

The Coral Bay to Exmouth wreck inspection trip

5–13 September 1992

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Introduction

The objective of this wreck inspection trip was to inspect a number of sites and to carry out a variety of objectives on each site. The following is a list of sites and objectives:

1. The site thought to be the *Emma*.
 - i. Obtain GPS position of the site
 - ii. Assess the feasibility of recovering two document presses on the site and recover if possible
 - iii. Obtain measurements of artefacts on site with the objective of helping to confirm the identification of the site
 - iv. Recover loose artefacts that may assist in the identification
 - v. Make a photographic and video record of the site
2. Jetty at Maud Landing.
 - i. Make a preliminary assessment of site
 - ii. Make a photographic and video record of the site
3. Investigate the exposed rock between Maud Landing and Point Cloates with the objective of helping to identify the *Correo de Azia* site
4. The *Rapid* site
 - i. Obtain GPS position of the site
 - ii. Carry out corrosion measurements on iron and timber on site
5. Investigate the 'Forde' site
 - i. Search and locate site
 - ii. Carry out a preliminary wreck inspection if the site is found
6. Investigate the sites shown on Walcott's chart
7. The SS *Perth* site
 - i. Obtain GPS position of the site
 - ii. Make a photographic and video record of the site
8. The Point Cloates lighthouse
 - i. Make a photographic record
9. The *Fin* site and Frazer Island Lighthouse
 - i. Obtain GPS position of the site
 - ii. Make a photographic and video record of the site
10. The *Zvir* site
 - i. Obtain GPS position of the site
 - ii. Make a photographic and video record of the site
11. The suspected wrecksite seen on aerial photograph of Norwegian Bay
 - i. Search and locate site
 - ii. Carry out a preliminary wreck inspection if the site is found
12. The *Chofuku Maru* site
 - i. Locate and obtain GPS position of the site
 - ii. Make a photographic and video record of the site
13. The Jones' anchor
 - i. Locate and obtain GPS position of the site
 - ii. Make assessment of the site
 - iii. Make a photographic and video record of site
14. Recover the Clark anchor
15. The *Fairy Queen* site
 - i. Obtain GPS position of the site
 - ii. Make survey of site
 - iii. Photograph and video record of the site
16. The *Mildura* site
 - i. Obtain GPS position of the site
 - ii. Photograph site.

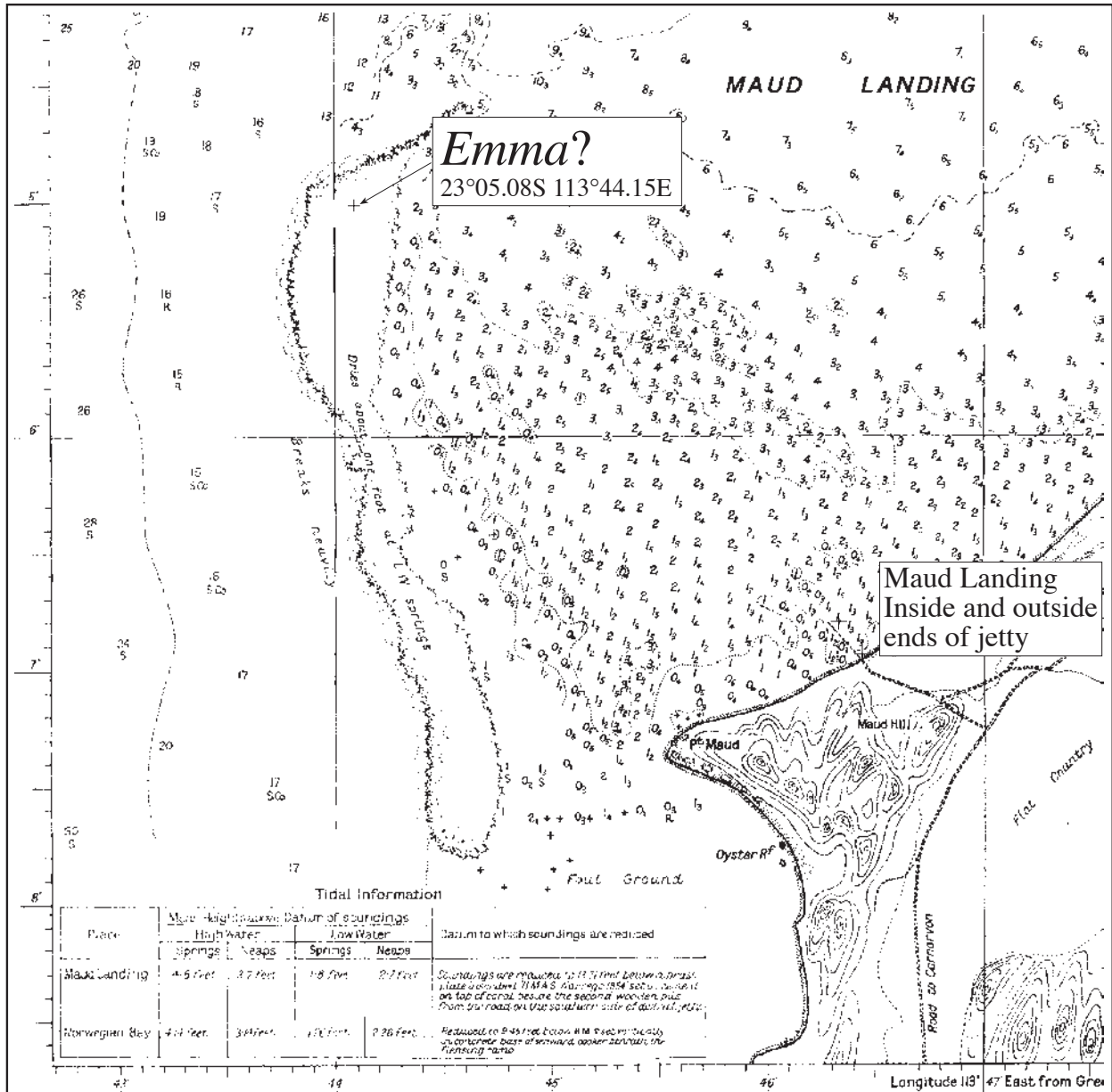
Field Daybook

Saturday, 5 September 1992

Depart Fremantle 0930. Collect Colin and meet John Clark at Cataby. Overnight at Carnarvon at the Hospitality Inn.

