See samples: RT 10–36.]	
Integrity:	Moderate; intrusive new sections of wall.	
Public Access:	RESTRICTED	
Threats:	Digging and/or other physical disturbance.	
REFERENCES:		
Documentary:		
Oral:		
<i>Frank Gregor, 1993</i>	Camp 2/2A is one of the "old" camps on Rat Island. In the early 1950s when Frank (aged 13) joined his father crayfishing, there were only 5 camps on Rat Island.	
Pictorial:	MA 4950/2–9	
Maps and Plans:		
Existing survey:	White, 1993, FB:6	
SIGNIFICANCE:	Not fully determined. Possibly an early construction but probably post-dating guano settlement.	
RECOMMENDATIONS:		
Legislative:	PENDING SIGNIFICANCE EVALUATION	
Conservation:	PRESERVATION	
Public Use:	RESTRICTED	
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED	

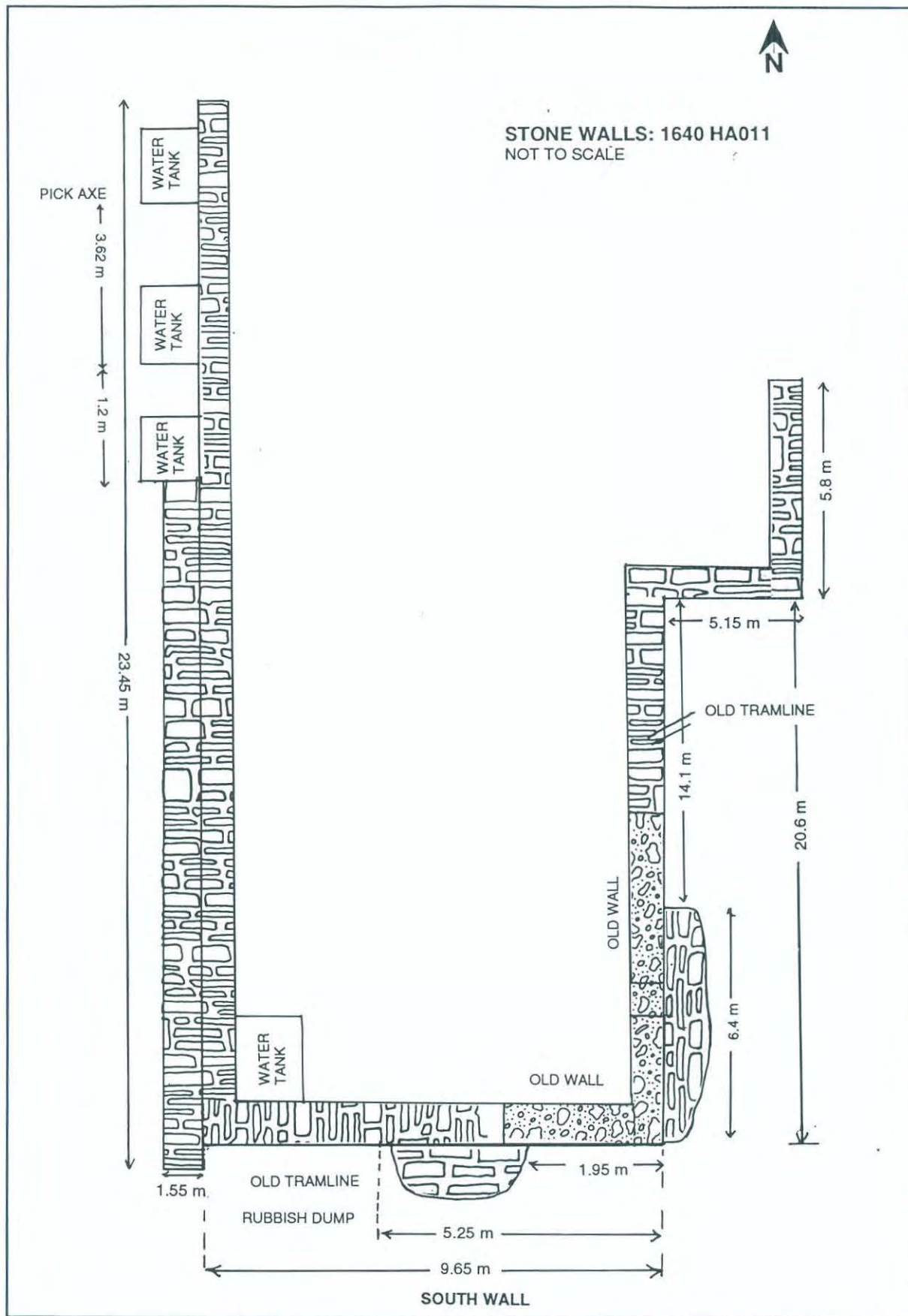


Figure 25. Sketch plan of stone walls around Hut 2/2A, Rat Island (drawing: J. Potts, 1993).



Figure 26. South wall of site 1640 HA011 with remains of tramline embankment in the central foreground (photo: M. Stanbury, 1993).



Figure 27. Detail of mid section of south stone wall 1640 HA011; artefacts located in between boulders (photo: M. Stanbury, 1993).

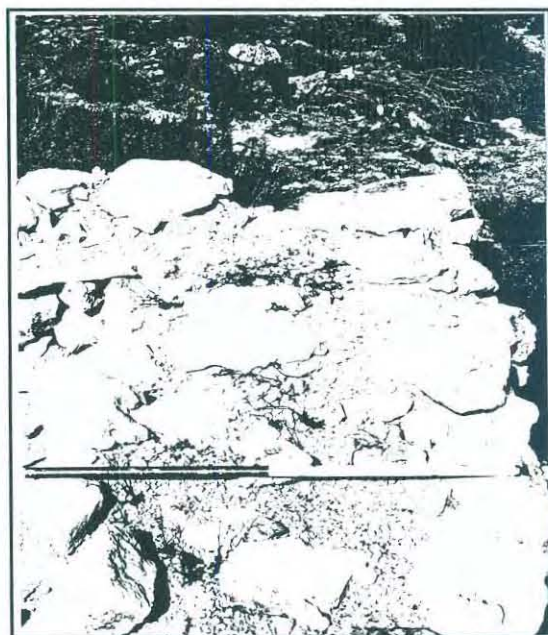


Figure 28. Detail of south-east corner of stone wall 1640 HA011, believed to be an older section (photo: M. Stanbury, 1993).

Ref Number: 12	Site Number: 1640 HA012	Site Type: 2.2
Site Name:	STONE WALLS-RELICS	
Location:	Rat Island, Hut 2/2A, west of stone landing.	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 719 Northing:208
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Sample collection of miscellaneous ceramic, glass, wood and metal artefacts randomly distributed inside, outside and within the fabric of the walls.	
	RT 17-19—In south wall.	
	RT 10-16—Surface in yard	
	RT 20-36—Rubbish dump	
Assoc Features:	Other relics from Rat Island.	
Integrity:	Some complete glass bottles but mainly broken sherds.	
Public Access:	RESTRICTED	
Threats:	Digging and/or other physical disturbance.	
REFERENCES:		
Documentary:		
Oral:		
Pictorial:	1:1 Scale drawings: C. Heine and M. Stanbury, 1993	
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	Not yet determined.	
RECOMMENDATIONS:		
Legislative:		
Conservation:	REGISTER AND CATALOGUE	
Public Use:		
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED	

Ref Number: 13	Site Number: 1640 HA013	Site Type: 2.0
Site Name:	STONE HUT NO. 22B	
Location:	Rat Island, inland from Huts 21A, B and E.	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 722 Northing: 203
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Stone hut consisting of 2 rooms with limestone rubble walls; East wall internally lined with corrugated iron; west side of middle wall has screwed up paper (old magazines, newspapers etc.), fibre and old sacking stuffed into the spaces between the rocks; South and West wall also with paper etc. in rock spaces; West wall lined with timber frames attached to which is a type of paper and fibre cladding. Timber rafters (new jarrah) supported internally by posts and beam rest on top of walls and support corrugated iron gently pitched roof. Door in North wall has a wooden sign marked: 'STONY VILLA, NORM T. GRIGSBY, N° 1 [RAT] ISLAND'. Windows in North and East walls. North wall: length 7.43 m; East wall: length 5.56 m; West wall: length 7.75 m; South wall: length 5.26 m. Height (max) to roof apex: 2.08 m.	
Assoc Features:	Other stone huts; sample papers (1640 HA014); stone landing/jetty (1640 HA008).	
Integrity:	Intact with intrusive elements.	
Public Access:	RESTRICTED	
Threats:	Development.	
REFERENCES:		
Documentary:		
Oral:		
Pictorial:	MA 4252/23-33	
Maps and Plans:	Sketch plans: Stanbury & Potts, 1993.	
Existing survey:		
SIGNIFICANCE:	Not yet established. Appears to be a construction of early date, at least dating to the 1950s.	
RECOMMENDATIONS:		
Legislative:	PENDING EVALUATION	
Conservation:	PRESERVATION	
Public Use:	RESTRICTED	
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED	

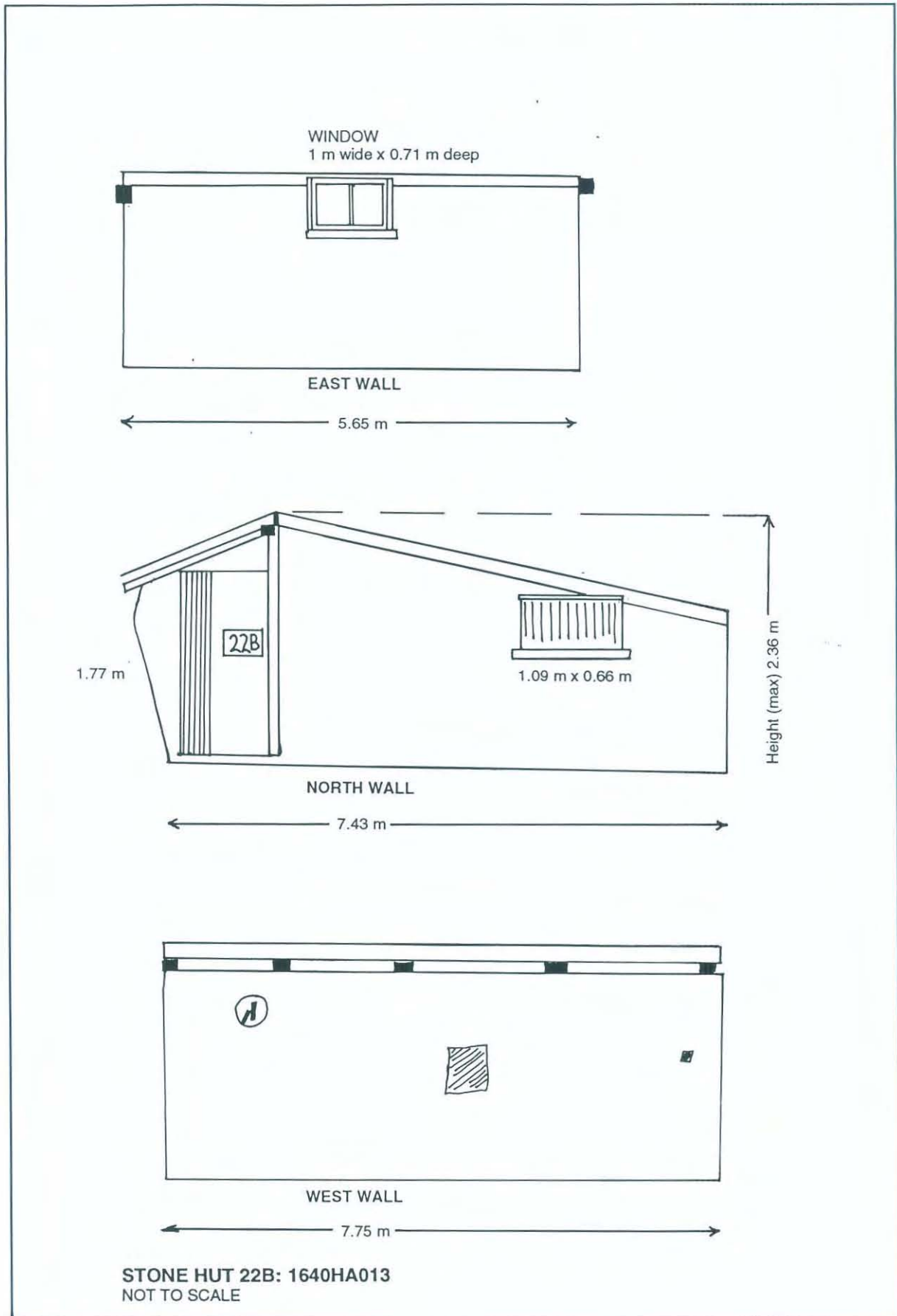


Figure 29. Sketch plan of Stone Hut 22B, Rat Island (drawing: J. Potts, 1993).

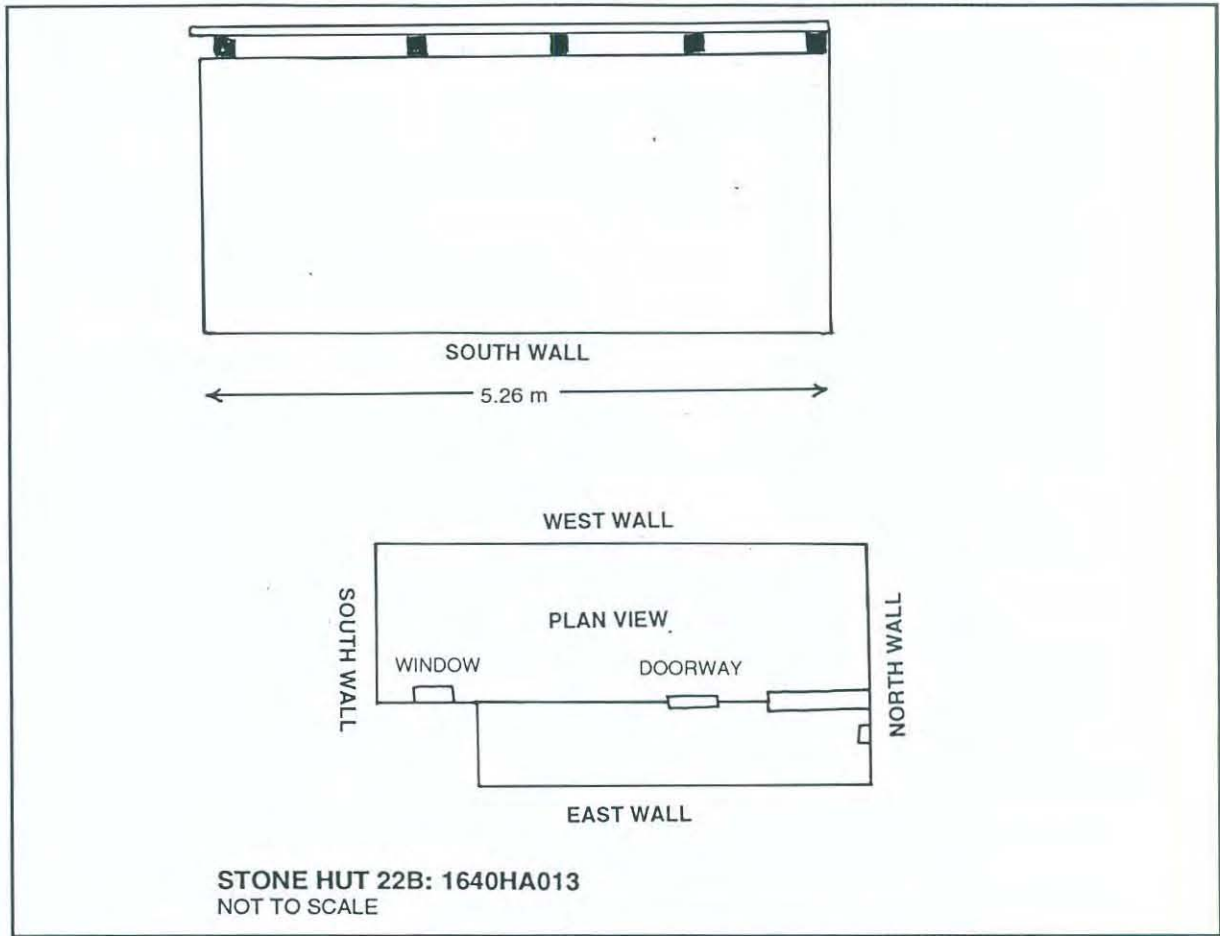


Figure 30. Sketch plan of Stone Hut 22B, Rat Island (drawing: J. Potts, 1993).



Figure 31. Stone Hut 22B, Rat Island (photo: M. Stanbury, 1993).

Ref Number: 15	Site Number: 1640 HA015	Site Type: 2.1
Site Name:	HISTORIC SETTLEMENT AREA	
Location:	North-east area of Rat Island, in vicinity of stone landing.	
Map Series No.:	ABROLHOS SHEET 1641 (EDITION 1) SERIES R611	
Zone:	49J	
AMG Coordinates:	GJ	Easting: 720 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Area in the north-east sector of Rat Island extending south to north from approximately fishing camp No. 8 up to and including camps 6, 7, 5, 3, 4 and 1, plus all subsidiary camp buildings—generator sheds etc. The main pathway passing between camps 8, 7 and 6, exhibits a relatively dense surface scatter of occupation material—black, green, brown and blue glass sherds; ceramic sherds, miscellaneous copper alloy and iron sherds; the density diminishes to the south. Similar scatters of material in front of Huts 5, 3 and 4.	
Assoc Features:	Other artefact deposits.	
Integrity:	Scattered surface deposits of artefact material.	
Public Access:	RESTRICTED	
Threats:	Digging and/or development.	
REFERENCES:		
Documentary:		
<i>Campbell, A.J., WA 27.3.1890</i>	Rat Island approximately contains 350 acres. Deducting say 50 acres for the guano station and cleared ground and taking one bird for every square yard (there could not be less ...) the 300 acres would give 1,452,000 birds upon one island alone.	
<i>Wells, 1897b:2</i>	See 1640 HA010	
Oral:		
Pictorial:		
<i>Saville-Kent (coll.), 1894:</i>		
<i>BL 1786B/12-14, 20, 37</i>	Early photographs show a group of at least 7 buildings in this locality which accords with Wells' (1897) plan of the guano settlement. A small shed or 'dunny' situated on the edge of the island is the southernmost building. Some distance to the north is a large rectangular corrugated iron shed with ridged roof and skillion on the east side with large opening facing the stone landing. Two water tanks are situated adjacent to the south wall and on the north wall; a small window is set high up on the west wall. The next building to the north is oriented in a NE-SW direction with the main entrance facing north-east (to the stone landing); the roof is ridged and a water tank is located on the south-east wall. A smaller building with ridged roof and a tall chimney is situated adjacent to the south-west wall. A group of at least 4 houses are located further to the north. Photo 1786B/37 indicates that some of the corrugated iron buildings at the end of the stone landing are protected by exterior limestone rubble walls, almost to the height of the roof; the houses to the west do not appear to have the same protection. Photographs depicting the buildings also show the guano miners (Europeans and Malays) at work to the south-west of the settlement on Rat Island. The method of collecting guano as described by Helms (1902:35-36) is clearly depicted in these images. A photograph dated 'Sept' [18]94' (BL 1786B/16) shows a group of 'Employees' seated outside one of the sheds on Rat Island. Photograph BL 2908B/162 taken in 1908 shows a group of Italian fishermen and C. Price Conigrave's party outside a stone hut on Rat Island. Sheets of corrugated iron supported by lengths of tramline have been placed over the rubble walls and held down with large boulders.	
Maps and Plans:	Wells, 1897 FB. 23:4. Abrolhos Islands, Victoria 326.	

Existing survey:

SIGNIFICANCE:

Documentary and pictorial sources indicate that a large area in the north-east part of Rat Island was occupied more or less continuously from 1883 to 1904 by groups of up to 40 people; and thereafter intermittently. Surface scatters of artefacts along pathways and around existing buildings is evidence of occupational debris from successive phases of settlement and could reflect the different cultural backgrounds of communities known to have lived on the island.