Sunday, 6 September 1992

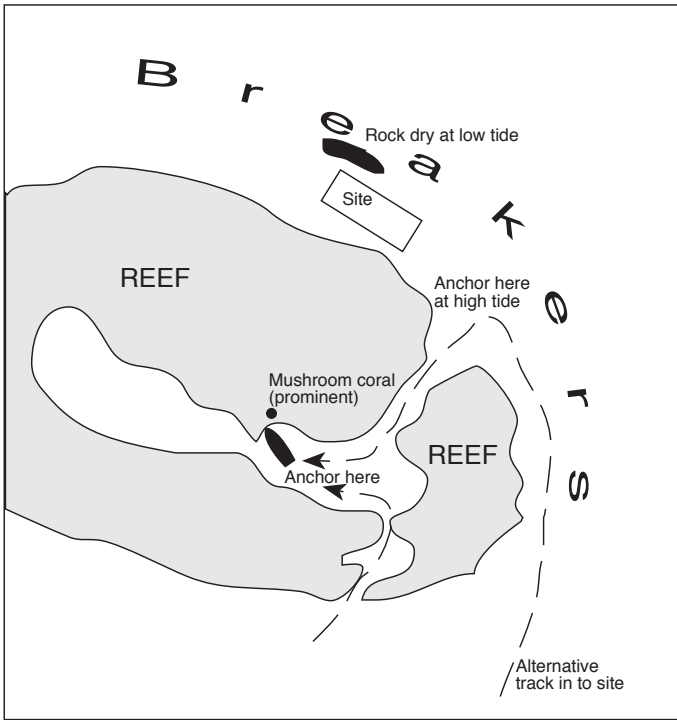
Depart Carnarvon 0745. Arrive Coral Bay 1130. Met Ian Godfrey. Depart to *Emma?* site 1330. Ian, Jon, Pat, John and Jeremy. Site located xEM1 (Note, all GPS positions are given an abbreviation and are listed in Appendix 1) is GPS position of sand hole to E of site (Figure 1). Return to Coral Bay.



Monday, 7 September 1992

Departed for the site 0700. Unable to work on site because of higher tide than yesterday. xEM2 is GPS position from the inner sand hole about 150 m W of site. Ian Godfrey bruised thigh when rolled, not seriously hurt. Visited Mauds Landing briefly on the way back and noted piles in water.

Departed again at 1145 for Mauds Landing. Obtained GPS positions on outer end (xML1) and on beach end (xML2) of jetty piles. Noted c. 94 piles, seaward end 2.8 m deep. Pat and Jon photographed, videoed and recorded piles. Pat made a rough site plan. Note the piles were originally sheathed in



a copper alloy.

To the *Emma?* site. Proceeded between the reef and the break towards the rock. On a good day it would be possible to get very close to the site (See *Emma?* general area plan Figure 2). Then moved into the sand patch to where we anchored in morning. Colin on boat, Jon, John, Pat and Jeremy to the site. Measured the main anchors and features and measured the distance from site to boat (xEM4) 180 m bearing 295° N. Measured and recorded on Geoff Kimpton's plan a number of features (Figure 3). Collected small fragment of copper alloy instrument and nail head with wood fragments (for timber identification).

Features at W end of site

Mast Goose Neck

0.3 x 0.3 m

Boom end?

8.5 Inches!

Pintle

0.6 x 0.2 x 0.08 (deep) m

Anchor

1.3 m Shank x 1.2 m across flukes

Knee (largest on site)

2.1 x 0.6 m (NB this was a canted knee)

Features in middle area (about 4–5 m from above)

Anchor

1.3 m Shank x 1.0 m across flukes x 1.5 m stock

Anchor

1.5 m Shank x 1.2 m across flukes x 1.8 m stock

Anchor

1.3 m Shank x 1.0 m Stock

Anchor (broken)

0.85 m across flukes

Features at E end of site (about 15–20 m from above)

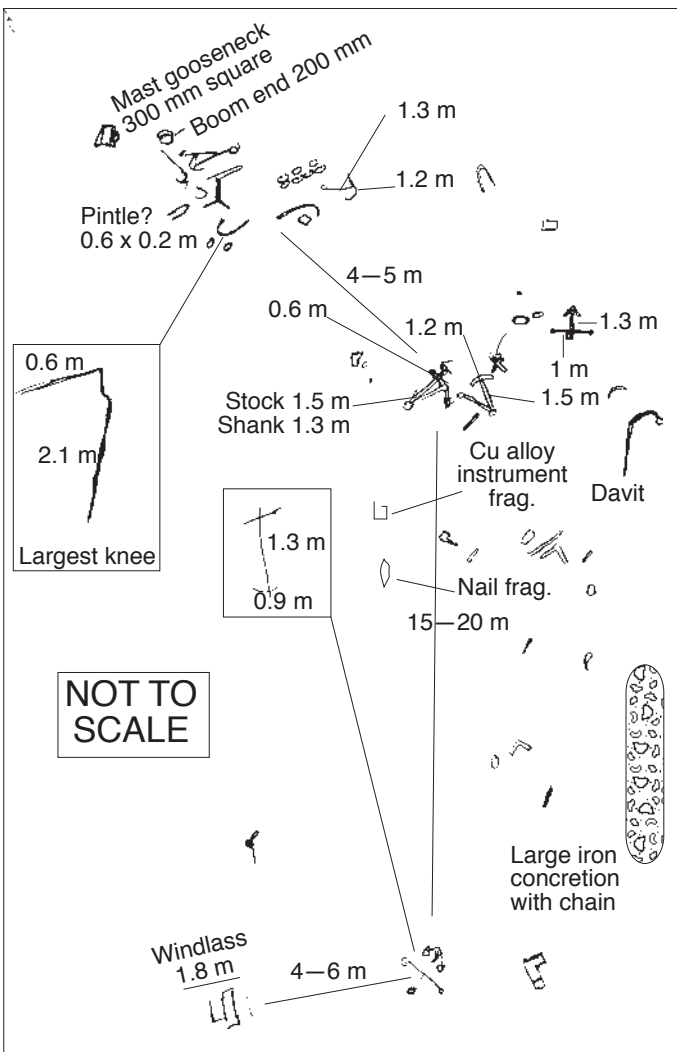
Anchor

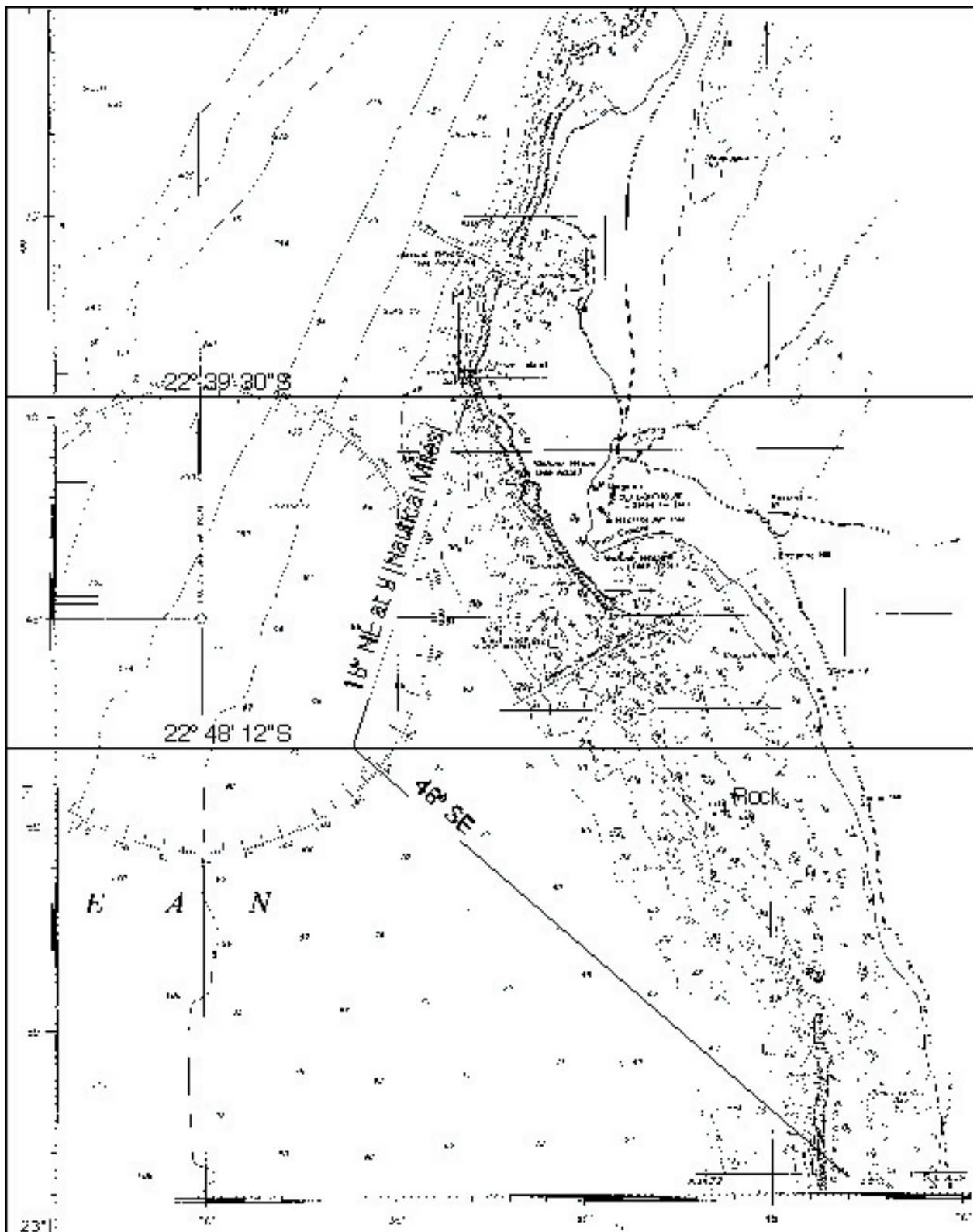
1.3 m Shank x 0.9 m across flukes

Windlass

1.8 m across length of barrel

There seems to be at least six anchors, some have chain attached, others have iron stock in place others have stocks stowed. There may be collapsable and fixed anchors. The shanks all seem to be square sectioned. The pintle is questioned as one cannot see the





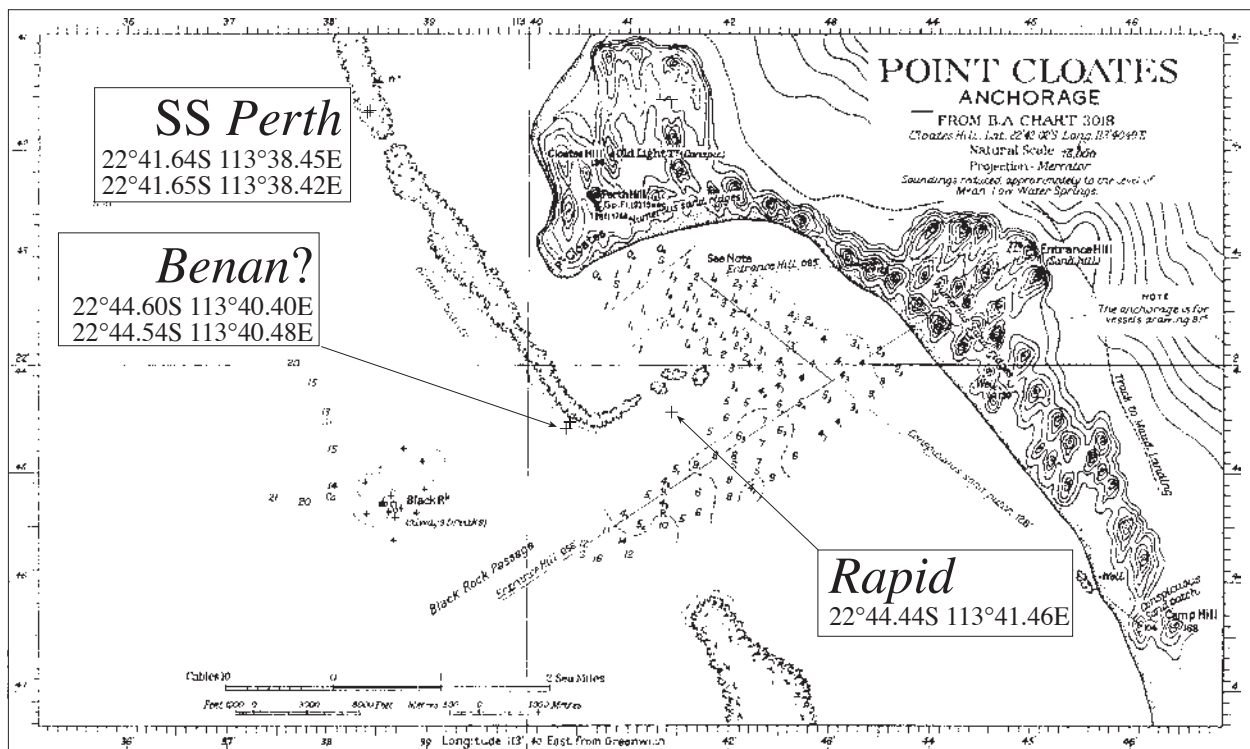
pin, but it is not a gudgeon. There are number of full-length keel bolts (copper alloy) some about 2 m long. Reasonable amount of stone ballast.