RECOMMENDATIONS:

Legislative:

REGISTER AS PART OF RAT ISLAND HISTORIC PRECINCT

Conservation:

PRESERVATION

Public Use:

RESTRICTED

Interpretation:

THIS SITE SHOULD BE INCLUDED IN AN INTERPRETIVE BOOK-LET/PAMPHLET/MAP

Other:

ARCHAEOLOGICAL SURVEY AND SURFACE ANALYSIS



Figure 33. Guano workers at work on Rat Island c. 1894: note small shed of 'dunny' with mast of ship behind (photo: W. Saville-Kent coll. BL 1786B/14).

Ref Number: 16	Site Number: 1640 HA016	Site Type: 2.2
Site Name:	HUT 3—RELICS	
Location:	North-east area of Rat Island, east side of Hut 3.	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 721 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Printed earthenware sherd (RT 46)and button (RT 75).	

Assoc Features: Other artefact deposits.
Integrity: Broken sherd; complete button.

Public Access: RESTRICTED
Threats: Nil.

REFERENCES:
Documentary:

Oral:

Pictorial: 1:1 drawings: C. Heine, 1993 (see Appendix 3).

Maps and Plans:

Existing survey:

SIGNIFICANCE: Not yet determined.

RECOMMENDATIONS:

Legislative:
Conservation: REGISTER AND CATALOGUE

Public Use:
Interpretation:

Other:

Ref Number: 18	Site Number: 1640 HA018	Site Type: 2.2
Site Name:	HUT 5 - RELICS	
Location:	North-east point of Rat Island, vicinity of Hut 5 pathway.	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 721 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Sherd of saltglaze stoneware from Rheinisch jug (RT 1), printed earthenware sherd (RT 3), button (RT 2).	
Assoc Features:	Other artefacts.	
Integrity:	Broken sherds and complete objects; corroded iron nails.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:		
Oral:		
Pictorial:		
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	Not yet determined. The most significant finding is the Rheinisch stoneware sherd which is compatible with a broken jug found on Middle Island and which is associated with the Dutch shipwreck <i>Zeewijk</i> (1727). [The fit is still to be confirmed as the jug is on display.] Broadhurst located the <i>Zeewijk</i> survivors' camps on Gun Island and may have brought material back to the headquarters on Rat Island.	
RECOMMENDATIONS:		
Legislative:		
Conservation:	REGISTER AND CATALOGUE	
Public Use:		
Interpretation:		
Other:		

Ref Number: 19 **Site Number:** 1640 HA019 **Site Type:** 2.2
Site Name: **HUT 6C—RELICS**
Location: **Rat Island**

Map Series No. **ABROLHOS SHEET 1640 (EDITION 1) SERIES R611**
Zone: **49J**
AMG Coordinates: **GJ Easting: 720 Northing: 208**
Council: **MINISTER FOR FISHERIES**
Tenure: **A CLASS RESERVE**
DESCRIPTION: **Sherd of coarse Asian porcelain bowl or dish (RT 47).**

Assoc Features:
Integrity: **Broken.**

Public Access: **RESTRICTED**
Threats:

REFERENCES:
Documentary:

Oral:

Pictorial:

Maps and Plans:

Existing survey:

SIGNIFICANCE: **Not fully determined. Could be associated with the Asian contract workers employed by Broadhurst in the guano mining industry.**

RECOMMENDATIONS:

Legislative:
Conservation: **REGISTER AND CATALOGUE**
Public Use:
Interpretation:

Other:

Ref Number: 20	Site Number: 1640 HA020	Site Type: 3.0
Site Name:	WELL	
Location:	North-east point of Rat Island, between Huts 7, 6 and 2A.	
Map Series No.:	ABROLHOS SHEET 1640 (EDITION 1) SERIES R611	
Zone:	49J	
AMG Coordinates:	GJ	Easting: 719- Northing: 208
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Deep well in limestone bedrock—appears artificially made. Two large slabs of limestone nearby and several smaller pieces, now being used to make a 'wall' to support a partial cover of corrugated iron on timber frame. [The large boulders are bigger than the average loose rocks and hence could have been removed to create the well.] Walls painted blue and green as if used for children's paddling pool. Intrusive rubbish—carpet, rubber mats etc. Depth 620 mm on highest (north) side; diameter 1.77 m (N-S).	
Assoc Features:	Large limestone boulders to north and west.	
Integrity:	Intrusive rubbish.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:		
<i>Broadhurst to CCL</i>	In negotiating the terms of his lease for the Houtman Abrolhos Broadhurst pointed out that he 'must sink wells through solid rock on both islands (Rat and Pelsaert)' which would be expensive, although water seemed certain.	
<i>27.12.1882 (CSO 82/2044)</i>	No drinking water. Supply from rainwater or brought by ships and lighters from Champion Bay.	
<i>1441/50 BL</i>		
<i>I. 2.5.1890</i>		
<i>Helms, 1902:37</i>	Since insufficient rain water can be gathered from roofs of the buildings to provide the workmen [30 hands employed 8 hours per day] with it for more than a few months after the rainy season is over, a small schooner has to be employed during the dry swson for carrying water from Champion Bay—usually weekly.	
<i>Dakin, 1919:139,164.</i>	One or two wells occur on the larger islands...Rat Island...but the water is poor and brackish and often contains too much decaying organic matter to be pleasant.	
	On Rat Island:	
	Numerous holes due to subaërial denudation exist and two or three of these may be termed wells—they probably contain fresh water through out the year. It is neither satisfactory, nor plentiful enough, for the few guano workers at present on the islands [in 1917], who have all their supplies brought in tanks from the mainland.	
Oral:		
Pictorial:		
Maps and Plans:		
Existing survey:	White, 1993, FB:6	
	Magnetic bearings from centre of well to:	
	• NMF = 185°	
	• SE corner of 2A wall = 220°	
	• NW corner of Hut 6 = 029°	
	Distance: 25 m from middle of well to north end of stone wall (1640 A011); 22.4 m to SE corner of stone generator shed.	
SIGNIFICANCE:	The well is located in an area known to have comprised the guano settlement and appears to have been man-made. It is historically significant as it demonstrates through physical evidence the constraints imposed on communities trying to live and work on remote offshore islands where fresh water supplies are limited and/or non-existent.	

RECOMMENDATIONS:

Legislative:

Conservation:

Public Use:

Interpretation:

Other:

REGISTER AS PART OF RAT ISLAND HISTORIC PRECINCT
PRESERVATION

RESTRICTED

INCLUDE IN INTERPRETIVE BOOKLET/PAMPHLET/MAP

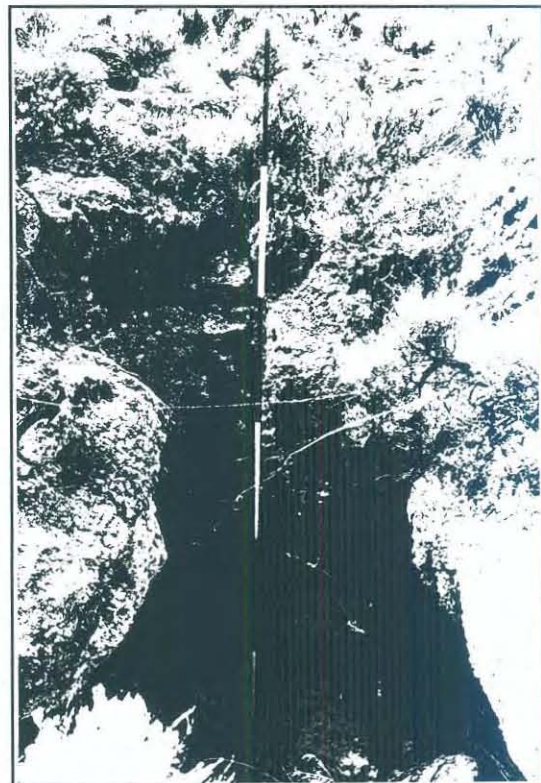


Figure 34. Deeprockhole ('Big' well), Rat Island (photo: M. Stanbury, 1993).

Ref Number: 21	Site Number: 1640 HA021	Site Type: 3.0
Site Name:	DEEP ROCK HOLE	
Location:	Rat Island, north-east of Control Point ME Magnetic bearing from mid point south side to: <ul style="list-style-type: none"> • NMF = 035° • southernmost toilet on east coast = 145° • Control Point north end of Airstrip = 230° • 'Orbit Inn' = 180° 	
Map Series No.:	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 718 Northing: 201
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Deep, natural rock hole. Depth: 2.5 m. Filled with small rocks, piece of timber and dead plants.	
Assoc Features:	Rock hole partially covered with corrugated iron about 50 m north of well , bearing 015°magnetic to Wells' cairn (MA 4251/32). Fresh coprolite (RT 80)—possibly from feral cat—found on rock at surface of well; brown and feathery. Similar to white droppings seen north of the well (see MA 4251/30). Pale green flat glass sherd with relief-moulded diamond pattern (RT 45)—probably from square bottle with rounded corners—found north 015° of well and some modern brown glass sherds.	
Integrity:	Natural feature.	
Public Access:	RESTRICTED	
Threats:		
REFERENCES:		
Documentary:	See 1640 HA0020	
Oral:		
Pictorial:	MA 4252/7-9	
Maps and Plans:		
Existing survey:	White, 1993, FB:3 'Big well' Magnetic bearing from range pole on NE corner to <ul style="list-style-type: none"> • north airstrip stake = 230° • NMF = 035° • southernmost toilet = 150° 	
SIGNIFICANCE:	Natural feature which would have provided a source of water for the guano settlement during winter months; horses and livestock kept on the island also needed watering.	
RECOMMENDATIONS:		
Legislative:		
Conservation:		
Public Use:		
Interpretation:	INCLUDE IN INTERPRETIVE BOOKLET/PAMPHLET/MAP	
Other:		

Ref Number: 22	Site Number: 1640 HA022	Site Type: 3.0
Site Name:	ROCK HOLE	
Location:	Rat Island, east coast, 7.5 m north and 3 m west of Hut XB—between path and railway embankment.	
Map Series No.:	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 720 Northing: 200
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Hole in limestone bedrock, filled in with small stones, post holding electricity cable in hole. Diameter: c..2 m.	
Assoc Features:	Other rock holes.	
Integrity:	Intrusive fittings.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:	See 1640 HA0020.	
Oral:		
Pictorial:		
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	Natural feature. Possibly used as a source of water by guano miners.	
RECOMMENDATIONS:		
Legislative:		
Conservation:		
Public Use:		
Interpretation:		
Other:		

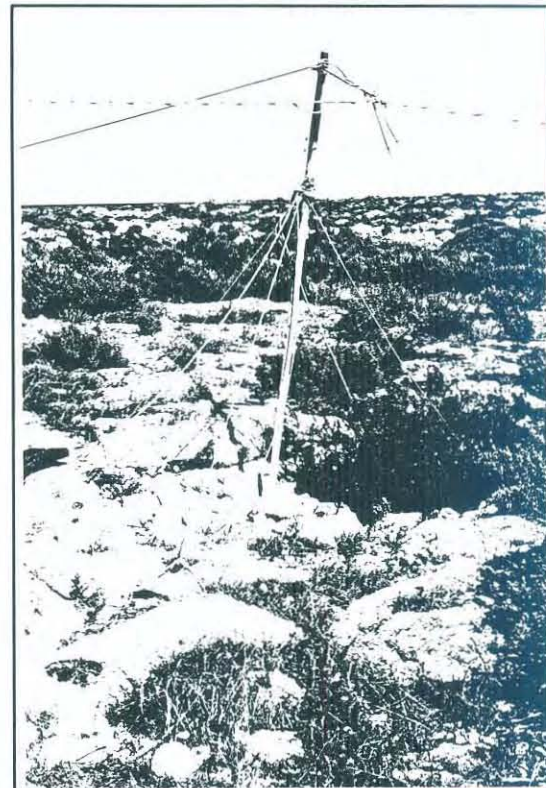


Figure 35. Rock hole (1640 HA022), Rat Island (photo: M. Stanbury, 1993).

Ref Number: 23	Site Number: 1640 HA023	Site Type: 3.1
Site Name:	WELLS' CAIRN	
Location:	Rat Island, central area, to north of NMF.	
Map Series No.	Abrolhos sheet 1640 (edition 1) series R611	
Zone:	49J	
AMG Coordinates:	GJ	Easting: 719 Northing: 204
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Limestone cairn. Height c. 2m	
Assoc Features:	Other survey cairns in Houtman Abrolhos.	
Integrity:	Intact.	
Public Access:	RESTRICTED	
Threats:	Physical disturbance.	
REFERENCES:		
Documentary:		
<i>Stokes, 1846:147.</i>	'Observation spot on Rat Island was on the north-east end, which we placed in lat. 32° 42' 50"S and long. 1° 57' 50" West of Swan River.'	
<i>Exploration Journals, Thomson, W.P.C., 24.8.1867 Cutter Albert</i>	—Notes "cairn" on Middle Group, low island on the NE end of which was the cairn—the Master who knew the island had not noted a cairn there before. Only 2 cairns on the Abrolhos—one called 'Goss' Monument' on the Northern Group, the other called the Post Office on the Southern Group. They were unable to land in consequence of heavy weather.	
Oral:		
Pictorial:		
Maps and Plans:	Wells, 1897, FB 23. Victoria 326.	
Existing survey:	White, 1993, FB:3 Magnetic bearings from centre of helipad (central PVC pipe 'bullseye') to	
	<ul style="list-style-type: none"> • cairn = 310° • NMF = 280° • deep rock hole = 305° 	
SIGNIFICANCE:	The cairn is historically significant as it demonstrates through physical evidence the work of 19th century surveyors in the Houtman Abrolhos, and in this instance the survey of the guano deposits on Rat Island.	
RECOMMENDATIONS:		
Legislative:	REGISTER ON STATE HERITAGE LIST	
Conservation:	PRESERVATION	
Public Use:	RESTRICTED	
Interpretation:	INCLUDE IN INTERPRETTIVE BOOKLET/PAMPHLET/MAP	
Other:	RE-PHOTOGRAPH	

Ref Number: 24	Site Number: 1640 HA024	Site Type: 3.3
Site Name:	GRAVE—GUISEPPE BENVENUTO	
Location:	Rat Island, south-west coast, west of airstrip, close to cliff edge.	
Map Series No.	ABROLHOS	SHEET 1641 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 717 - Northing: 199
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Grave made of wooden surround overlain with coral, white marble headstone reads: IN MEMOR... GUISEPPE BENVENUTO DI ANNI 38 NAUFRAGATO IL GIORNO 22/2/1921 IL CLUB GIOVANE ITALIA ERESSE	
	Headstone: 0.630 x 0.270 m Grave: length: 2.35 m, breadth 1.35 m	
Assoc Features:	Other graves.	
Integrity:	Headstone broken, otherwise intact.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:	Nil to date.	
Oral:		
Pictorial:		
Maps and Plans:		
Existing survey:	White, 1993, FB:2	
SIGNIFICANCE:	Not yet established.	
RECOMMENDATIONS:		
Legislative:		
Conservation:		
Public Use:		
Interpretation:		
Other:	RE-PHOTOGRAPH	

Ref Number: 25	Site Number: 1640 HA025	Site Type: 3.3
Site Name:	GRAVE—UNIDENTIFIED	
Location:	Rat Island, north-west promontory, close to eagle's nest.	
Map Series No.	ABROLHOS	SHEET 1641 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 715 Northing: 208
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Coral boulders demarcating an area 2.4 m x 1.5 m; corroded Star Picket on surface; no sign of headstone. Surrounded by dense scrub. Eagle's nest immediately to north.	
Assoc Features:	Other graves.	
Integrity:	Intact.	
Public Access:	RESTRICTED	
Threats:	Physical disturbance.	
REFERENCES:		
Documentary:	Nil to date.	
Oral:		
Pictorial:	MA 4950/10	
Maps and Plans:		
Existing survey:	White, 1993, FB: 7 Distance: from centre of grave to CP Bob = 6.75 m.	
SIGNIFICANCE:	Not yet established.	
RECOMMENDATIONS:		
Legislative:		
Conservation:		
Public Use:		
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED	

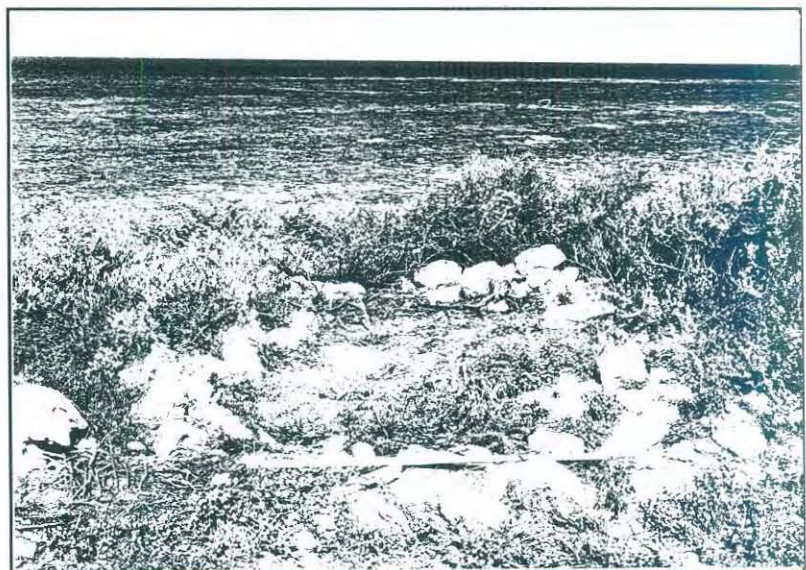


Figure 36. Unidentified grave ?, Rat Island (photo: M. Stanbury, 1993).

Ref Number: 26
Site Name:
Location:

Site Number: 1640 HA026 **Site Type:** 5.0
WRECK
Rat Island, north beach.

Map Series No.
Zone:
AMG Coordinates:
Council:
Tenure:
DESCRIPTION:

ABROLHOS SHEET 1640 (EDITION 1) SERIES R611
49J
GJ Easting: Northing:
MINISTER FOR FISHERIES
A CLASS RESERVE
Fishing boat marked LFB 327; 3 cyl. diesel motor. Length overall: 10 m;
beam c. 2.8 m; base of keel to rudder post 1.8 m.

Assoc Features:
Integrity:

Public Access:
Threats:

RESTRICTED
Further corrosion and deterioration.

REFERENCES:
Documentary:

Oral:

Pictorial:

MA4950/11-18.

Maps and Plans:

Existing survey:

SIGNIFICANCE:

Not yet established.

RECOMMENDATIONS:
Legislative:

REFERRED TO MARITIME ARCHAEOLOGY DEPARTMENT FOR
ASSESSMENT

Conservation:
Public Use:
Interpretation:

Other:

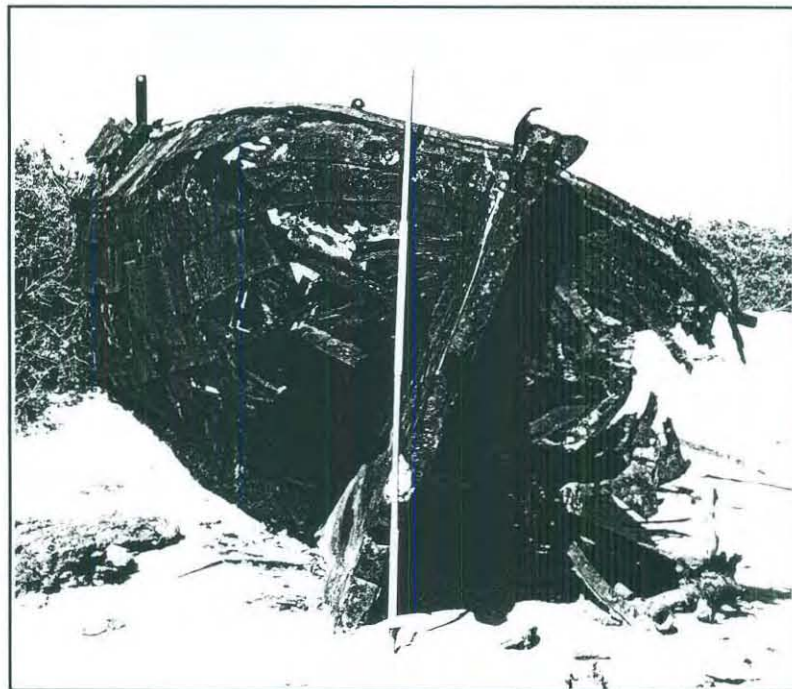


Figure 37. Wreck of fishing boat, Rat Island (photo: M. Stanbury, 1993).