The two paper presses are both well concreted to the sea bed. Because the presses are unlikely to be recovered illegally and given the difficulty in getting them back to the boat given the tide and sea conditions it was decided not to attempt recovery. It would be possible on a good day at Spring tides to break the presses free at low tide and then recover them at high tide. It may be possible to get the boat over or close to the site and take advantage of the Easterly current.

Tuesday, 8 September 1992

Lloyd Jones arrived to join the team. Boat departed Coral Bay 0830 for the rock on the chart (see Figure 4) position xROC (see GPS). Travelled along the inside of Ningaloo Reef from Bateman Bay along Boat Passage to rock. This is a large pinnacle of rock exposed about 2–3 m and another rock awash to the ESE about 50 m. It is surrounded by a large number of coral bommies about 10 m in diameter extending several hundred meters radius from the main rock. Pat and Jon snorkelled around the rock briefly. It is obvious that any work on this site will require a systematic survey, (magnetometer and visual). Jeremy hit a rock (again!) while entering a waystation on the GPS, had to replace two of the plastic prop blades! (quickly and easily done).

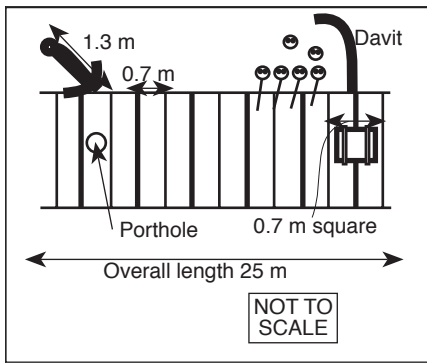
Continued north to the *Rapid*; had some trouble finding the site. Called Colin as per radio schedule at 1220. No reply, he later advised he heard us but we could not receive him, may be screening effect of hills. Went to the camp site at Ningaloo met Fisheries Department (Shane O'Donohue (OIC Exmouth) and Eric Loughton) and Colin, John Clark and Lloyd Jones. Lunch then back to



the site with Fisheries. Finally located site as per xRPD coordinate (see GPS positions, Appendix 1). The leading marks provided were noted to be quite inaccurate; the sailing instructions are also incorrect. The GPS is exactly over the site.

Wednesday, 9 September 1992

0800 Departed camp in Fisheries vessel and *Seaspray*, dropped Colin at W bay to walk the beach to search for remains of the Walcott sites. Fisheries officers, with John Clark, and Lloyd Jones to swim the S site of reef to look for the Forde site. *Seaspray* to *Rapid* for Jon to do conservation work on site. Found site with GPS exactly on position. Radio message to say Forde site found. Fisheries returned to *Seaspray* transferred John and Lloyd and *Seaspray* to site, Fisheries to inside reef opposite site. Pat, Jon and John dived on site. Jeremy and Lloyd on boat. GPS position xSO1 mobile fix (hence 25.5m SD). A good visual transit for the site is to follow the reef NW observe the new lighthouse approaching the old lighthouse from the left. When the two coincide you have just passed the site. This is a very fast moving transit. On sextant on site the angle 0° 33.5.



NORTH

Figure 7. *Benan?* inside reef site plan

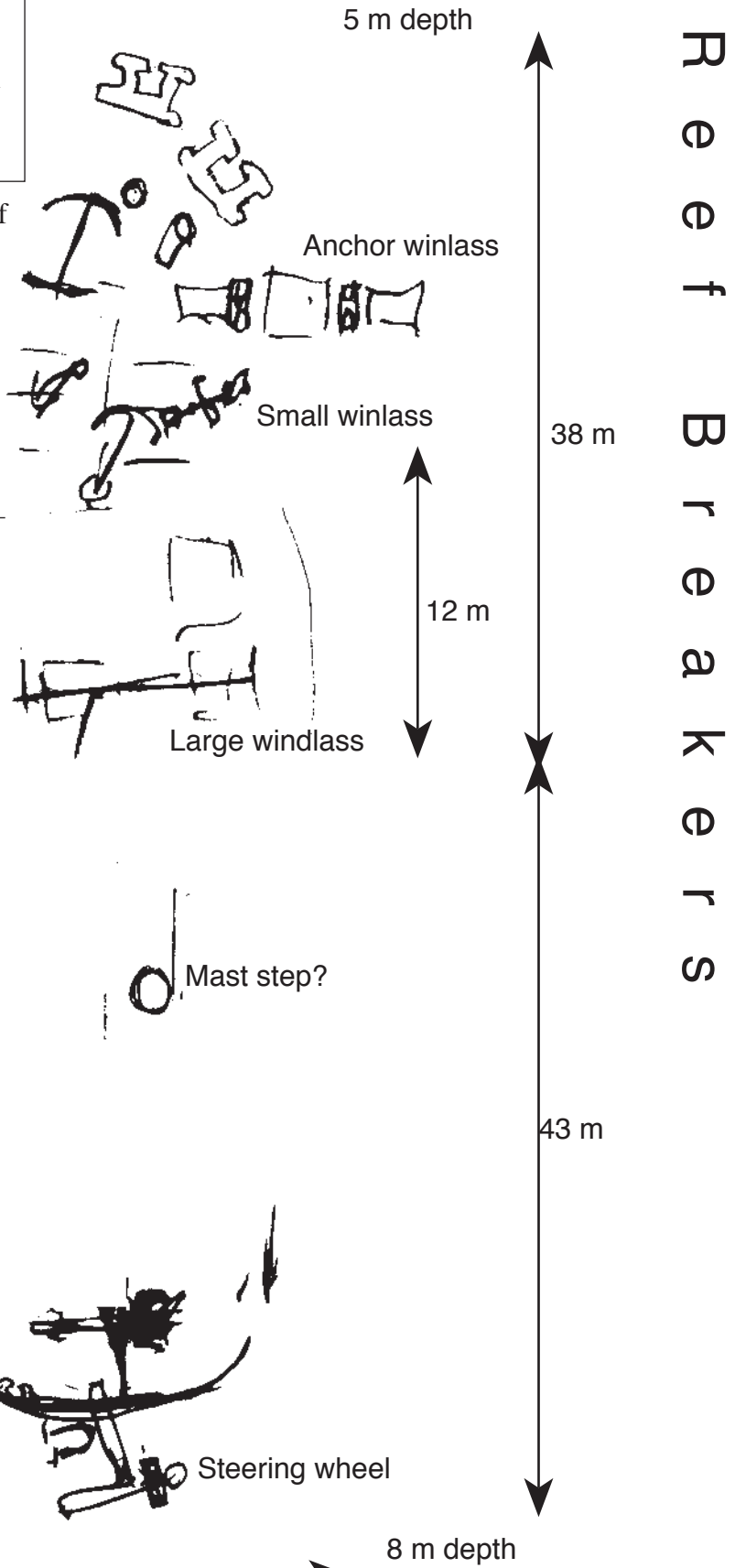


Figure 6. *Benan?* main site plan

Compass bearings:

Pt. Cloates	355°
Old Lighthouse	150°
Entrance Hill	75°
Black Rock	240°
<i>Rapid</i>	185°

Sextant Angles

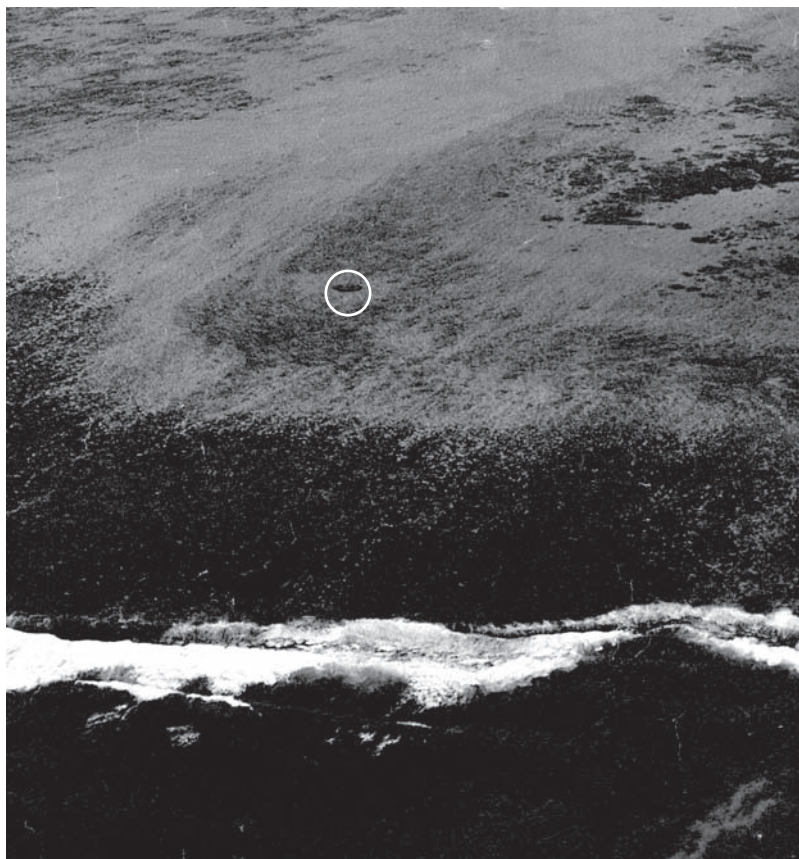
Point Cloates→LightHouse	18°34
Lighthouse→Entrance Hill	59°37

Site is very large iron vessel (*Benan?*). There is no evidence of a cargo of coal. Site 80 m long with two windlasses, 2 large anchors 1 small. Iron plates and masts. See plan and Jon and Pat's notes. Moved to inside reef area (xPT2). Several large sections of ship. Largest is bulwarks about 25 m long with 5 or 6 deadeyes, a davit, small collapsable stock anchor 1.3 m long, brass porthole, square scuttle? 0.7 x 0.7 m. The iron frames on this alternate thick and thin spaced 0.7 m appart.

Compass Bearings:

Lighthouse	10°
Point Cloates	350°
Entrance Hill	75°
Black Rock	235

1430 to *SSPerth* for GPS. PER is the inside reef position, PER 2 is on top of reef S of site, PER3 is position of plates on the inside, PER 4 is the position of engine on outside of reef and the xPER is averaged position of engine. Went there at low water, very difficult to walk across the coral flats before the rock part of the reef was reached. Doug Myers (OIC CALM Exmouth) arrived late afternoon.

**Thursday, 10 September 1992**

0800 to 'boat-shaped' rock on aerial photograph at N end of Norwegian Bay (see Figure 8). Rock quickly located, it is a large coral head (ROKW). Then to *Zvir* site. Located reasonably quickly best fix xZU3 position of bow of vessel.

Compass bearings

N Point	35°
Whaling Station	70°
Lighthouse	155°

Sextant Angles

Lighthouse→Whaling Station	84°07
Point to Whaling Station	34°36

Note the sextant angles may be a bit off because of difficulty of identifying the Whaling Station because of the angle of the Sun. A good transit is that there are two small breaking rocks one on either side of the Whaling Station.

The site consists of a large iron wreck, 2 iron stockless anchors and

Friday, 11 September 1992

Departed (Jeremy, Pat and Jon) with Fisheries Boat, others with cars to Tandabiddy. Went to the *Chofuku Maru* site. Searched the site for about 2 hrs. Not locatable with given information. Proceeded to Tandabiddy. Met up with rest of team. Then with Lloyd to the anchor site. Found reasonably quickly (chain running seaward). Position xANC. Searched seaward and towards reef for possible associated site with no success.

Compass bearings

Vlaming Head LH	61°
Central Exmouth Radio Mast	70°
Tandabiddy lead	125°
Notch in Hill	158°