Ref Number: 27	Site Number: 1640 HA034	Site Type: 4.0
Site Name:	SKELETON—? CAT	
Location:		
Map Series No.	ABROLHOS SHEET 1640 (EDITION 1) SERIES R611	
Zone:	49J	
AMG Coordinates:	GJ	Easting: 719 Northing: 209
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Skeleton of cat ?	
Assoc Features:	Coprolites.	
Integrity:	Intact.	
Public Access:	RESTRICTED	
Threats:	Deterioration.	
REFERENCES:		
Documentary:		
<i>Helms, 1902:52</i>	Helms noted that rats were so common on Rat Island at the time of collecting guano that they would run over the table when men were having their meals. Provisions had to be kept in iron tanks.	
<i>Dakin, 1919:138</i>	...rats became a plague on Rat Island and cats were introduced to keep down the pest. The rats no longer exist, but a few cats occur in a wild state and probably have a very happy time during the nesting season of the terns.	
<i>Dakin, 1919:169</i>	...the cat which was introduced by the guano workers to keep down the rats.	
Oral:		
Pictorial:	RIAS 69–72 (Maritime Archaeology colour collection).	
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	Physical evidence of intrusive fauna introduced by guano miners to Rat Island in the 19th century.	
RECOMMENDATIONS:		
Legislative:		
Conservation:		
Public Use:		
Interpretation:		
Other:	OBTAIN SPECIMEN FOR PRESERVATION AND RESEARCH	

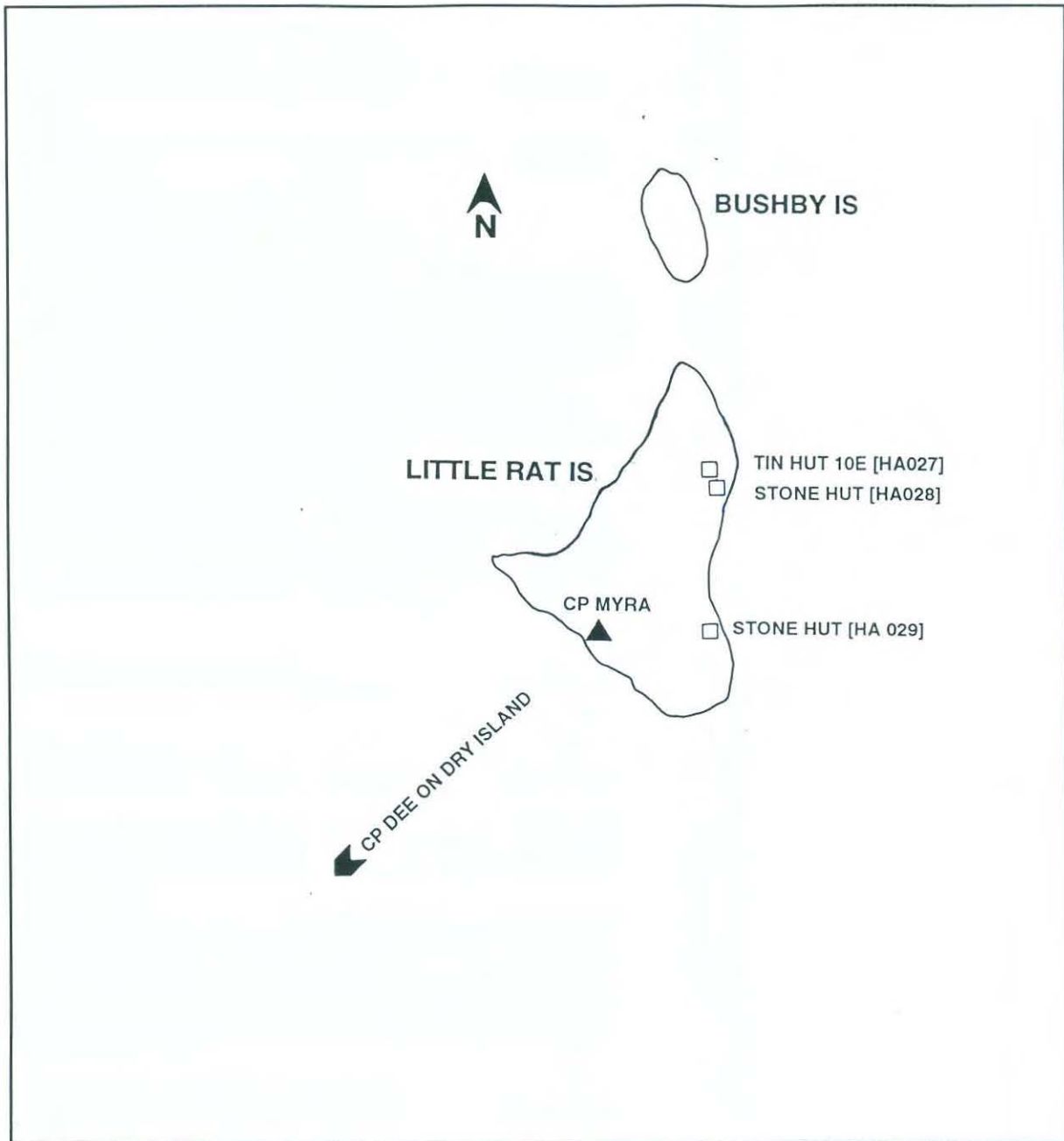


Figure 38. Little Rat Island: site location map.

Ref Number: 28	Site Number: 1640 HA027	Site Type: 2.0
Site Name:	HUT NO. 10E	
Location:	Little Rat Island, north of stone shed 1640 HA028.	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 722 Northing: 191
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Timber and iron shed. Jarrah and pine frame; corrugated asbestos roof fastened with standard roofing nails; walls made of sheets of corrugated iron fastened to frame with bullet head nails. Inner part of roof lined with canvas type material over pine frame. Door and small window on North wall; small windows on East and South walls.	
	Length: 3.81 m; width 3.0 m; height (max): 2.2 m.	
Assoc Features:	Other stone buildings.	
Integrity:	Intact.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:	Nil to date.	
Oral:		
Pictorial:	MA 4215/1-6; 4252/15-19.	
Maps and Plans:		
Existing survey:	Photo identification: Jetty No. 8 from north end of Little Rat; large 'community house' inland.	
SIGNIFICANCE:	Not yet established.	
RECOMMENDATIONS:		
Legislative:	PENDING EVALUATION	
Conservation:		
Public Use:		
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED	

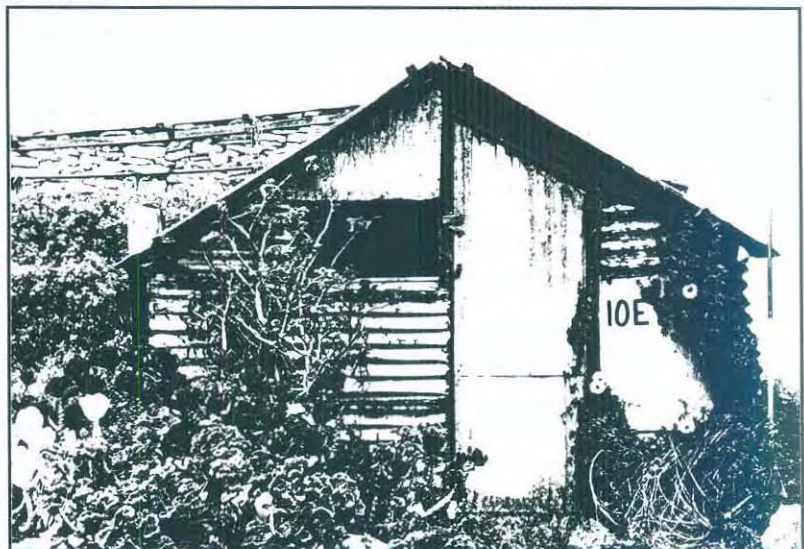


Figure 39. Hut 10E, Little Rat Island (photo: M. Stanbury, 1993).

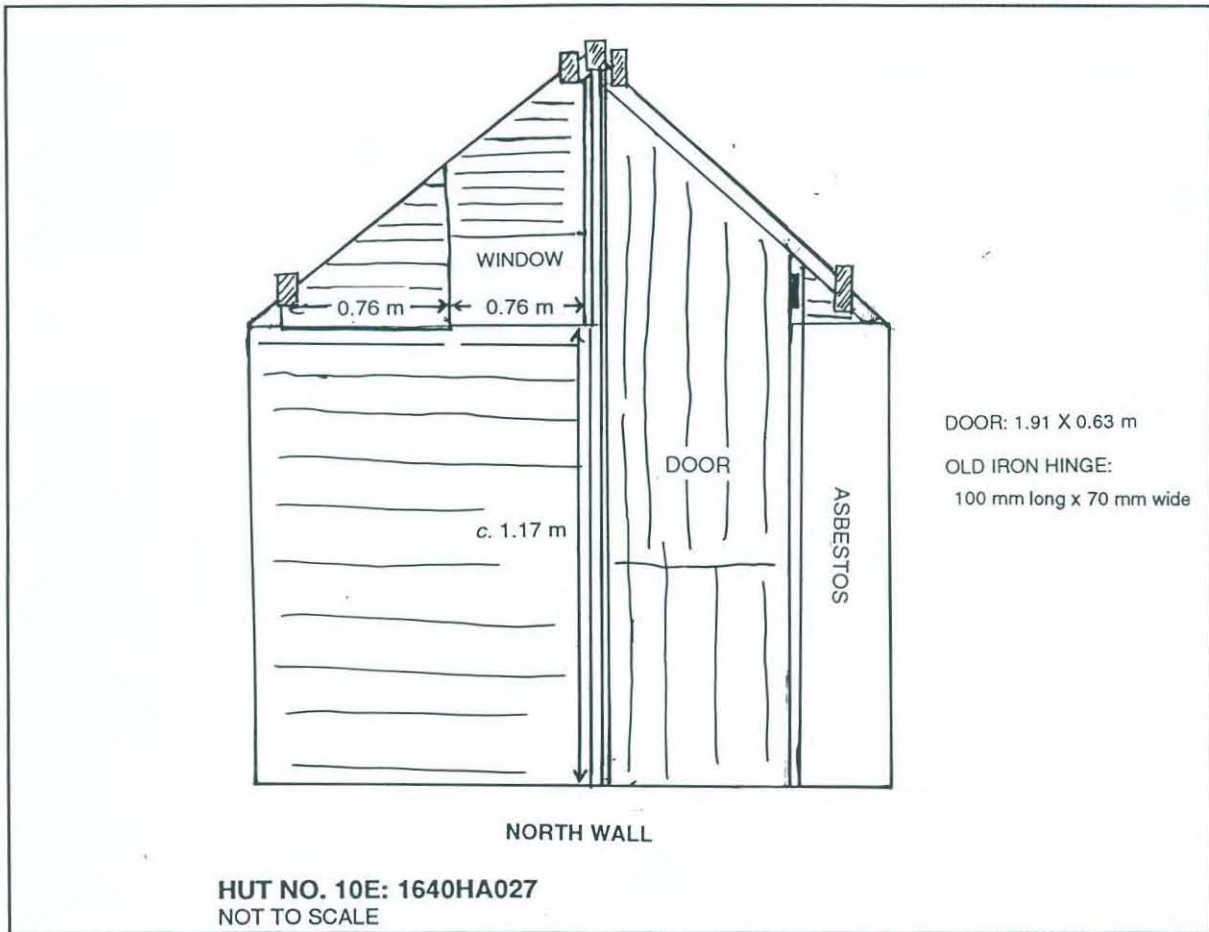


Figure 40. Sketch plan of North wall of Hut 10E, Little Rat Island (drawing: J. Potts, 1993).

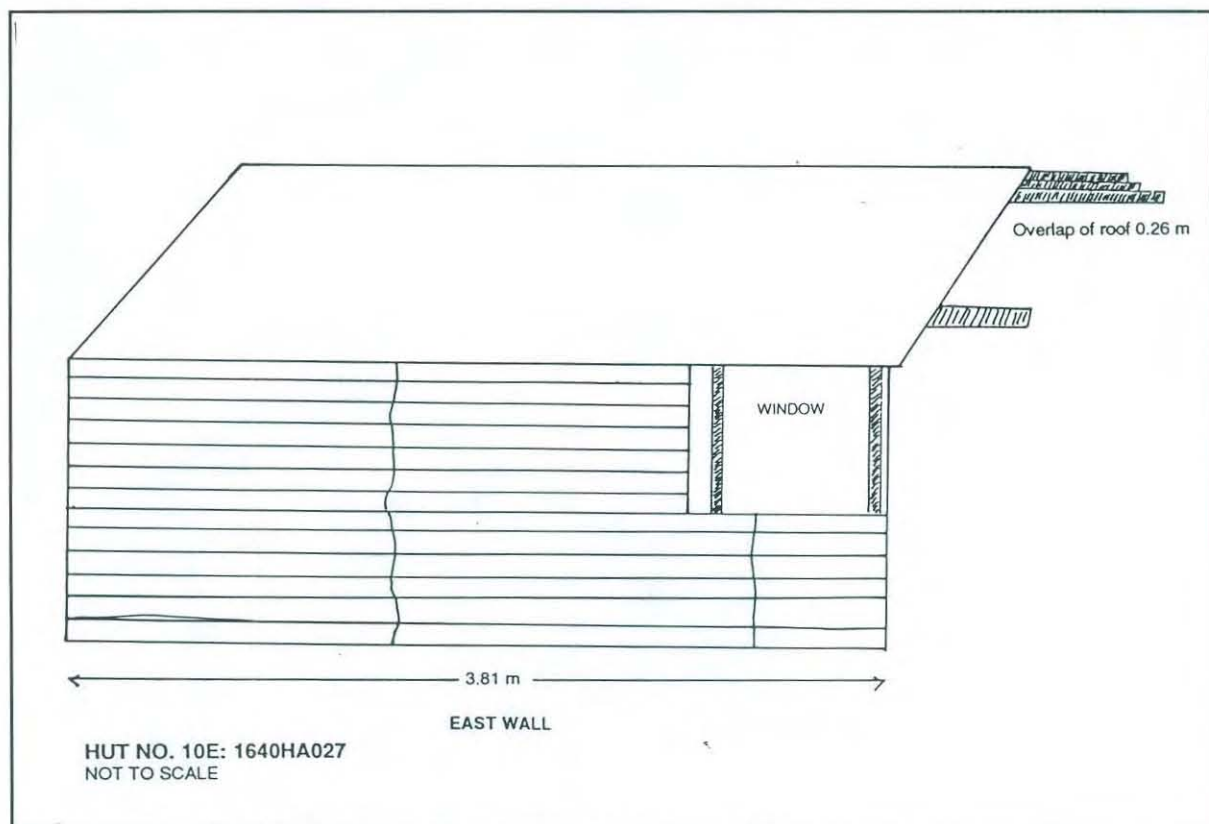


Figure 41. Sketch plan of East wall of Hut 10E, Little Rat Island (drawing: J. Potts, 1993).

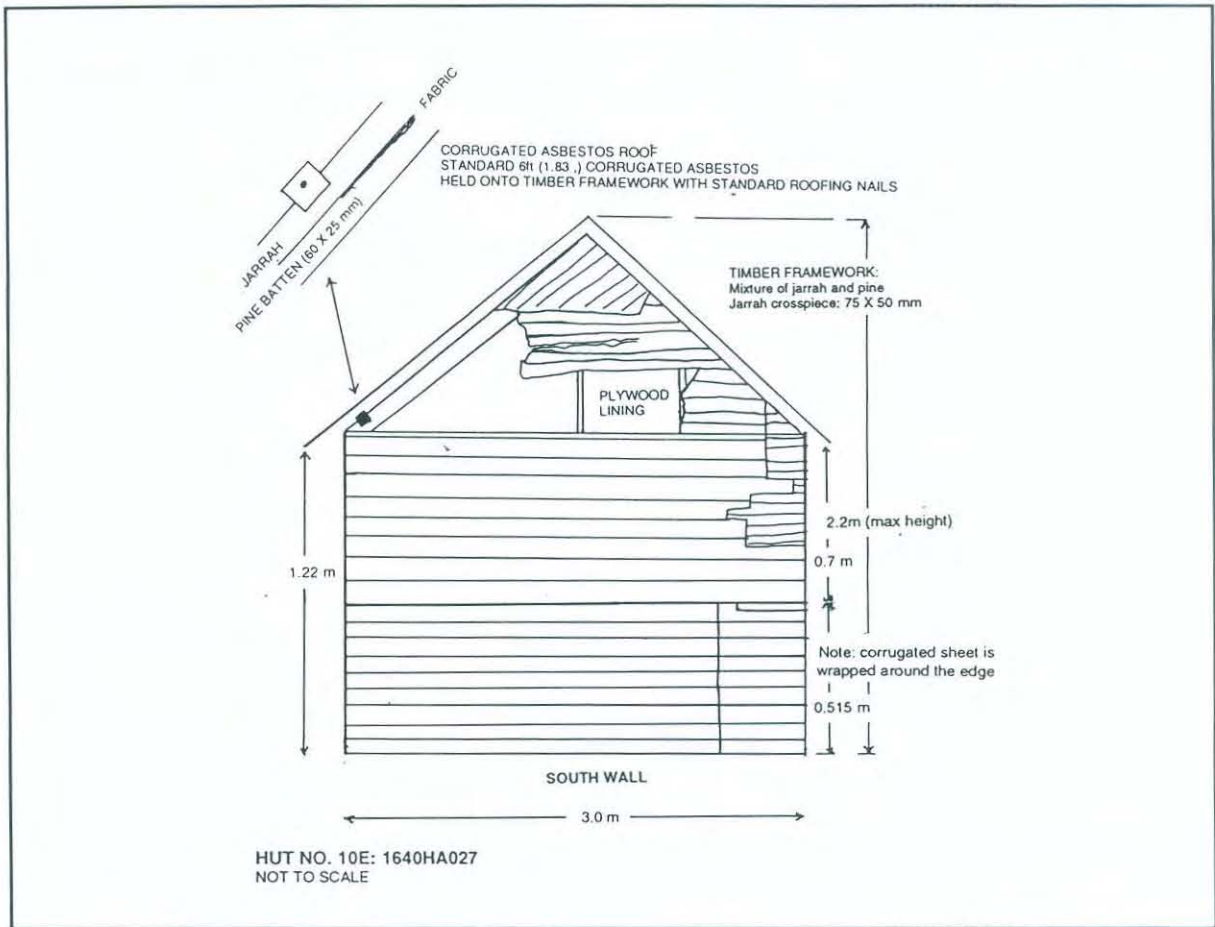


Figure 42. Sketch plan of South wall of Hut 10E, Little Rat Island (drawing: J. Potts, 1993).

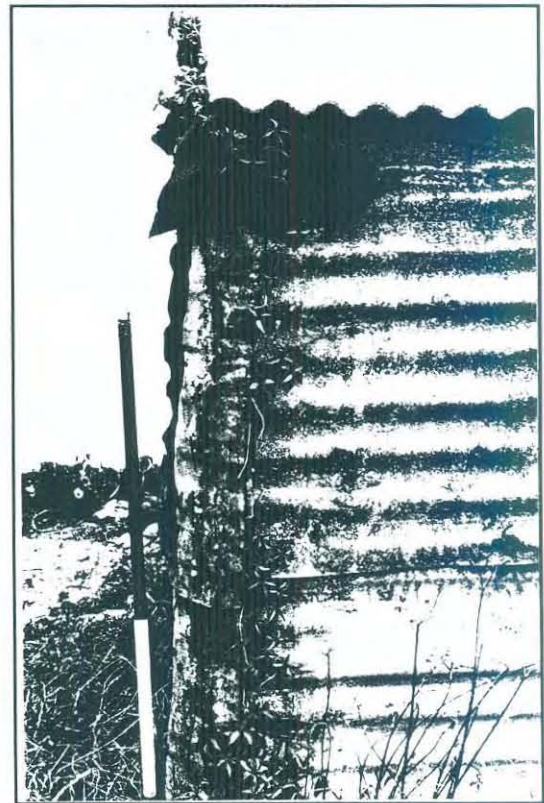


Figure 43. Detail of south-east corner of Hut 10E, Little Rat Island (photo: M. Stanbury, 1993).

Ref Number: 29	Site Number: 1640 HA028	Site Type: 2.0
Site Name:	STONE HUT ? NO	
Location:	Little Rat Island, south of Hut10E (1640 HA027).	
Map Series No.	ABROLHOS	SHEET 1641 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 722 Northing: 191
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	<p>Remains of substantial size limestone rubble hut consisting of 4 rooms. North part of hut consists of north entrance leading to two interconnected rooms; internal limestone rubble wall has been mortarerd with shell grit mortar; internal wall between east room north and east room south has been boarded up with timber and corrugated iron; east wall north has small timber framed window. Timber rafters resting on limestone walls support a corrugated iron roof over the two north rooms; roof held down with large boulders. Internally lined with corrugated iron in places.</p> <p>South part of hut has collapsed walls on east and west side; window in dividing wall between two south rooms; entrance way in east wall.</p> <p>Dimensions as shown in sketch plans. Overall length (N-S): 9.72 m; width (max): 5.91 m; height (max): 2.42 m.</p>	
Assoc Features:	Other stone buildings. Old craypots (1640 HA031) and iron stove (1640 HA032).	
Integrity:	Partially collapsed.	
Public Access:	RESTRICTED	
Threats:	Further deterioration.	
REFERENCES:		
Documentary:	Nil to date.	
Oral:	Nil to date.	
Pictorial:	MA 4251/1; MA 4252/10-14	
Maps and Plans:	Sketch plans: J. Potts & M. Stanbury, 1993	
Existing survey:		
SIGNIFICANCE:	Not yet established.	
RECOMMENDATIONS:		
Legislative:	PENDING EVALUATION	
Conservation:	PRESERVATION	
Public Use:		
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED	

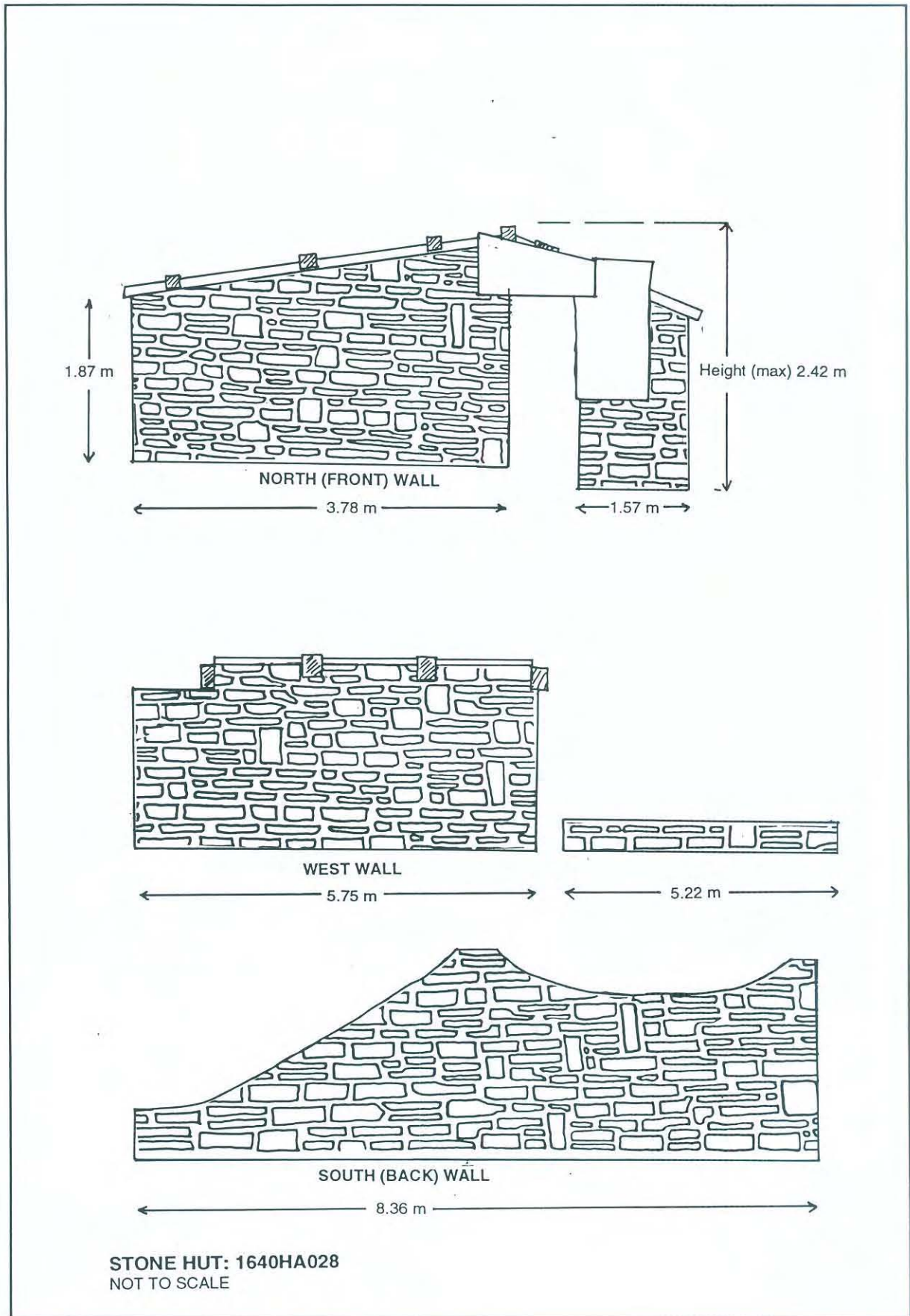


Figure 44. Sketch plan of stone hut (1640 HA028), Little Rat Island (drawing: J. Pots, 1993).

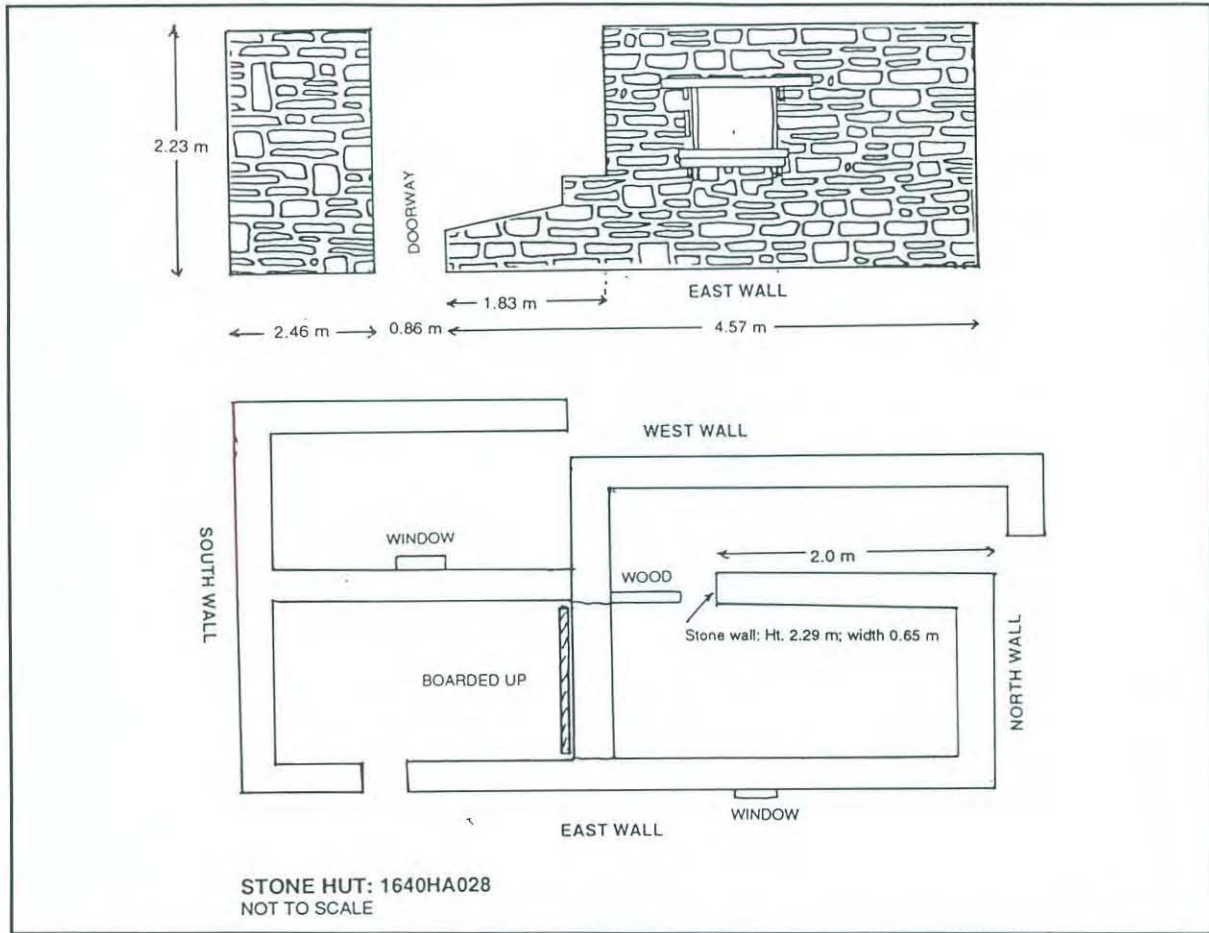


Figure 45. Sketch plan of stone hut (1640 HA028), Little Rat Island (drawing: J. Potts, 1993).

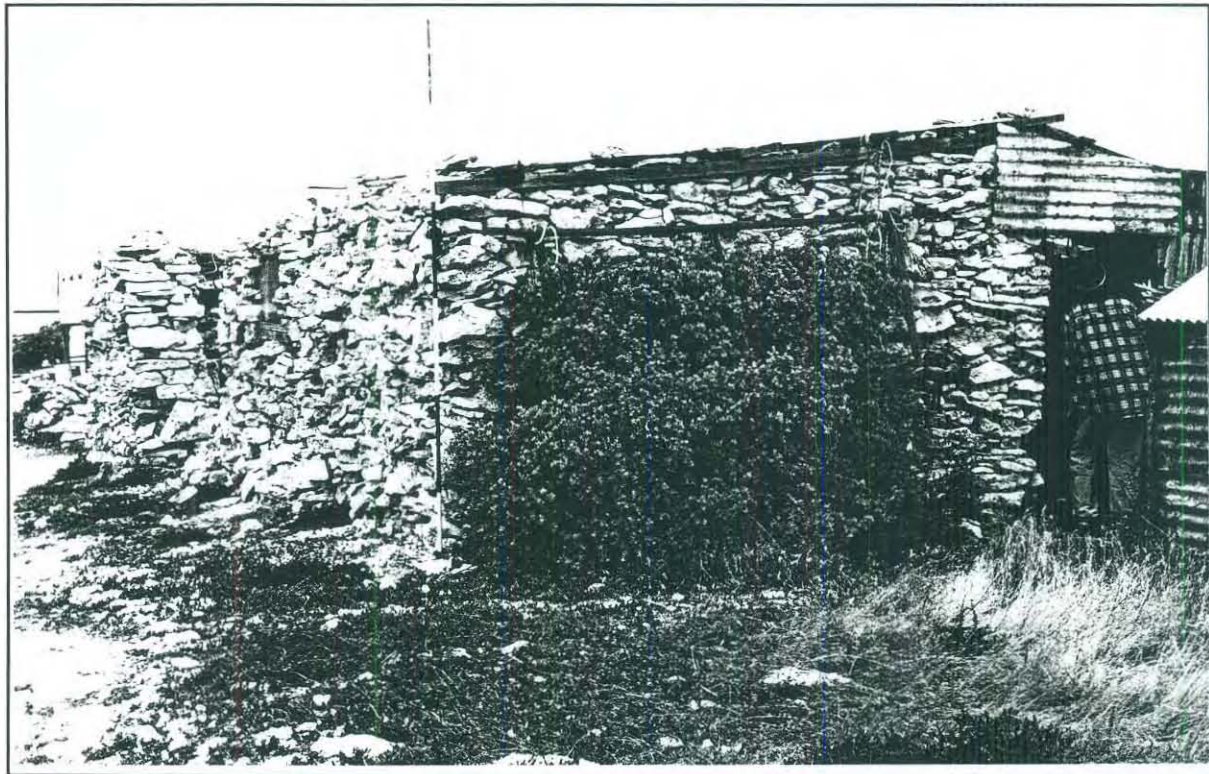


Figure 46. Stone hut (1640 HA028, Little Rat Island (photo: M. Stanbury, 1993).

Ref Number: 30	Site Number: 1640 HA029	Site Type: 2.0
Site Name:	STONE HUT NO. 14C (21D)	
Location:	South-east coast of Little Rat Island, north of Hut 15, jetty No. 4 from south end of island (3rd one with T-piece).	
Map Series No.:	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 722 Northing: 188
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Intact rectangular limestone rubble hut; internal timber frame supporting corrugated iron roof; roof held down with large limestone boulders. Length (N-S): 7.2 m; width (E-W): 4.3 m; height of walls: 1.53 m; height to apex of roof 2.26 m.	
Assoc Features:	Other stone huts	
Integrity:	Intact.	
Public Access:	RESTRICTED	
Threats:	Nil.	
REFERENCES:		
Documentary:		
Oral:		
Pictorial:	MA 4251/16-18	
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	Not yet established.	
RECOMMENDATIONS:		
Legislative:	PENDING EVALUATION	
Conservation:		
Public Use:		
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED	

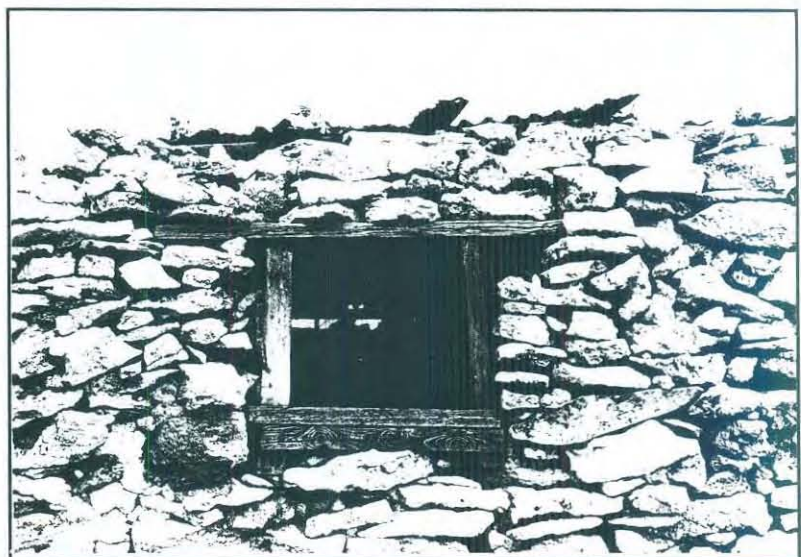


Figure 47. Detail of window on east wall of stone hut (1640 HA028), Little Rat Island (photo: M. Stanbury, 1993).



Figure 48. Stone hut 14C(21D), Little Rat Island(photo: M. Stanbury, 1993)

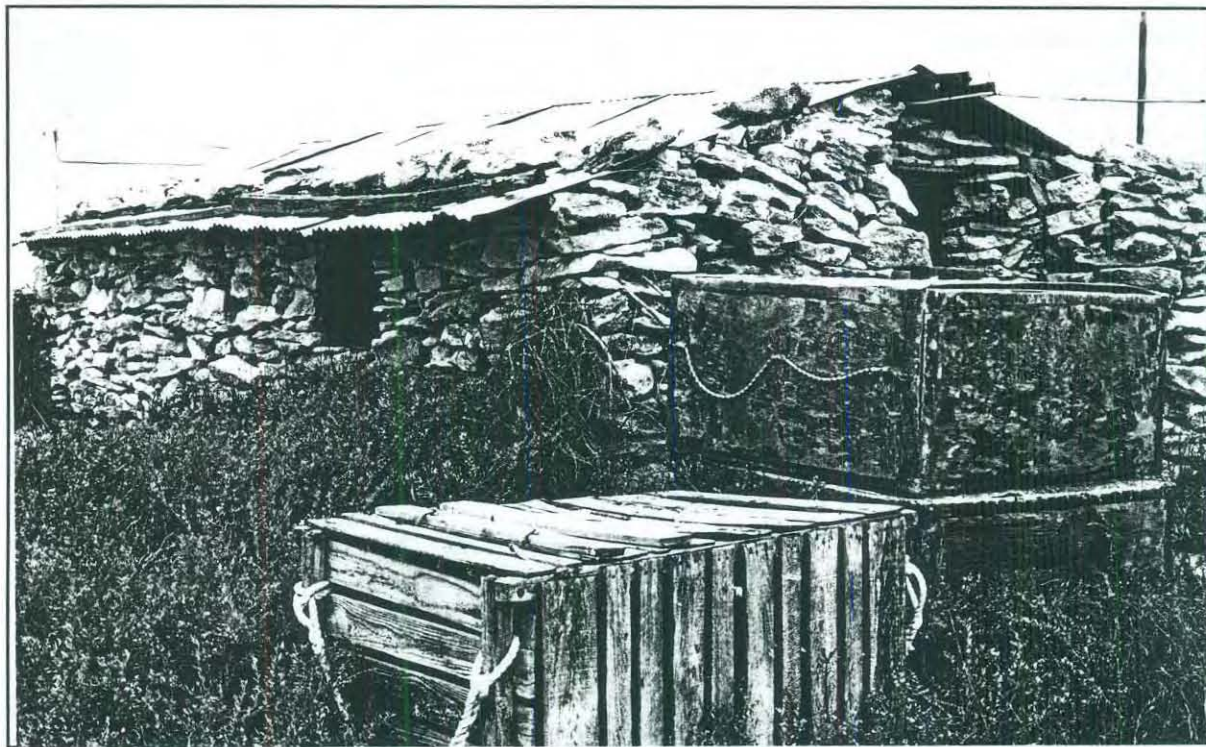


Figure 49. North and east walls of stone hut 14C (21D), Little Rat Island (photo: M. Stanbury, 1993).

Ref Number: 31	Site Number: 1640 HA030	Site Type: 2.0
Site Name:	'TIN' HUT [OLD NO. 13]	
Location:	Little Rat Island, south of jetty No. 7(from north end of island)	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 721 Northing: 190
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Hut constructed of sheets of corrugated galvanised iron; sloping roof; louvre glass windows—one with galvanised iron 'shutter'. Not measured.	

Assoc Features: Other 'tin' huts. [See also small one opposite.]
Integrity: Intact.

Public Access: RESTRICTED
Threats: Demolition and/or development.

REFERENCES:
Documentary:
Oral:
Pictorial: MA 4215/7

Maps and Plans:
Existing survey:

SIGNIFICANCE: Not yet established.