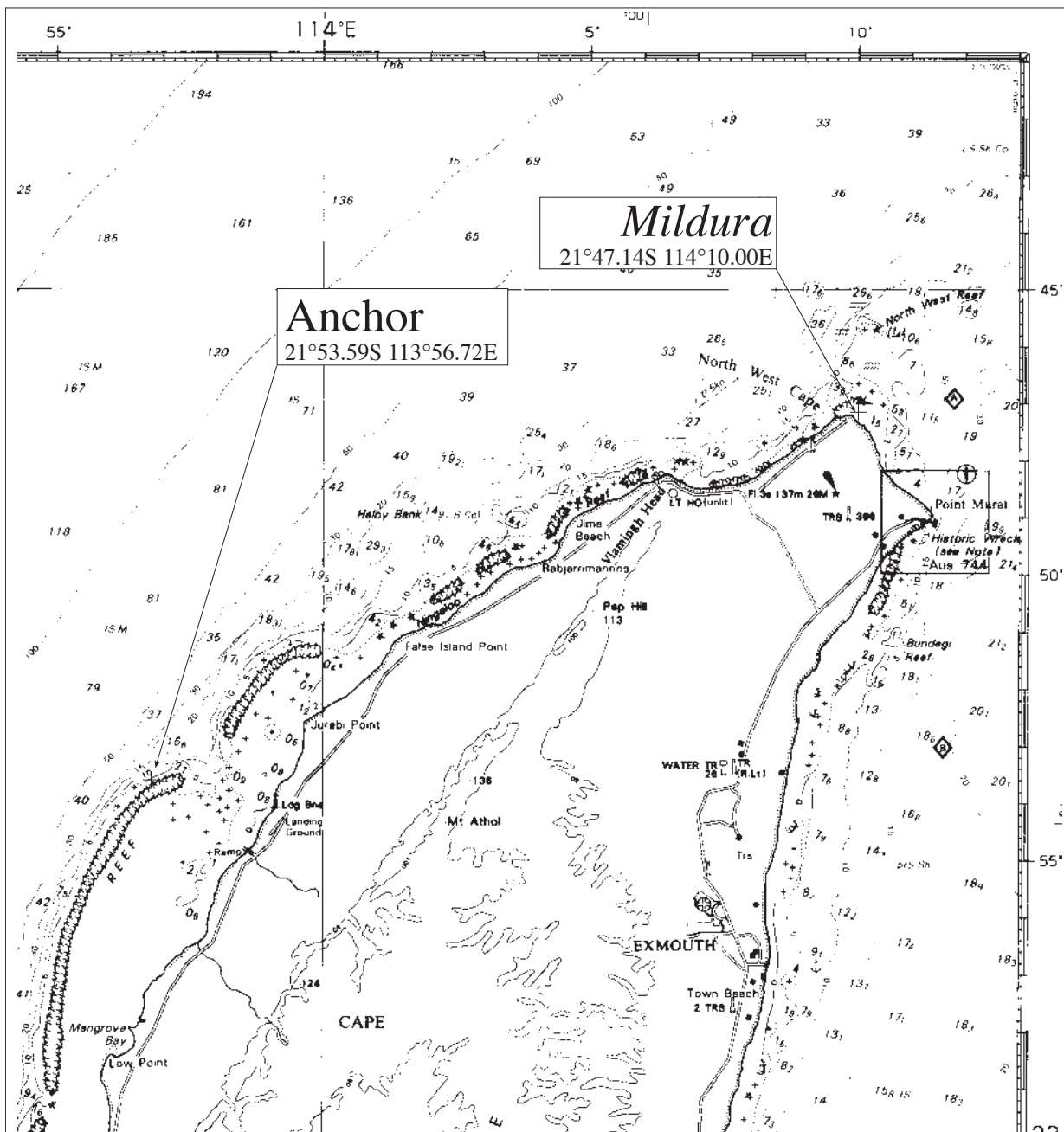
Sextant Bearings

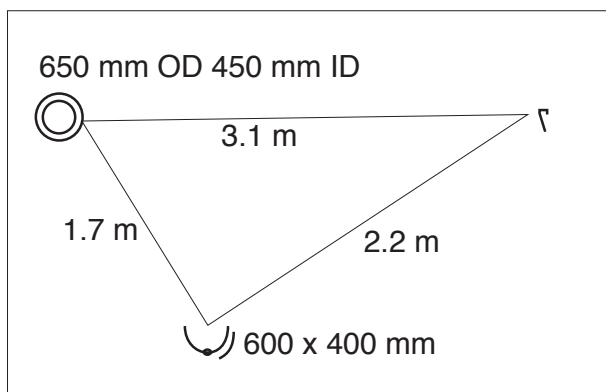
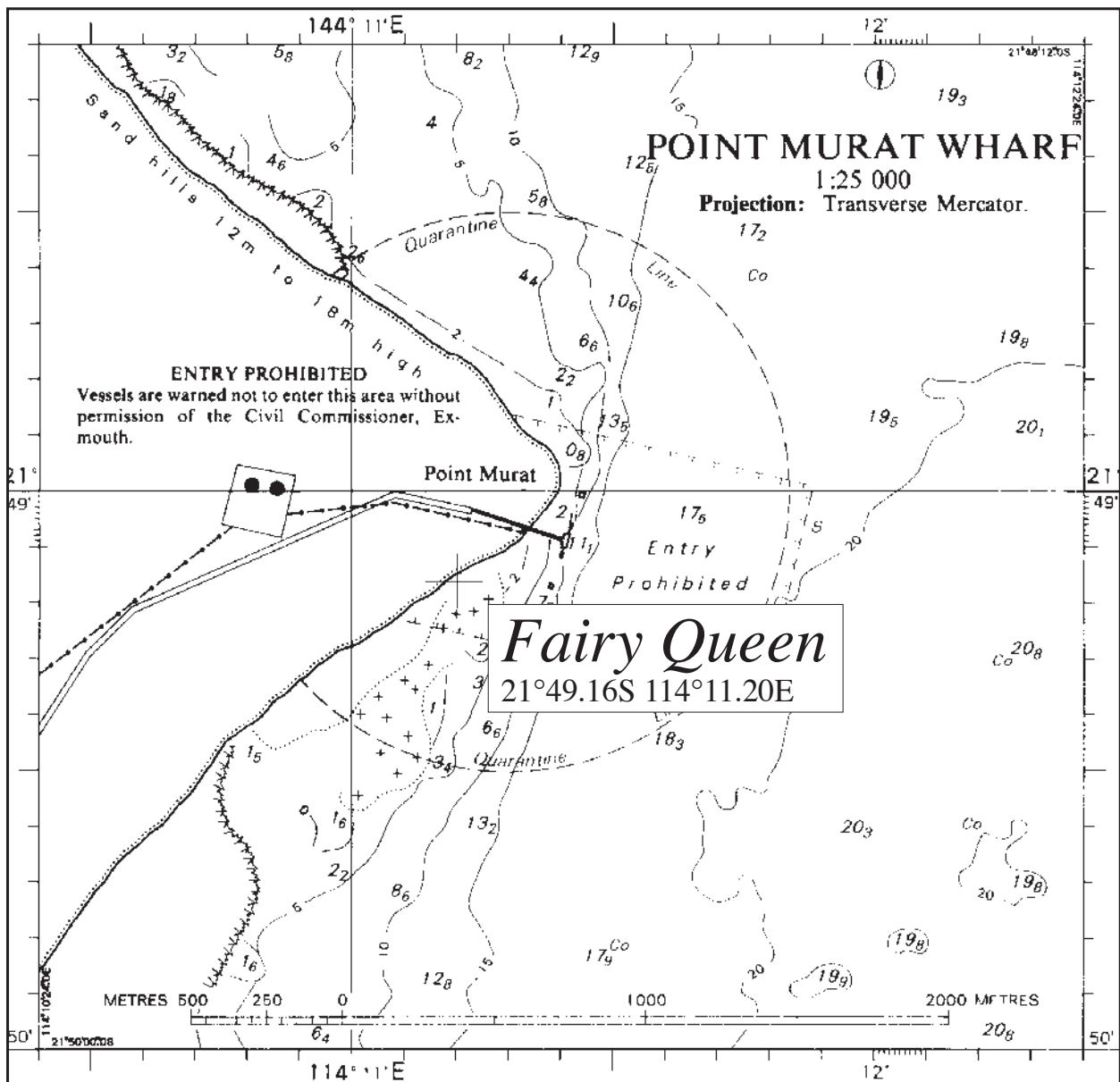
Vlaming HLH → Tandabiddy	62°45'
Tandabiddy → Notch	33°06'