RECOMMENDATIONS:
Legislative: PENDING EVALUATION
Conservation:
Public Use:
Interpretation:

Other: FURTHER DOCUMENTATION REQUIRED

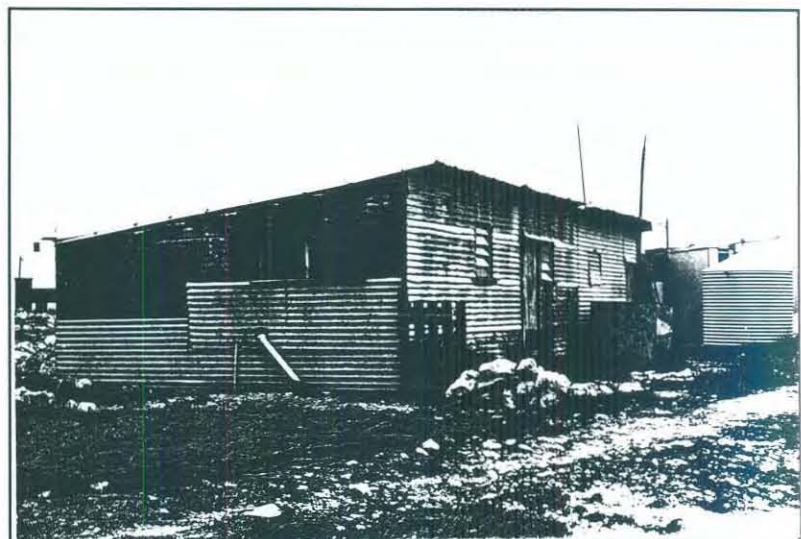


Figure 50. 'Tin' hut (1640 HA030), Little Rat Island (photo: M. Stanbury, 1993).

Ref Number: 32
Site Name:
Location:

Site Number: 1640 HA031 **Site Type:** 2.2
CRAY POTS
Little Rat Island, south of stone hut 1640 HA028

Map Series No.
Zone:
AMG Coordinates:
Council:
Tenure:
DESCRIPTION:

ABROLHOS SHEET 1640 (EDITION 1) SERIES R611
49J
GJ Easting: 722 Northing: 191
MINISTER FOR FISHERIES
A CLASS RESERVE
Circular metal craypots with chicken wire; cane and metal craypots; wooden holding pots.

Assoc Features:
Integrity:

Intact.

Public Access:
Threats:

RESTRICTED
Nil.

REFERENCES:

Documentary:
Oral:
Pictorial:

MA 4215/14-15

Maps and Plans:

Existing survey:

SIGNIFICANCE:

Not yet established. Probably evidence of early types of equipment used in the rock lobster industry.

RECOMMENDATIONS:

Legislative:
Conservation:
Public Use:
Interpretation:

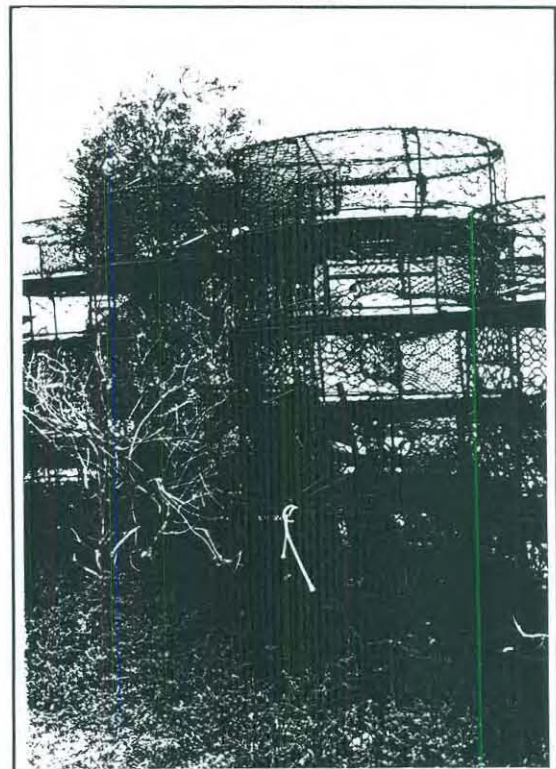


Figure 51. Metal craypots, Little Rat Island (photo: M. Stanbury, 1993)

Other:

FURTHER DOCUMENTATION REQUIRED



Figure 52. Cane craypots and wooden holding pots, Little Rat Island (photo: M. Stanbury 1993).

Ref Number: 33	Site Number: 1640 HA032	Site Type: 2.2
Site Name:	IRON STOVE	
Location:	Little Rat Island, behind stone hut 1640 HA028	
Map Series No.	ABROLHOS	SHEET 1640 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 722 Northing: 191
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Cast iron stove with chimney.	

Assoc Features: Similar stove in 'tin' hut on edge of cliff south of Jetty No. 7 from north of Little Rat Island.

Integrity:

Public Access: RESTRICTED
Threats: Corrosion.

REFERENCES:
Documentary:

Oral:

Pictorial: MA 4252/20

Maps and Plans:

Existing survey:

SIGNIFICANCE: Not yet established.

RECOMMENDATIONS:

Legislative:
Conservation:
Public Use:
Interpretation:

Other: FURTHER DOCUMENTATION REQUIRED

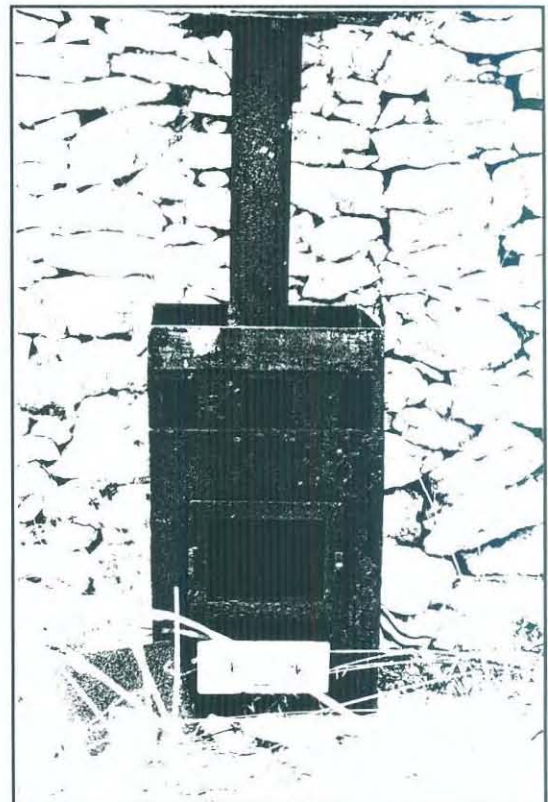


Figure 53. Iron stove, Little Rat Island (photo: M. Stanbury, 1993).

Ref Number: 34	Site Number: 1640 HA033	Site Type: 3.1
Site Name:	CAIRN	
Location:	Dry Island	
Map Series No.	ABROLHOS	SHEET 1641 (EDITION 1) SERIES R611
Zone:	49J	
AMG Coordinates:	GJ	Easting: 714 Northing: 176
Council:	MINISTER FOR FISHERIES	
Tenure:	A CLASS RESERVE	
DESCRIPTION:	Wooden post in rock cairn approximately where Wells' cairn would be. Two Star Pickets about 100 m to the east. [Note: Dry Island was called 'Beacon Island' by Wells.]	

Assoc Features: Other cairns.
Integrity: Intact.
Public Access: RESTRICTED
Threats:

REFERENCES:
Documentary: Wells, 1897, FB.23:

Oral:

Pictorial:

Maps and Plans: Victoria 326

Existing survey:

SIGNIFICANCE: Historic survey cairn established by Surveyor A.J. Wells to survey guano deposits.

RECOMMENDATIONS:

Legislative:
Conservation:
Public Use:
Interpretation:

Other: RE-PHOTOGRAPH

INCLUDE IN INTERPRETIVE BOOKLET/PAMPHLET/MAP



Ref Number: 35	Site Number: 1641 HA034	Site Type: 3.3
Site Name:	ROCK WALL	
Location:	Pigeon Island, Wallabi Group	
Map Series No.	ABROLHOS SHEET 1641 (EDITION 1) SERIES R611	
Zone:	49J	
AMG Coordinates:	GJ	Easting: 669 Northing: 493
DESCRIPTION:	Wall of discarded rocks.	
Assoc Features:		
Integrity:	Observed by Howard Gray	
Public Access:	RESTRICTED	
Threats:		
REFERENCES:		
Documentary:		
<i>Christie, 1909</i>	...1600 tons of guano shipped from Pigeon Island—area 200 acres. Barren inhospitable rock—mounds of rock thrown into rough walls. No sign of bird life.	
Oral:		
Pictorial:		
Maps and Plans:		
Existing survey:		
SIGNIFICANCE:	Associated with the mining of guano on Pigeon Island.	
RECOMMENDATIONS:		
Legislative:	PENDING EVALUATION	
Conservation:	PRESERVATION	
Public Use:		
Interpretation:		
Other:	FURTHER DOCUMENTATION REQUIRED	
:		

Appendix 1. Map references.

Maps/Aerial Photographs of Easter Group					
No.	Date	Month	Map/Aerial Photo	Ref No	Location
1	1727		CHART drawn by Adriaan (Van) de Graaf [Adriaen van der Graeff]		
2	1727		CHART drawn by Jan Steijns [Skipper of the ZEEWIJK]		
3	1727		Drawing of the islands, called Tortelduiff, upon which the ship Zeewijk perished in the year 1727; situated on latitude 29 degrees to 28 degrees 20 minutes South.	HS II 2586 fol. 74v	Kononklijke Bibliotheek Albert I, Brussels
4	1782	August	HOUTMAN'S ABROLHOS [Houtman Abrolhos] near the W. COAST OF NEW HOLLAND [Western Australia]. From Van Keulen. Scale approximately 5 nautical miles to 1 inch. Gives references to an unspecified wreck. [Published by Dalrymple August 1782.]	MISC. 1/496V	India Office Library [Copy on MA 1332/1A-1C: Dept. Maritime Archaeology, WA Maritime Museum.]
5	1782		Dangerous Rocks off the COAST of NEW HOLLAND seen in the London [New London] Capt: Daniel 1681. Scale approximately 2.5 nautical miles to 1 inch. Position of rocks given as 28°30'S.	MISC. 1/496V	India Office Library. [Copy on MA 1332/1A-1C: Dept. Maritime Archaeology, WA Maritime Museum.]
6	1779	Jul-28	CHART of the WEST COAST of NEW HOLLAND [from North West Cape to Shark Bay and Dirk Hartogs Island], From Van Keulen: With some additional soundings from the Journals of English Ships. 18" x 12"; scale approximately 20 nautical miles to 1 inch.	P. Begbie, Mw. Smith sc MISC.1/498	India Office Library, London
7	1779	Jul-28	[No title; southward continuation of the previous chart from Edel Land and Houtman Abrolhos to Rottneest Island and Perth]'Swan R.']. 18" x 12"; scale approximately 20 nautical miles to 1 inch. P. Begbie, Mw. Smith sc	MISC. 1/499	India Office Library, London
8	1841	Sep-25	Good Friday Harbour Houtman's Abrolhos from HMS BEAGLE 1840	L 236	WA Maritime Museum
9	1845	Aug-26	AUSTRALIA WEST COAST- THE HOUTMAN ROCKS AND ADJACENT COAST. From a survey by Commrs Wickham and Stokes, 1840. The coast of Australia by Staff Conr Archdeacon, R.N. 1875. New Editions Aug. 1879, Aug. 1887. Large Corrections 7th Sept. 1951.	1723	
10	1886	Jan-20	HOUTMAN ROCKS - AUSTRALIA W.C.	L 2362 a Press 3b (Original)	Hydrographic Department, Admiralty. [Copy - Dept. Maritime Archaeology, WA Maritime Museum.]
11	1898	May/June	ABROLHOS ISLANDS, Easter Group, Victoria 326. Surveyed by A.J. Wells, 1897. F.B. 23	Victoria 326	Department of Land Administration, Perth
12	1947	Jan-30	Plan of Houtman Abrolhos, Victoria District. A 20253. Public Recreation and Tourist Resort. Engineering 235. Lands & Survey Department.	Engineering 235	Department of Land Administration, Perth
13	1969	7-Feb	QUOBBA POINT TO GERALDTON: Aus 332. Scale 1: 300 000 New Edition 12th Sept 1972. Corrections to 1980. [Inset: GOOD FRIDAY BAY From British Admiralty Surveys, 1840-1875 Scale 1: 37,500]	Aus 332	
14	1986	24-Nov	HOUTMAN ABROLHOS AND GEELVINK CHANNEL: Aus 751. Scale 1: 150 000 [Inset: GOOD FRIDAY BAY 1:50	Aus 751	
15	1977		ABROLHOS: Topographic Survey. Sheet 1640 (Edition 1) Series R611 Surveyed by Royal Australian Survey Corps. Scale 1:100 000		
16	1988		HOUTMAN ABROLHOS EASTER GROUP: Sheet 3. Scale 1: 75 000		
17	1987		Aerial photo Job 870079 Scale 1:25 000		Department of Land Administration, Perth

Appendix 2. Field survey data—R. White, 1993

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PHOTO CONTROL Abrolhos Islands I.A. WA MUSEUM MARITIME ARCHEOLOGY JOB No 870079 RAT ISLAND	1-7
TRAVERSE DETAIL	8

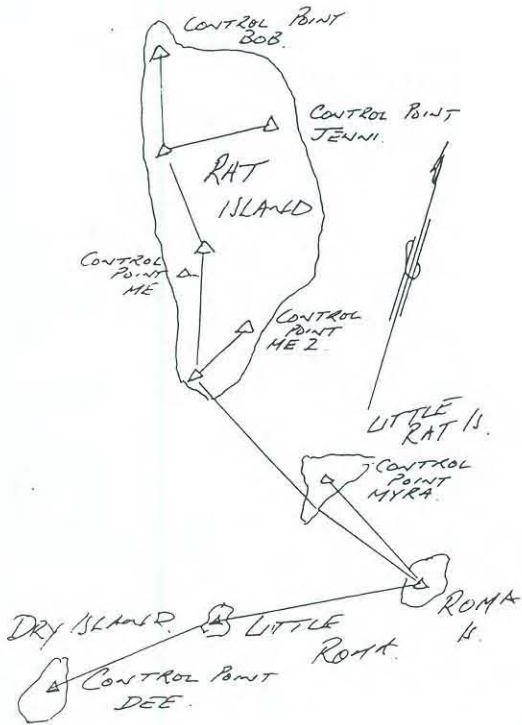
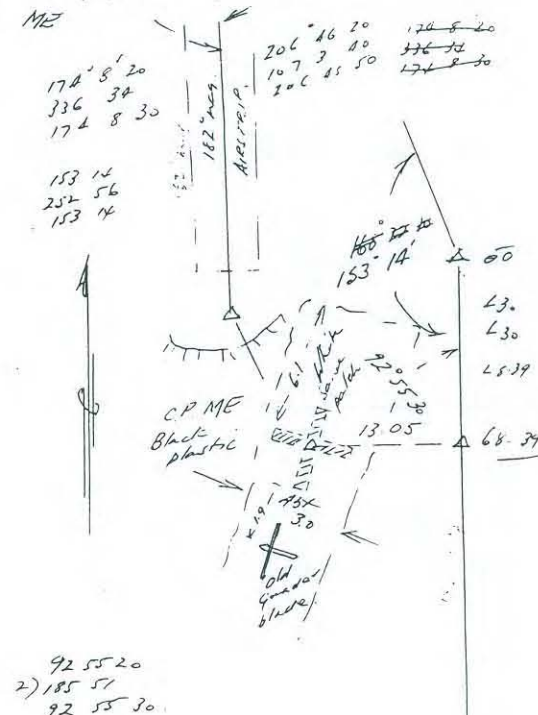
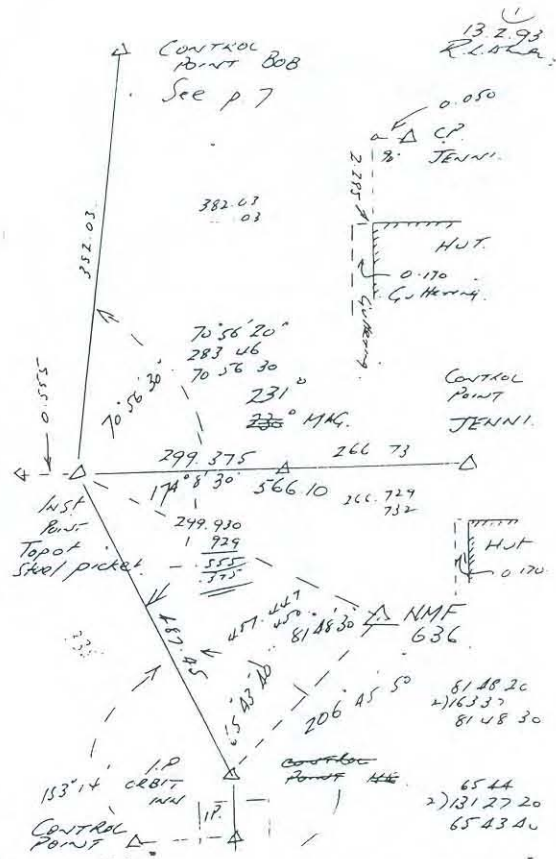
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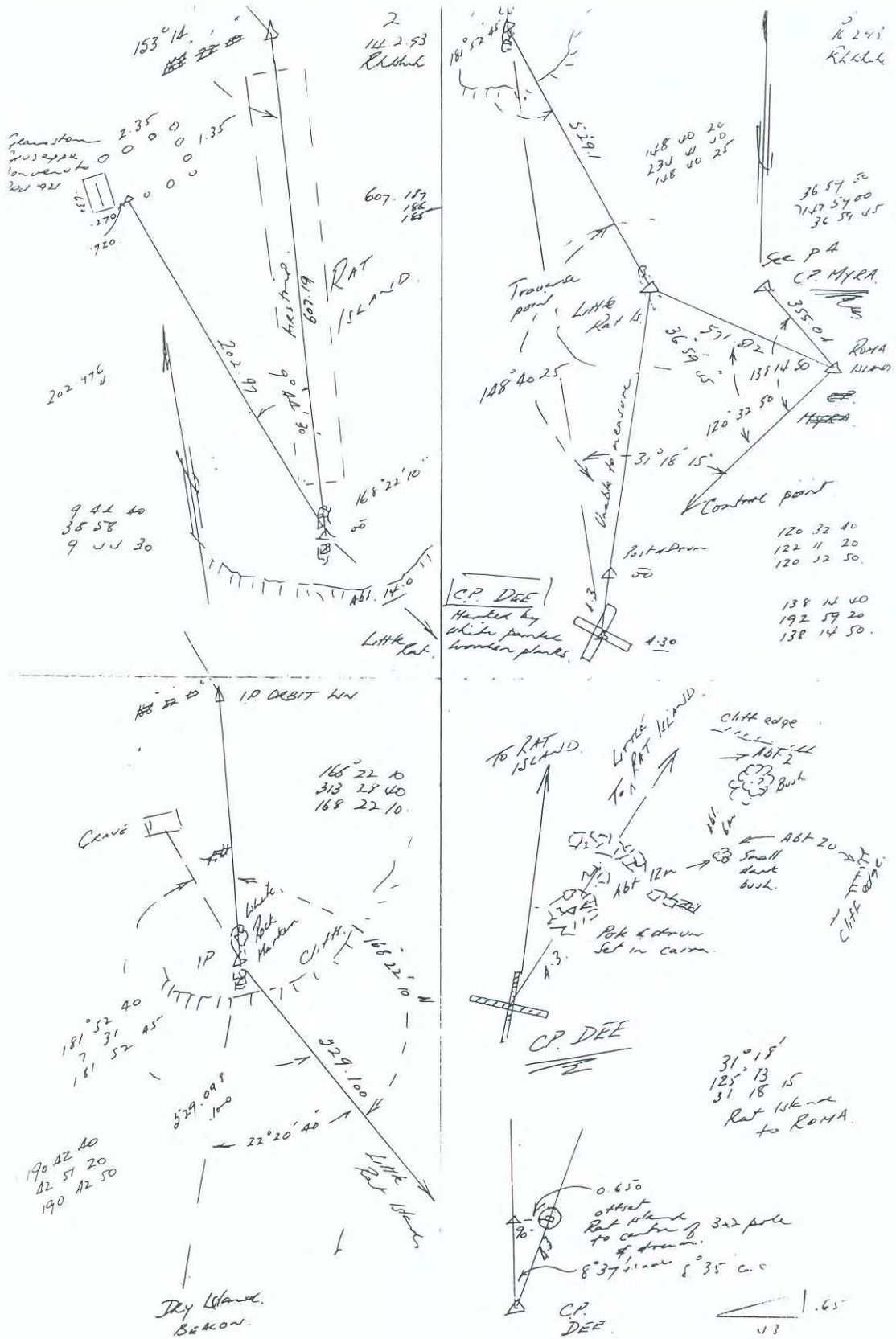
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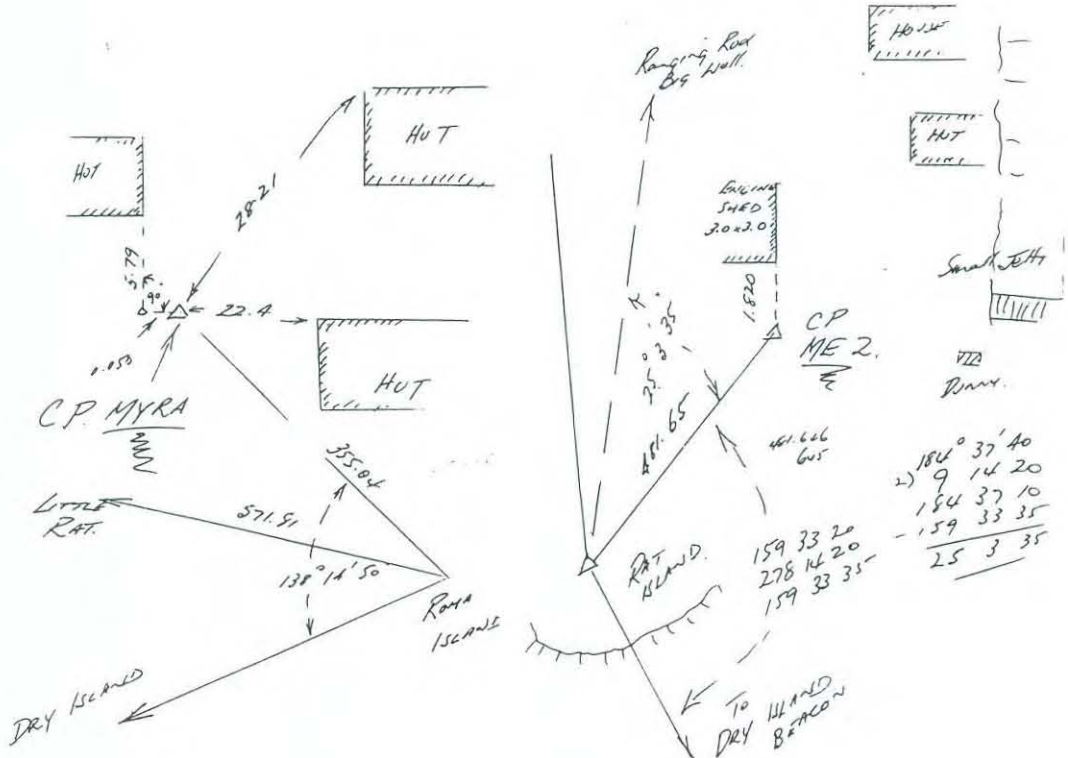
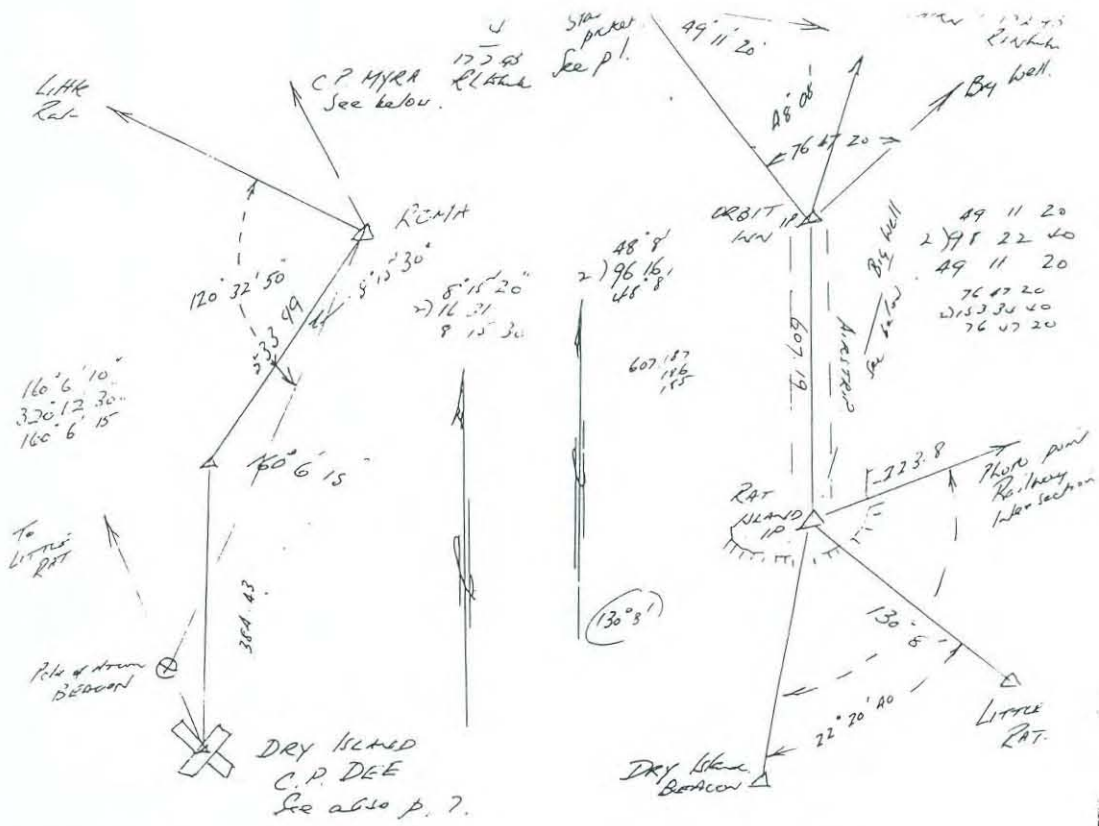
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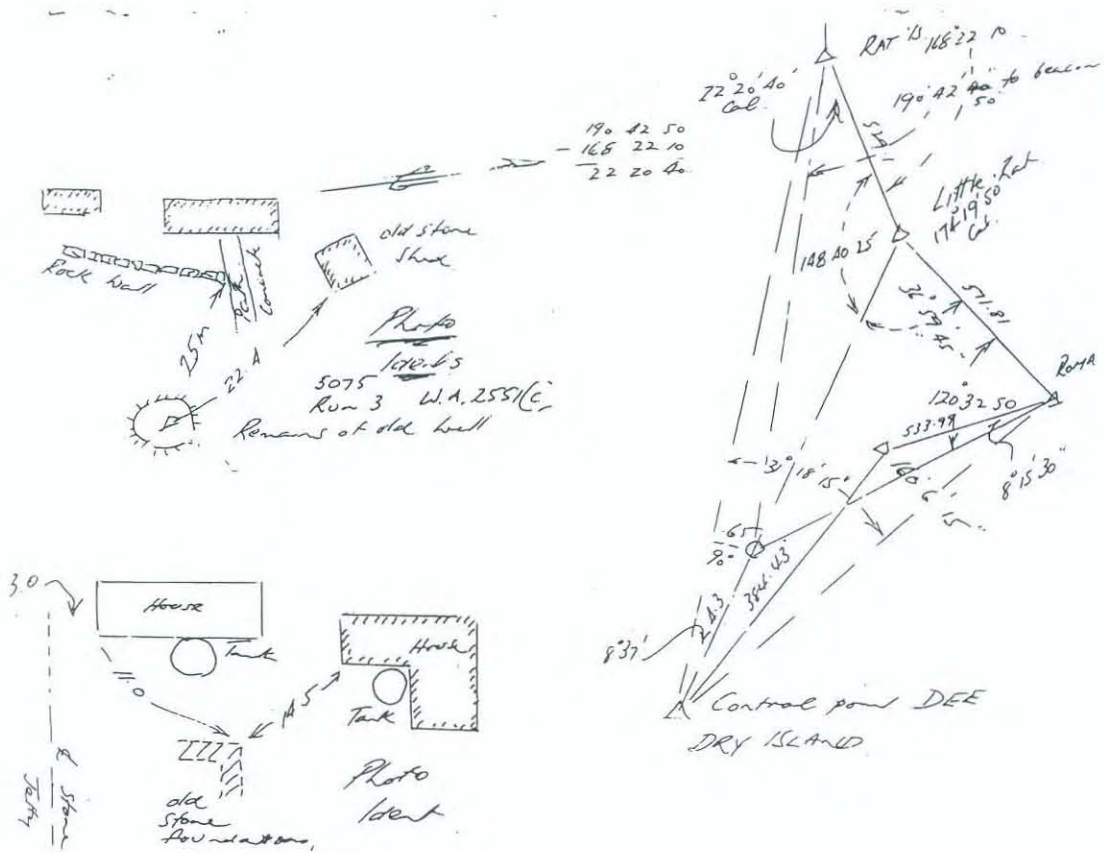
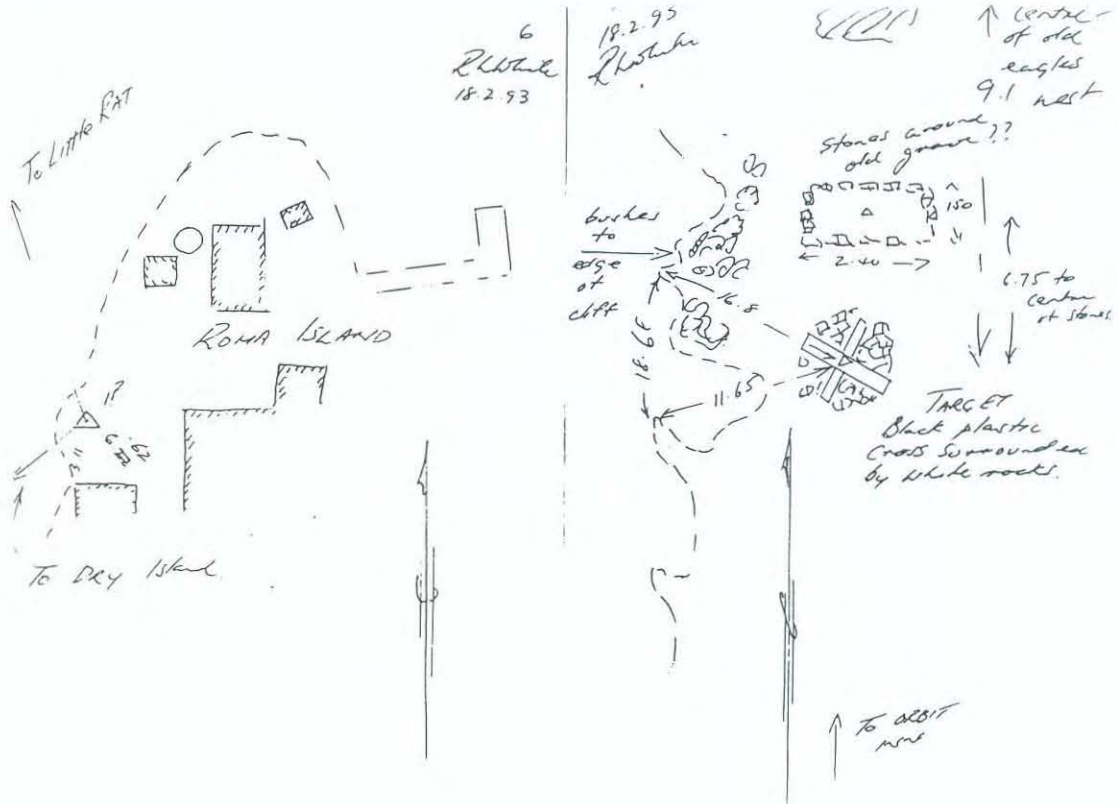
R. White
Surveyor

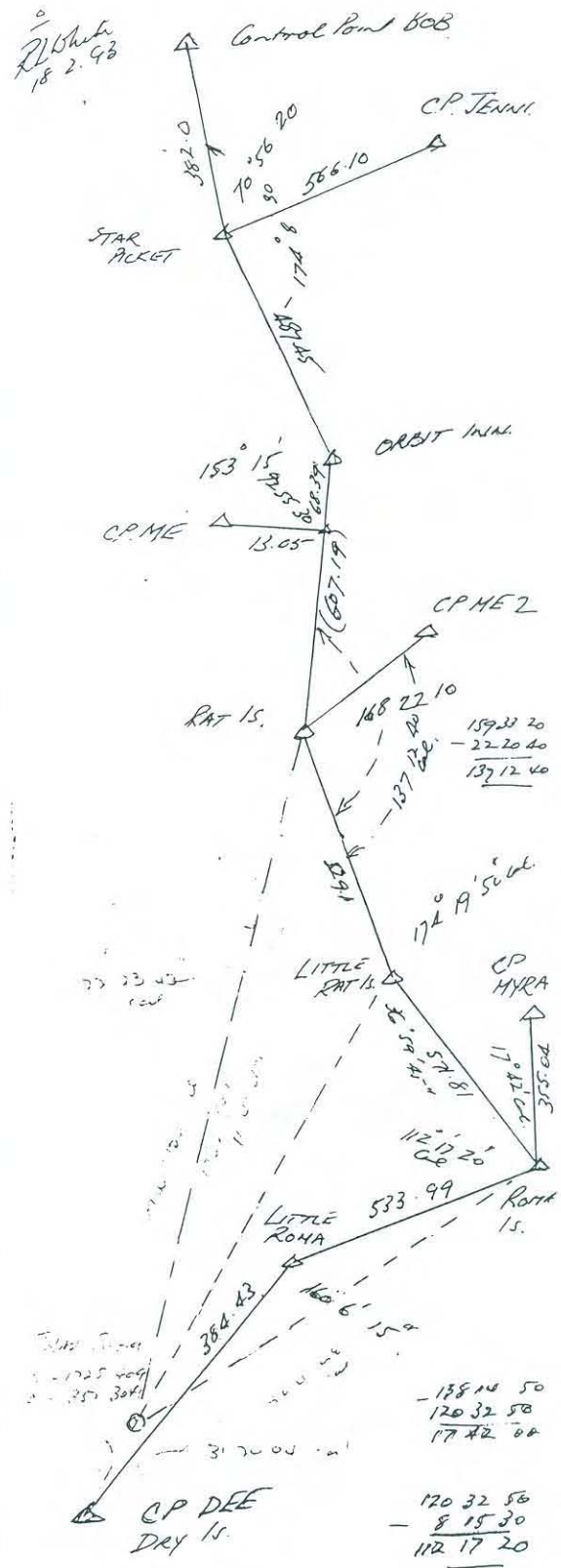
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Appendix 3. Artefact database and report.

Maritime Archaeology Department Database printed by SITE

Printed as of: 09:58 : JUL 14 93 Page 1

Reg. No.	Mus.Co.	Mus. Loc.	M.Co	Description	Date 1	Date 2	Site Loc.
RT1	MA	Hut 5	21	Sherd, bellarmine ?- light brown mottle ,light brown inner glaze , grey body		FEB 13 93	
RT2	MA	Hut 5	32	Button , copper- 2 holes , rolled edge		FEB 13 93	
RT3	MA	Hut 5	22	Sherd, w/ blue transfer , leaf pattern , e'ware		FEB 13 93	
RT4	MA	S. Jetty- land	3	Buttons- 1 x 4 holes , trouser end		FEB 13 93	
RT5	MA	S.Jetty- land	32	Nail, w/ concretion attached, copper		FEB 13 93	
RT6	MA	S.Jetty- land	32	Nails, assorted , copper alloy end		FEB 13 93	
RT7	MA	S.Jetty-land	32	Wire , copper end		FEB 13 93	
RT8	MA	S.Jetty	8	Nails , iron - rose head style		FEB 13 93	
RT9	MA	S.Jetty	8	Nail, rose head ?		FEB 13 93	
RT10	MA	2A yard	21	Sherds, s'ware		FEB 15 93	
RT11	MA	2A yard	3	Buttons, 2 -hole		FEB 15 93	
RT12	MA	2A yard	32	Nails, copper alloy		FEB 15 93	
RT13	MA	2A yard	32	Case shells. modern - 28? calibre rifle		FEB 15 93	
RT14	MA	2A yard	32	Case shell, marked 'H', 28 ? calibre rifle		FEB 15 93	
RT15	MA	2A yard	8	Unid . iron point , spear gun point ?		FEB 15 93	
RT16	MA	2A yard	32	Rod, copper . Brazing rod ?		FEB 15 93	
RT17	MA	2A yard	8	Buckle , square		FEB 15 93	
RT18	MA	2A yard.	3	Buckles , oval shaped - diam: 26mm; square shaped (like a overall buckle)- length: 44mm; width: 43 mm(max)		FEB 15 93	
RT19	MA	2A yard	6	Handle , wooden		FEB 15 93	
RT20	MA	2A rubbish dump	21	Sherds, s'ware . Marked w/ ' CUMIN G SMITH PROPRIETORS , PERTH' , jar also has screw thread on the inner neck		FEB 15 93	
RT21	MA	2A rubbish dump	32	Wire , copper		FEB 15 93	
RT22	MA	2A rubbish dump	44	Jar, opaque glass, marked on base ' ..CM Vegimite X (?)9 (?) 05 + Australian Glass Manufacturers mark		FEB 15 93	
RT23	MA	2A rubbish dump	44	Jar, colorless glass , complete ' Cheeseborough Manfg, CO.CD New-York' on base - CMISM 46/4 + Australian Glass Manufactures		FEB 15 93	

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Maritime Archaeology Department Database printed by SITE

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Reg. No.	Mus.Co.	Mus. Loc.	M.Co	Description	Date 1	Date 2	Site Loc.
RT24	MA	2A rubbish dump	44	mark. Bottle , incomplete , pieces fit together. Base hexagonal , brown glass . Marked ' Property of Perth ... Wery... Perth... S'. on base marked w/ PA 306 + Australian Glass Manufacturers mark.		FEB 15 93	
RT25	MA	2A rubbish dump	44	Bottle , brown beer , incomplete, marked 'Property o.. works WA G... W WA'; horseshoe motif . 2 mould lines		FEB 15 93	
RT26	MA	2A rubbish dump	44	Bottle , medicine, complete , colorless , marked: ' California Fig syrup Co. Sterling Products (inc) Proprietary Agencies (Australia) Pty Ltd Successors ' + 'Califig ' on both sides		FEB 15 93	
RT27	MA	2A rubbish dump	44	Bottle, complete , flat and circular w/ screw thread top. Marked on bottom: ...L is the property of Heroo ? Pty Ltd.		FEB 15 93	
RT28	MA	2a rubbish dump	44	Bottle , incomplete , missing part of rim. Colorless glass . Marked: This Bottle is the Property of the Sydney Pickle Bottle Co. mark on base GM and 790		FEB 15 93	
RT29	MA	2a rubbish dump	44	Bottle , incomplete , colorless , round, marked ' This bottle is the property of the branded bottle assn. of WA LTD / BBA WA. LTD - on base Australian Glass Manufacturers (023, P 325)		FEB 15 93	
RT30	MA	2a rubbish dump	44	Bottle , complete , same as RT 29 markings + BBA WA LTD ; on base P 58 s 33 + Australian glass manufacturers		FEB 15 93	
RT31	MA	2a rubbish dump	44	Bottle , medicine , complete, colorless w/ screw thread top ?. Marked ' Dr Mackenzies Menthoids ' on base IS 723 + Australian glass manufacturers mark.		FEB 15 93	
RT32	MA	2a rubbish dump	44	Bottle , circular , small w/ screw thread top w/ cap .Marked poison , brown , brown ; base marked A 46 L 140.		FEB 15 93	
RT33	MA	2a rubbish dump	44	Bottle sherd, colorless glass . Marked Holbroo, octagonal		FEB 15 93	
RT34	MA	2a rubbish dump	44	Bottle , circular brown , medicine , possibly a medicine bottle?. MARKed on base A241 or A244		FEB 15 93	
RT35	MA	2a rubbish dump	44	Bottle sherd, colorless glass w/ raised prancing horse w/ rider		FEB 15 93	
RT36	MA	2a rubbish dump	65	Rolling pin		FEB 15 93	
RT37	MA	Stone jetty	32	Case shot , 0.22 calibre		FEB 15 93	
RT38	MA	Stone jetty	22	Plate sherd , pale purple transfer , flowers - e'ware		FEB 15 93	