Dimensions

Shank	1.4 m
Stock	1.9 m
Arms (palm tip to palm tip)	1.2 m
Palm length	0.4 m
Shank diam.	0.13 m
Ring OD	0.3 m
Ring ID	0.2 m
Chain length approx	25 m
Chain link	100 mm x 80 mm

Returned to Tandabiddy took the boats out of the water. To Exmouth. Said goodbye to Fisheries.





Saturday 12 September 1992

0800 to boat ramp located John's anchor (GPS xANC), lifted it with bag and dragged it ashore. 10.30 left Colin, John and Lloyd to winch it out of water. Proceeded to *Fairy Queen* site. Located it quickly, xFQ1 and Jeremy and Jon carried out brief survey of three visible objects. Site largely covered with sand, the last survey was carried out after cyclone when more was uncovered

Compass Bearings

- S. Radio Tower 245°
- S. Jetty Mooring Structure 95°
- N. Radio Tower 305°

Then to *Mildura* site for GPS xMIL, and surface photography. Returned to help get anchor onto John's pickup, boat out of water 1230. Departed Perth 1430, Fremantle 0530.

The following table (Table 1) is a list of the GPS positions recorded during the field trip. The GPS used was a Magellan 1000 Pro, and the coordinate system used was Australian Geodetic (1984) Spheroid. Each position lists the abbreviated site reference (note if preceded by 'x' it means that it was an averaged position), the latitude and longitude (in decimal minutes), the number of measurements if the position was averaged and the standard deviation of these determinations (in metres), the date and time and the identification number of the three satellites used together with their signal strength and the PDO (Position Dilution of Precision— a measurement of possible precision due to the orientatiuon of the satellites) of the determination. All readings on this trip were two dimensional measurements recorded off the external antenna located 3 m above sea level.

It should be noted that GPS positions when plotted on Admiralty charts often plot in anomalous positions, particularly where the charts are quite old. For example, the *SSPerth* plots on the chart Aus 72 which date to Austraklian and British surveys to 1956, 0.3 nautical miles S of the position shown on the chart. This is typical for 'older' style charts, particularly fathom charts which date from early surveys. For example, on the modern Department of Marine and Harbours chart of Fremantle DMH 001 (1:7500), the GPS position of the lighthouse on the North Mole was ten metres out from the position indicated on the chart. Similarly, the position of the rock (xRock) is 0.1 of a nautical mile out from the position shown on the metric 1985 Admiralty chart Aus 745 (1:150000).

Table 1. GPS Positions.

Site	Lat S	Long E	No.	SDm	Date	Time	Sat 1	Sat 2	Sat 3	pdo
xENM (Emma?)	23°05.08	113°44.15	200	12.6	06/09/92	15:05:06	02/9	12/9	13/9	1.3
xENE (Emma?)	23°05.03	113°44.08	200	13.2	07/09/92	08:44:40	13/9	14/9	15/9	1.6
xNL1 (North Land)	23°06.79	113°46.33	200	12.3	07/09/92	11:32:12	02/9	16/9	18/9	1.5
xNL2 (North Land)	23°06.93	113°46.46	200	14.3	07/09/92	11:51:54	02/9	16/9	18/9	1.7
xENM (Emma?)	23°04.98	113°44.08	200	14.1	07/09/92	14:13:06	02/9	13/9	16/9	1.7
xRock	22°49.61	113°43.73	200	11.7	08/09/92	10:02:39	13/5	14/9	18/9	1.4
xRPD	22°44.44	113°41.46	200	10.7	08/09/92	14:57:16	02/9	12/9	13/9	1.4
xRQ1	22°44.60	113°40.40	200	25.6	09/09/92	11:02:03	14/9	18/9	24/9	1.4
xRQ2	22°44.52	113°40.50	200	11.6	09/09/92	12:35:22	24/9	18/9	26/9	1.6
PER	22°41.72	113°38.63			09/09/92	16:21:06	12/9	20/9	24/2	1.6
PER2	22°41.69	113°38.45			09/09/92	16:38:30	12/5	20/9	24/9	1.5
PER3	22°41.64	113°38.45			09/09/92	16:39:59	12/9	20/3	24/9	1.5
PER4	22°41.66	113°38.43			09/09/92	16:42:02	12/9	20/9	24/8	1.5
xPER	22°41.65	113°38.42	10	8.6	09/09/92	16:43:14	12/9	20/8	24/9	1.5
ROV	22°35.93	113°38.33			10/09/92	09:03:32	13/9	14/9	24/7	1.8
E1	22°36.53	113°37.52			10/09/92	09:24:22	13/9	14/9	18/9	1.6
xEU2	22°36.55	113°37.55	100	24.0	10/09/92	09:45:11	14/9	18/9	24/9	2.4
xEU3	22°36.55	113°37.56	200	19.7	10/09/92	09:58:15	14/9	18/9	24/9	2.1
FIN1	22°38.93	113°37.93			10/09/92	11:30:07	02/9	16/9	18/9	1.6
xFL2	22°38.93	113°37.61	10	15.6	10/09/92	11:51:34	16/9	18/9	24/9	1.7
xFK3	22°38.93	113°37.61	200	15.0	10/09/92	12:04:42	16/9	18/9	24/9	1.7
xG	22°38.93	113°37.65	10	14.8	10/09/92	12:11:05	16/9	18/9	24/9	1.7
xRE1	22°44.54	113°40.48	200	9.7	10/09/92	15:53:17	02/9	12/9	16/9	1.3
xAM	21°53.59	113°56.72	200	14.3	11/09/92	14:16:17	02/9	13/9	16/9	1.7
xRQ1	21°49.16	114°11.20	200	10.3	12/09/92	10:56:29	14/9	18/9	24/9	1.4
xML	21°47.14	114°10.00	10	13.7	12/09/92	11:18:37	02/9	16/9	18/9	1.6