Maritime Archaeology Department Database printed by SITE
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Reg. No.	Mus.Co.	Mus. Loc.	M.Co	Description	Date 1	Date 2	Site Loc.
RT39	MA	Stone jetty	22	Rim sherd , printed e'ware , thin section , two purple lines (or blue ?).		FEB 15 93	
RT40	MA	Stone jetty	22	Rim sherd , printed e' ware - magenta band and thinner line - plate ? . Possibly Adelaide Steam Ship company ?		FEB 15 93	
RT41	MA	Stone jetty	22	Sherd, printed e'ware w/ magenta leaf decoration on one side and makers mark on the other: mark w/ ship underneath + part of motif + .. NATE		FEB 15 93	
RT42	MA	Stone jetty	22	Sherd, prined e'ware , base w/ part of makers mark. grey w/ dark grey motif		FEB 15 93	
RT43	MA	Stone jetty	21	Sherd, s' ware ,brown		FEB 15 93	
RT44	MA	Stone jetty	44	Fragment, glass - blue/green		FEB 15 93	
RT45	MA	North 015' of deep well	44	Fragment , clear glass - relief moulded diamond pattern . Probably square bottle w/ rounded corners		FEB 16 93	
RT46	MA	Hut 3	22	Plate , rim sherd , e'ware , pale blue print		FEB 18 93	
RT47	MA	Shed 6c	29	Base sherd , ? SE asian, porcelain blue internal decoration , blue /green rings around base		FEB 15 93	
RT48	MA	Dry Is.	44	Bottle base , hammered black glass , w/ kick-up		FEB 18 93	
RT49	MA	Dry Is.	44	Bottle sherd, hammered black		FEB 18 93	
RT50	MA	Dry is.	67	Vegetable substance , fibrous		FEB 18 93	
RT51	MA	Dry Is.	41	Bone , sawn/butchered		FEB 18 93	
RT52	MA	Hut 5	22	Rim sherds ; pale blue and a larger dark blue sherd		FEB 18 93	
RT53	MA	Hut 5	3	Button, 4- hole ; brown; wood or plastic ?		FEB 18 93	
RT54	MA	Stone jetty - undercut	44	Sherd, dark olive green ('black'), hammered		FEB 18 93	
RT55	MA	Stone jetty- undercut	44	Bottle top, light olive green , vertical moulded seams ; flat string rim		FEB 18 93	
RT56	MA	Stone jetty - undercut	44	Bottle base ; light olive green base, air bubbles in glass ; shallow dome profile ; 'mammelon' in centre (6.5 mm), straight heel		FEB 18 93	
RT57	MA	Stone jetty- undercut	44	Bottle base, blue/green ; shiny glass - shallow dome push-up		FEB 18 93	
RT58	MA	Stone Jetty undercut	44	Bottle neck sherd ,blue/green , shiny glass		FEB 18 93	

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Reg. No.	Mus.Co.	Mus. Loc.	M.Co	Description	Date 1	Date 2	Site Loc.
RT60	MA	Stone jetty - undercut	44	Bottle neck sherds, w/ string rim , shiny glass ,olive green , matching.		FEB 18 93	
RT61	MA	Stone jetty - undercut	44	Bottle sherd , light green w/ part of a mark: Swan Brewery Australia		FEB 18 93	
RT62	MA	Stone jetty- undercut	44	Bottle base , colorless moulded ovoid , w/ Australian glass manufacturers mark and no' P764 P		FEB 18 93	
RT63	MA	Stone jetty - undercut	44	Bottle , colorless ovoid , complete; marked '2' at base on one side ; A 930 on base		FEB 18 93	
RT64	MA	Stone jetty- undercut	44	Bottle base , square , colorless w/ chamfered corners; manufacturers logo - Australian glass manufacturers, P857, '8' + T 23		FEB 18 93	
RT65	MA	Stone jetty- undercut	44	Bottle , brown ,moulded , side of flat sided bottle ; marked .. is the Proper.. of .. rd Polish Co... tscray +		FEB 18 93	
RT66	MA	Stone jetty- undercut	3	Buttons, black , 2-hole + 4-hole diam		FEB 18 93	
RT67	MA	Stone jetty - undercut	21	Base sherd , s'ware w/ inner and outer glaze		FEB 18 93	
RT68	MA	Stone jetty- undercut	22	Sherds, 2 light blue markings , 1 w/ dark blue design , part of base ? all small		FEB 18 93	
RT69	MA	Stone jetty- undercut	21	Rim sherd , small plate , saucer? - dark blue/ light blue pattern		FEB 18 93	
RT70	MA	Stone jetty- undercut	21	Rim sherd , worn - blue lines around rim		FEB 18 93	
RT71	MA	Stone jetty- undercut	44	Bottle sherd , blue /green shiny glass , mould line		FEB 18 93	
RT72	MA	Stone jetty- undercut	44	Bottle , brown , complete shiny glass , 2 part mould, flat heel , sloping shoulders , string rim ,markings Australian glass manufacturers + RAI + 12		FEB 18 93	
RT73	MA	Hut 22b	49	Lining from Hut 22B , fibre and paper?		FEB 19 93	
RT74	MA	Hut 22B	49	Paper- True Confessions , February 1951 + the West Australian April 1, 1960		FEB 19 93	
RT75	MA	Hut 3	32	Button, 4-hole , marked ' Best Ring Edge ' trouser type , copper alloy		FEB 19 93	
RT76	MA	Hut 4	32	Button, triangular shape , folded edge , 2-hole , copper alloy		FEB 19 93	
RT77	MA	Hut 4	22	Sherd, v.small , blue printed e'ware		FEB 19 93	
RT78	MA	Hut 4	8	Nail, iron , knuckle shaped head		FEB 19 93	
RT79	MA	Hut 4	32	Buttons, copper alloy, 4hole , marked ' Best Solid Unt ..'		FEB 19 93	

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Reg. No.	Mus.Co.	Mus. Loc. M.Co	Description	Date 1	Date 2	Site Loc.
RT80	MA	Rat Is.	41 Feathers , dark grey , matted		FEB 19 93	
RT81	MA	Rat Is.	32 Wire, twisted at one end		FEB 19 93	
RT82	MA	Rat Is- tramline	8 Strap, iron, w/ bolt at one end		FEB 19 93	
RT83	MA	Rat Is.	48 Coral , consolidated		FEB 19 93	
RT84	MA	Surface collection - stone jetty	4 Misc. surface collection- glass, bone, metal, ceramics, a button, marine, plastics- very small pieces .		FEB 13 93	

Preliminary identification of artefacts from Rat Island

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Glass

RT 48

Base sherd of dark olive green—'black'— glass bottle. Surface of glass exhibits turning marks and has a 'hammered' appearance; rounded cone push up with irregular push-up forming marks. Similar to glass bottles from the *James Matthews* (1841) and *Eglinton* (1852). From its appearance, this glass sherd is compatible with a mid-19th century date. [See also RT 49 and RT 54.]

RT 22, 23, 24, 28, 29, 30, 31, 62, 64, 72.

The **Australian Glass Manufacturing Company Limited (AGM)**: the trade mark is a large A with the G and M cased inside. This specific style of trade mark dates to c. 1930, and was common between 1934–1948 (Arnold, 1985:27).

Modern markings are usually located on the side of the bottle just above the heel or incorporated in embossed markings on the shoulder. However, the examples found on Rat Island have the trade mark on the base. Typical markings on a modern AGM wine bottle include the mould number inset, trade mark, design number and the factory of origin e.g. A (Adelaide), B (Brisbane).

The company is an example of the growth and expansion of business that occurred with the advent of Federation and the abolishment of State trade taxes in Australia. The Melbourne Glass Bottle Works Co., Pty Ltd., had stakes in almost all the States and amalgamated with the Waterloo Glass Bottle Works Company Limited to form AGM in 1915.

The range of AGM products found on Rat Island include vegemite, a pickle bottle, petroleum jelly, menthoids medicine and beer.

RT 23

Colourless glass jar with screw top, marked: CHESEBROUGH MANFG. CO. CD NEW-YORK; also has the trade mark of the Australian Glass Manufacturers on the base, that which is most common between 1934–1948.

Robert Chesebrough started manufacturing petroleum jelly for the drug market in 1872. The product (vaseline) was retailed from 1887 onwards. An Act of 1909 curtailed the promotion of Chesebrough Vaseline as a 'cure all', especially for internal usage. The main uses of petroleum jelly had been for wounds, bruises etc. and for coughs, colds, croup, diphtheria etc. (Ref. *Bottle Collectors Review*, May 1973:4.)

RT 26

Colourless, rectangular bottle with 3 recessed panels and chamfered corners. Front recess marked: California Fig Syrup Co Sterling Products (INC.) PROPRIETARY

AGENCIES (AUSTRALIA) PTY LTD SUCCESSORS. Ht. 143.5 mm; base 46.5 x 27.5 mm.

This product was the idea of William Pinninger and Richard Queen. They began in 1878 in Reno, Nevada. In 1883 they formed the California Fig Syrup Company. Richard Queen then sought the aid of distiller Elias Chielovich in San Francisco and from there made and distributed the syrup around the world.

(Ref. *Bottle Collector's Review*, September 1973:6.)

RT 25

Base of brown glass machine-made bottle marked: PROPERTYO...WORKS WA.—G. W., WA

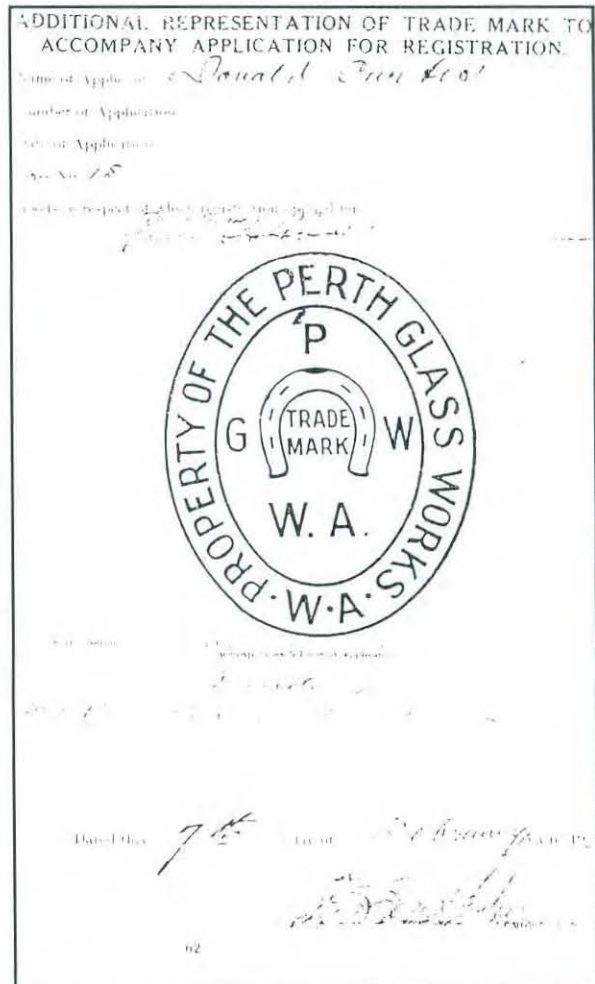


Figure 55. Registered Trade Mark of the Perth Glass Works.

Perth Glass Works: This company produced bottles for areas outside the Perth and Fremantle Bottle Exchange Companies distribution. The complete trade mark on bottle RT 25 would have read: 'Property of the Perth Glass Works WA', with the initials P. G. W. and a horseshoe. The Trade Mark was registered by Donald Curtis of 253 Pier Street, Perth, under the Trade Marks Act 1905–1919 on 7 February 1927.

The Western Australian Glass Manufacturing Company, became part of the Australian Glass Manufacturing

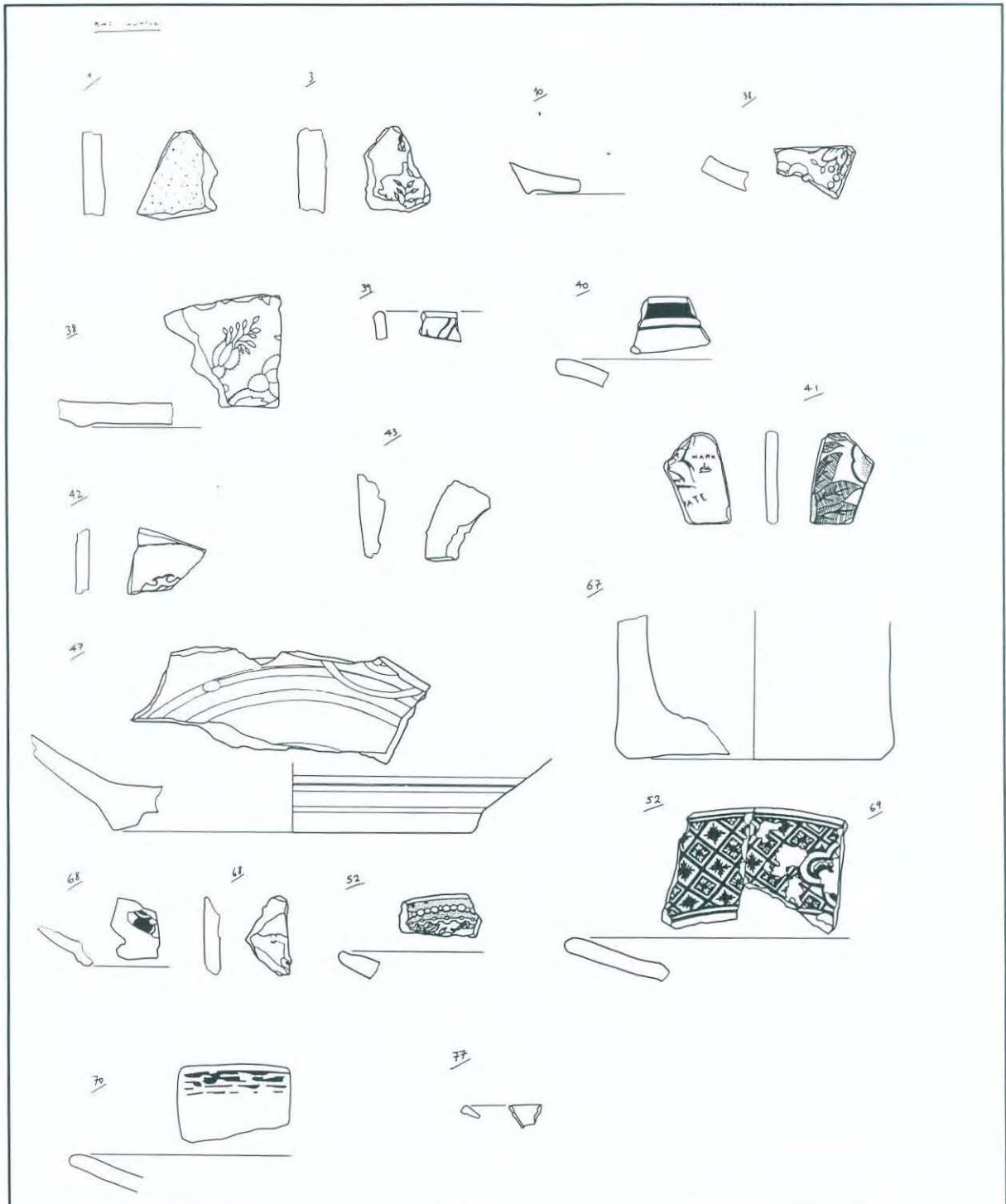


Figure 56. Rat Island ceramics (drawing: C. Heine. Scale 1:2).

Company (AGM) in 1926. The bottle from Rat Island has no AGM mark which means that the bottle pre-dates 1926. The Perth Bottle Works began c.1905 and is still in operation. (Ref. *Bottle Collector's Annual Review*, n.d. Vol. 2.)

RT 35

Wall sherd of circular, colourless glass bottle with the motif of a raised horse and rider.

Raised horse and rider: The trade mark could be

from the Narranderra–Jerilderie, Victoria, Sydney—all later than the 1960s. The other possibility is that the mark belongs to the Paragon Aerated Water Company operating c.1889 from Sydney.

RT 61

Light green bottle sherd with part of maker's mark—raised 'swan' motif and letters indicating 'Swan Brewery Australia'. The swan motif faces right. There are two possible origins:

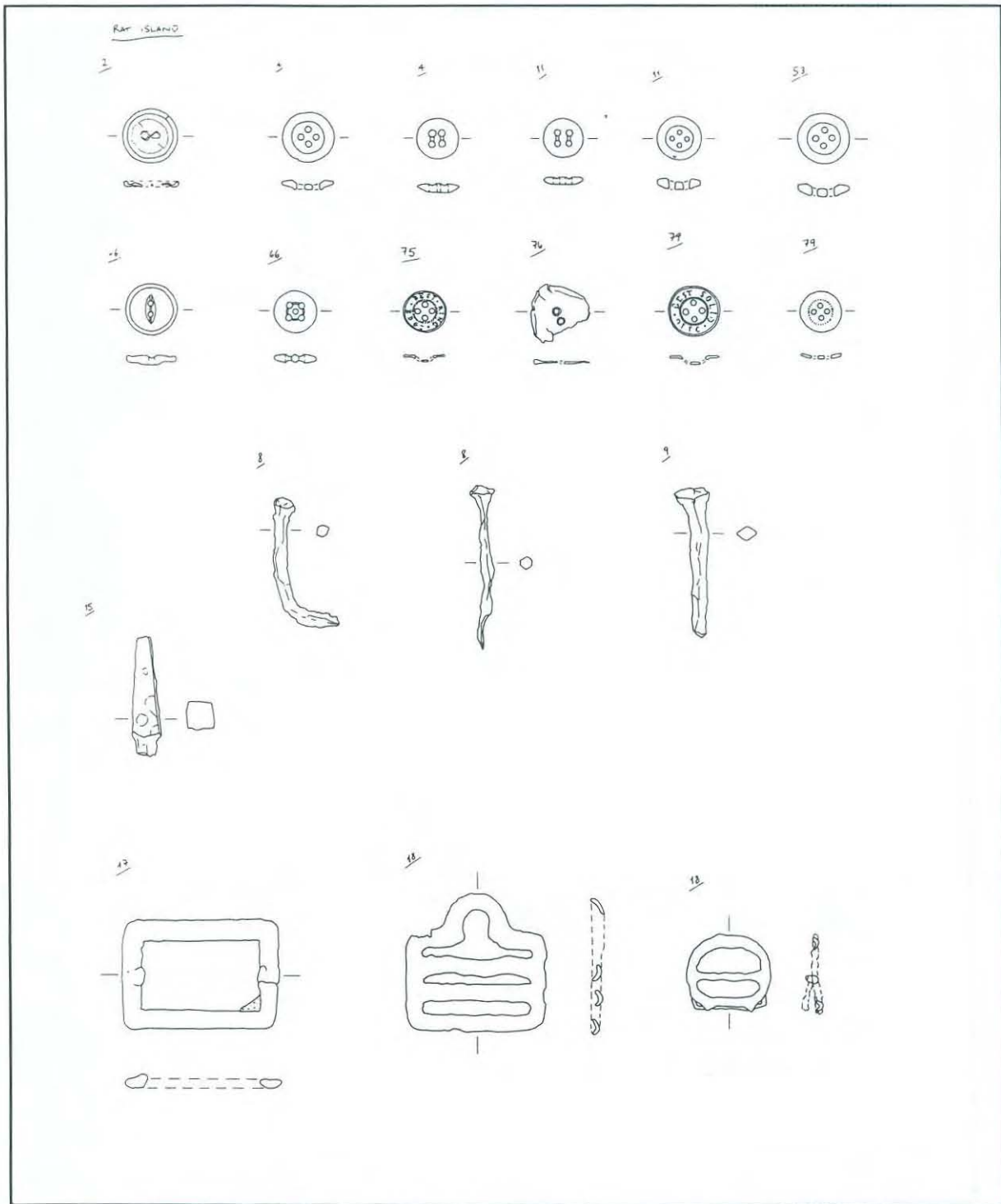


Figure 57. Rat Island buttons and metal objects (drawing: C. Heine. Scale 1:2)

- Logan, W. H. Hillgrove. Date: c.1904–1917; or the later line by Logan, W.H., again at Armidale. Date: c.1917–1950.

RT 24

Brown glass bottle—incomplete—with hexagonal sides. The bottle is marked **'Property of the Perth Brewery'** and has a raised swan motif facing left and is encircled.

Ceramics

STONEWARE

RT 1 and RT 10

Wall and base sherd of light brown mottle saltglaze stoneware; pale brown inner glaze: part of Rheinisch stoneware jug—possibly fits with ZW 5506, a broken jug recovered from the well on Middle Island in the Pelsaert Group (Green & Stanbury, 1988:19–20). Date: c. 1727 (loss of the *Zeewijk*).

RT 20

Several large saltglaze stoneware fragments of a Cuming Smith stone bottle. Ht. c. 44 cm.

The fragments fit together but the article is incomplete. There is a screw thread on the inner neck and part of a handle as well. Part of the trade name is present 'CUMINGSMITH...PROPRIE...PERTH'. Bottles similar to this and advertised by 'Price, Sons & Company, The Potteries, Bristol' were described as being 'Perfectly glazed inside and out. With or without screw mouths' (see *Bottle Collector's Review*, March 1973: 18). As such they were impervious and suitable for storing a wide range of liquors—spirits, brewed ginger beer, ginger wine, etc. The bottles came either basketed or bare, with and without tapholes and could be supplied with names, trade marks 'indelibly stamped in black letters'.

The Cuming Smith company (CSBP and Farmers) is still in business and located in Perth. The Company has three stone bottles on display in the main office, acquired from auction sales. One is marked 'Cuming Smith Mt Lyell Farmers Fertilisers Ltd' and manufactured by the Bendigo Pottery, Epsom, Bendigo. Another has a similar mark to the Rat Island example—'Cuming Smith & Co., Proprietary Ltd., Perth'. A third one is basketed. Dates presently unknown.

ASIAN CERAMICS

RT 47

Base sherd of coarse porcelain bowl or dish. Offwhite body with inclusions. Glazed throughout except footring which has been ground off before firing but after glazing. Underglaze blue brush stroke varies in intensity. Outer surface decorated with three concentric lines; inner surface decorated with single line and part of circle design. Similar to wares recovered from the *Zeewijk* wreck site and thought to originate in kiln sites in South China.

PRINTED EARTHENWARE

RT 38, 52

Pale blue printed earthenware sherds with 'Asiatic Pheasant' pattern.

Excluding the 'Willow Pattern' the Asiatic Pheasant pattern was the most popular design during the second half of the 19th century and continued to be popular into Edwardian times. The pattern was widely copied prior to the 1880s (see Coysh & Henrywood, 1982:28–29).

Description: pale blue and shows a pheasant (or pheasants) amongst flowers and foliage within an undistinguished floral border. There is also a floral scroll which often includes the makers initials.

Sherds of the same pattern were recovered from the wreck of the whaler *Star* which was lost in 1880 on Seven Sisters Reef (WAMM File MA 19/73). The vessel was built in 1876 for J.W. Bateman who held a guano lease for the Easter Group in the late 1870s and for a period in the mid 1880s.

RT40

Printed earthenware rim sherd with a magenta band and thinner magenta line around rim section.

There is a possibility that this is the same type of earthenware found on the Albany Town Jetty and Fremantle Long Jetty sites. The two lines, one thick/one thin, are similar to the Adelaide Steam Ship Company design.

RT 41

Printed earthenware sherd (probably plate) with maroon floral pattern on one surface and part of printed maker's mark on the other which contains the word 'MARK' over a 3–4 masted ship and the letters ...NATE.

RT 70

Very weathered example of an earthenware rim sherd with blue lines. The Adelaide Steam Ship Company produced blue and magenta versions of their tableware.

RT 46, 52, 69

Rim of printed earthenware plate with dark blue and white lozenge and Joo-I border pattern.

BUTTONS

All buttons that were found on Rat Island are known as utilitarian fasteners—your everyday normal plain button. Since the turn of the century the basic four-hole button has become standard for both sexes. The distinction between male and female buttons has lost its prominence (Epstein, 1968:75). The technique of mass producing die-stamped metal buttons had developed in the first half of the 19th century (Peacock, 1979:57).

RT 66 is an example of a 'fish-eye' button—a two-hole button with an oval depression in the centre.

The most common type of button in the Rat Island collection is what is called a 'sew-through' (sew-thru). This can be a two-hole (2-way) or a four-hole (4-way).

Two-hole examples are RT 2, 11, 66, 76. Four-hole examples are RT 4, 53, 66, 75, 79.

RT 2 and 76 are made from a copper alloy. One has a rolled edge (RT 2) and the other, which is slightly triangular in shape, has a folded edge (RT 76). RT 75 and 79 are also made from a copper alloy and marked: 'Best Ring Edge' and 'Best Solid ...TTO'. Both buttons are trouser types.

All other buttons appear to be made from plastic.

BUCKLES

RT 17, RT 18 a.b.

A square framed buckle (RT 17), small shoe type buckle (RT 18a) and belt buckle ? (RT 18b) have yet to be identified and dated.

FASTENINGS

RT 5, 6, 12,

Several sizes of copper alloy rose-head and flat head nails with square-shanks were observed in various locations of Rat Island. The sample obtained has not been fully analysed but may assist with dating.

RT 8

Rose-head iron nails with square shanks.

This type of nail was typically used for building purposes and may assist with dating.

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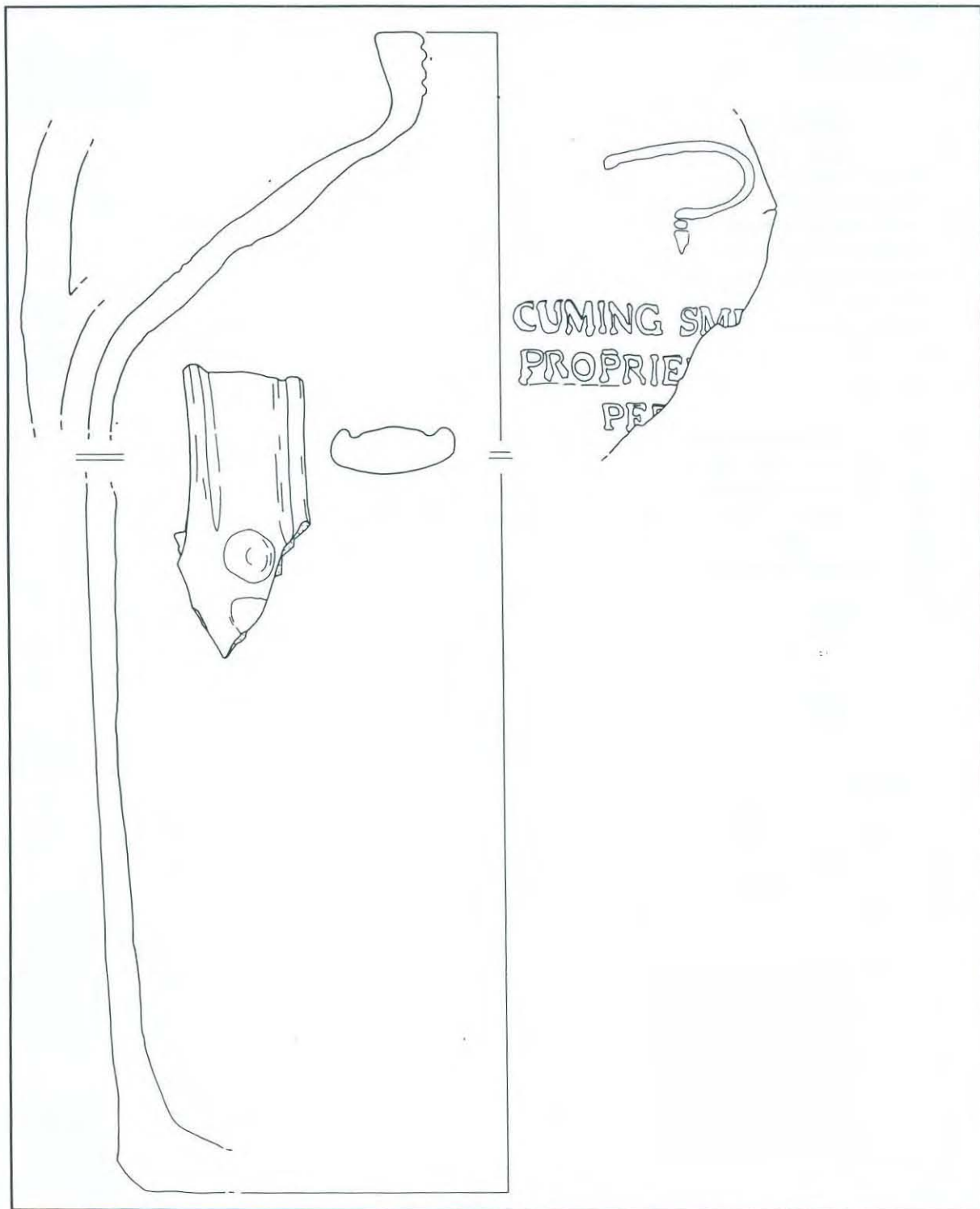


Figure 58. Stone bottle marked 'CUMING SMITH PROPRIE... PER...'(drawing: C. Heine, Scale 1:2).

Appendix 4. Archival photographic references

Date	Description	Locⁿ	Acc.No.	Photographer
1894	Guano mining, Rat Island	BL .	1786B/8	W. Saville-Kent
1894	Guano mining, Rat Island	BL	1786B/9	W. Saville-Kent
1894	Guano mining, Rat Island	BL	1786B/11	W. Saville-Kent
1894	Guano mining, Rat Island	BL	1786B/12	W. Saville-Kent
1894	Guano mining, Rat Island	BL	1786B/13	W. Saville-Kent
1894	Guano mining, Rat Island	BL	1786B/14	W. Saville-Kent
1894	Employees on Rat Island	BL	1786B/16	W. Saville-Kent
1894	Old guano workings	BL	1786B/17	W. Saville-Kent
1894	<i>Nautilus</i> at Rat Island	BL	1786B/20	W. Saville-Kent
1894	Surface of Rat Island, guano workings	BL	1786B/21	W. Saville-Kent
1894	Station and Jetty, Rat Island	BL	1786B/29	W. Saville-Kent
1894	Rat Island station and jetty	BL	1786B/37	W. Saville-Kent
1897	Group of Malays with their European foreman			Helms, 1902:36.
1901	Pulling bagged guano on cart ? where	BL		Theil, P.W.H., TCI
1908	C. Price Conigrave's party and Italian fishermen at Rat Island	BL	2908B/162	

Appendix 5. Nomenclature data for islands in the Easter Group, Houtman Abrolhos (courtesy of Department of Land Administration).

Easter Group Survey data: Source - DOLA									
Feature Name	Class	Status	LGA Code	Map Number	Latitude	Longitude	AMG E	AMG N	Zone
Alexander Island	IS		9779	SH 49 04 1640 1	28 40 27 S	113 49 45 E	776500	6824800	49
Beacon Is [Wells] [See Dry Island]	IS	A	0000	SH 49 04 1640 1	28 44 23 S	113 46 44 E	771400	6817650	49
Bushby Island [Wells' Second Island]	IS		9779	SH 49 04 1640 1	28 43 26 S	113 47 08 E	772100	6819400	49
Bynoe Island	IS		9779	SH 49 04 1640 1	28 39 55 S	113 52 32 E	781050	6825700	49
Campbell Island	IS		9779	SH 49 04 1640 1	28 41 45 S	113 50 06 E	777000	6822400	49
Crake Island	IS		9779	SH 49 04 1640 1	28 44 32 S	113 48 58 E	775040	6817280	49
Dingville Island [See Dry Island]	IS	A	9779	SH 49 04 1640 1	28 44 23 S	113 46 44 E	771400	6817650	49
Disappearing Island	IS		9779	SH 49 04 1640 3	28 47 04 S	113 44 24 E	76500	6812800	49
Dry Island	IS		9779	SH 49 04 1640 1	28 44 23 S	113 46 44 E	771400	6817650	49
Easter Group	ISGP		9779	SH 49 04 1640 1 1640 2 1640 3	28 44 13 S 28 44 13 S 28 45 50 S 28 47 04 S	113 46 10 E 113 46 10 E 113 46 13 E 113 44 20 E	770500 770500 770500 767400	6818000 6818000 6815000 6812800	49 49 49 49
Gibson Island	IS		9779	SH 49 04 1640 1	28 41 14 S	113 49 41 E	776340	6823360	49
Gilbert Island	IS		9779	SH 49 04 1640 1	28 40 06 S	113 49 35 E	776250	6825450	49
Good Friday Bay	BAY		9779	SH 49 04 1640 1	28 40 57 S	113 46 23 E	771000	6824000	49
Graveyard Island	IS	A	9779	SH 49 04 1640 2	28 46 32 S	113 47 09 E	772000	6813670	49
Helms Island	IS		9779	SH 49 04 1640 1	28 40 11 S	113 51 39 E	779600	6825230	49
Helsinki Island [See Little Rat Island]	IS	A	0000 9779	1640 SH 49 04	28 44 00 S 28 44 00 S	113 47 00E 113 46 59 E	00000 771848	0000000 6818371	49
Joe Smith Island	IS		9779	SH 49 04 1640 1	28 40 56 S	113 51 29 E	779300	6823850	49
Keru Island	IS		9779	SH 49 04 1640 1	28 43 35 S	113 49 58 E	776700	6819000	49
Leo Island	IS		9779	SH 49 04 1640 1	28 41 23 S	113 51 37 E	779500	6866650	49
Little North Island	IS		9779	SH 49 04 1640 1	28 37 52 S	113 52 54 E	78750	6829450	49
Little Rat Island [Third Island]	IS		9779	SH 49 04 1640 1	28 43 42 S	113 47 08 E	772100	818900	49
Little Roma Island	IS		9779	SH 49 04 1640 1	28 44 08 S	113 67 52 E	771630	6818100	49
Morley Island	IS		9779	SH 49 04 1640 1	28 44 48 S	113 48 46 E	774700	6816800	49
Rat Island	IS		0000 9779 9779	1640 SH 49 04 1640 1	28 43 00 S 28 42 57 S 28 42 57 S	113 46 00 E 113 47 03 E 113 47 03 E	000000 772000 772000	0000000 6820300 6820300	00 49 49
Roma Island	IS		9779	SH 49 04 1640 1	28 43 58 S	113 47 07 E	772050	6818400	49
Serventy Island	IS		9779	SH 49 04 1640 1	28 41 00 S	113 49 53 E	776700	6823800	49
Shearwater Island	IS		9779	SH 49 04 1640 1	28 43 57 S	113 49 30 E	775940	6818340	49
Stokes Island	IS		9779	SH 49 04 1640 1	28 40 31 S	113 51 03 E	778600	6824650	49
Suomi Island	IS		9779	SH 49 04 1640 1	28 42 46 S	113 50 18 E	777300	6820500	49

Easter Group Survey data: Source - DOLA									
Feature Name	Class	Status	LGA Code	Map Number	Latitude	Longitude	AMG E	AMG N	Zone
Travia Island	IS		9779	SH 49 04 1640 2	28 51 53 S	113 59 13 E	791400	6803300	49
White Island	IS		9779	SH 49 04 1640 1	28 40 17 S	113 52 31 E	781020	6825000	49
Wooded Island	IS		9779	SH 49 04 1640 1	28 45 08 S	113 48 21 E	774000	6816200	49

Appendix 6. Leases issued for guano collection and fishing in the Houtman Abrolhos

ABROLHOS ISLANDS—LEASES						
Year(s)	Name	Lease No.	Type	Area	Cost	Reference
1874 – 30/6/75	McMURRAY, L. – on behalf of H. LEVY et al.		Fish preserving & curing	Houtman Abrolhos, East Wallabi		SDUR/B10/1071E
1875	BROADHURST, Charles		Fishing station	East Wallabi		
1876 Mar	BATEMAN, John, Wesley		Guano collecting	Rat Is., Easter Group		SDUR/B10/1063 a-b
1876–78 1/7/76– 30/6/78	MANNING, L.A. & Co		Guano collecting	West Wallabi		SDUR/M6/795a
1876	BROADHURST, Charles		Guano collecting	Pelsaert Group		SDUR/B10/1071b
1877–80	BATEMAN, John, Wesley		Guano collecting	Rat Is., Easter Group		SDUR/B10/1142D
1881						
1883	BROADHURST, Charles		Guano collecting	20 islands		
1884–89	BROADHURST & McNEIL		Guano collecting			
1889–90	BROADHURST & McNEIL		Guano collecting			
1890–1904	BROADHURST & McNEIL		Guano collecting			
1904	Messrs FALLOWFIELD & Co, Geraldton		Guano collecting			
1905 Oct	DAVIS, Alfred, William, FALLOWFIELD, William (For 1/6/06–1/5/07)	764/152	Guano collecting	SW Houtman	£50 pa	
1907–12	FALLOWFIELD, William, Bower	940/152	Guano collecting			
1912–17	FALLOWFIELD, William, Bower	1418/152	Guano collecting			
1918–23	FALLOWFIELD, William, Bower	1551/152	Guano collecting		£50 pa	
1929	FALLOWFIELD, William, Bower		Whaling	East & West Wallabi; Rat Is; Wooded Is &		
	MERENDINO, F.		Grazing	North Is, Wallabi, Rat Is	Annual tenancy	
1932	LINDSAY		Guano			
1943	GARRETT, G.C.L.		Sheep – to feed employees & provide bait for fishing ventures	Rat Is.		
1949	BOUCAUT, Penn	3756/29	Processing/freezing crayfish			

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Endnotes

¹ Royalties were to be calculated as before i.e. on the registered tonnage of the vessel. Ships were to be exactly measured according to Lloyds, and the number of cubic feet so ascertained divided by 40, be taken to be the tonnage capacity of the ship (*Govt. Gazette*, No. 28, 1880).

² Under the terms of the *Waste Lands Unlawful Occupation Act 1872*, unauthorised persons were not permitted to occupy, reside or erect buildings on Waste Lands of the Crown (36 Vic.No.8, 1872).

³ Guano was sold abroad at 30s. per ton by Broadhurst, MacNeil and Company whilst superphosphate was selling at £7.10s. per ton.

⁴ Ground rock phosphate or "dead" guano was of value in wet districts since it decomposed rapidly in a soil rich in humus or peat. Elsewhere, its low solubility made it slower acting than superphosphate or "live" guano (fresh bird droppings) : see Woodward, 1917:11.

⁵ Having a wetter climate guano was suitable for use in New Zealand and Tasmania.