Table 2. Slide and Video Reference numbers

	B & W	Colour Slides	Video
<i>Benan</i> , underwater		BNN/A/1-57	#109 52'03"-1.33'25"
<i>Benan</i> , underwater			#110 38'-45'
<i>Benan</i> , above water		BNN/B/1-8	
<i>Benan</i> , transits	MA4246/8-21		
Coral Bay		WI/1641-1671	
<i>Emma?</i>			#109 14'50"-30'20"
<i>Emma?</i> , transits		MA4246/1-7	
<i>Fairy Queen</i>		FQ/36-40	#110 48'38"-49'23"
<i>Fairy Queen</i> , transits		MA4246/35-37	
SS <i>Fin</i>			#110 32'30"-37'50"
John Clarke anchor	MA4244/33-34	MA/WI/1766-1771	
Lloyd Jones anchor		MA/WI/1736-1745	#110 45'-48'23"
Lloyd Jones anchor, transits	MA4246/29-33		
Maud Landing jetty		WI/1648-1665	#109 7'14"-14'50"
Ningaloo Reef (pillars)		WI/1672-1677	#109 30'25"-36'03"
Point Cloates		WI/1678-1705	
Point Cloates		WI/1728-1735	
<i>Rapid</i>	MA4244/24-28	PC/A/961-979	#109 36'03"-52'03"
SS <i>Mildura</i>	MA4244/29-32	MA/WI/1751-1765	
SS <i>Perth</i>	MA4244/21-23	MA/WI/1709-1727	
SS <i>Zvir</i> , underwater	MA4245	ZVR/1-60	#110 0-32'30"
SS <i>Zvir</i> , transits	MA4246/22-28		

Discussion

Correo de Azia site

The *Correo de Azia*, wrecked in 1816 off Point Cloates. She was a Portuguese advice boat bound for Macau. The survivors got to Macau, and a search party was sent back in a brigantine called the *Emillia*. The captain, Luis Antonio da Silca Beltrao, published a report and mentioned that on board his vessel was the captain and some of the crew of the *Correo de Azia*. The report was published in Calcutta in 1818. The account deals largely with issues relating to the longitude and plotting of Point Cloates, which was at the time a notorious navigational danger. The account mentions, but does not locate, the exact position of the site.

The following is an extract of the log which deals with descriptive issues related to the *Correo de Azia*, interestingly, the log makes reference to the place where the vessel was lost, but does not give the latitude.

The shallows of the reefs close to the coast extend northward in a 20° 00' NE direction, while we were steering SSE and SEbS, in order to seek the reef on which *Correo de Azia* was lost. According to the latitude in which the vessel was lost and the course taken by the launch in which the crew was saved they found themselves amongst this large rocky danger which extends seawards from the coast, (in my opinion the loss of the vessel was not due to a lack of knowledge, but by the proximity of the coast, and even more so at night when there is insufficient light to give adequate warning of dangers and so to avoid dire consequences): it was fortunate that when we sighted the large rock we also saw the large area of shallows at the point of land and extending well to seaward, while the depths were from 40 to 30 fathoms, sand and rock. At 21 h 56 m 13 s—21h 58 m 07s—21h 59m 14s. Having taken the number of observations which you see, numbers 3 to 6, the mean Longitude was found to be 113° 47' 45"; later at 24h the observed Latitude was found to be 22° 48' 12". The reef or large rock which extends seawards from the coast bore 18° 00' NE and in distance more or less 9, and the reef on which it is believed *Correo de Azia* was wrecked 48° SE. The Latitude of the large rock, seaward of the coast should therefore be 22° 39' 30". According to what I have heard and from the officers themselves, our combined remarks and reflections are: the calculated longitude of the vessel from lunar distances to the sun, deduced from four observations is 113° 47' 45"; then the land should be in Longitude 113° 50' 46", with small errors latitude given above 22° 39' 30".

7th June 1817. We continued on a NE tack, coasting along the large reef, but only areas awash were seen, while our depth was 37 fathoms, sand, rock and gravel, and the current carries us strongly towards the coast; this coast is of a good height, the highest we had seen along the whole coast. The boat went to the shore, in it my commander who, because of the misfortune which had happened to him, would be able to recognise the position of the mishap in the same boat were some of the sailors who had been with him when he was wrecked. They encircled the reef and recognised the position, the exact site of their misfortune, with a bottom of rocks and a circle of rocks similar in appearance to a salt marsh. They were then sure that this was the position they sought. At 22h 00 I took a large number of observations and my commander an equal number, from which we deduced the calculated Longitude E of Greenwich as 113° 52' 47.07" as can be seen from calculations Nos 7 to 10 so that in this Latitude the Longitude of the coast should be 114° 00', due to the distance we were off it in my estimation; this should be accurate to plus or minus one minute. The extremity of the reef on which the vessel *Correo de Azia* should be in Longitude 113° 52' 00" and the land on this parallel in 113° 55' 30". Therefore my work should serve from today onwards to assist my fellow seamen, completed by astronomical observations though without the aid of a chronometer. They should navigate with great caution but sighting the large patch of vegetation which is situated in a mean latitude of 23° 51' 25" S and Longitude 113° 44' 30" or even when finding themselves on the parallel of 24° 00' S and within sight of land, they should never steer E of a course 11° 15' even when the currents do not set them into dangers (if the SW monsoons is not blowing) lying between 23° 15' and 22° 57', they will encounter the one lying in 22° 39' 30", 113° 50' 46".

The following are a list of navigational references in Luis Antonio da Silva Beltrao's Journal of 1817.

Date	No	Latitude	Longitude	Notes
30 May	1	22°21'28"	113°37'50"	Land sighted 1500h, 5L, NE to SEbE, 70F
	2	22°35'00"	113°15'20"	New position E
31 May	3	23°10'51"	112°58'38"	Encountered small island then position
1 June	4	23°37'00"	113°09'38"	Calc. long 113°12'00"
	5	23°40'49"	113°29'00"	Position
	6	23°51'25"	113°44'30"	Feature, 54°SE 18L (Miles?)
2 June		23°09'40"	Large parch bearing 37°SE at 6m	

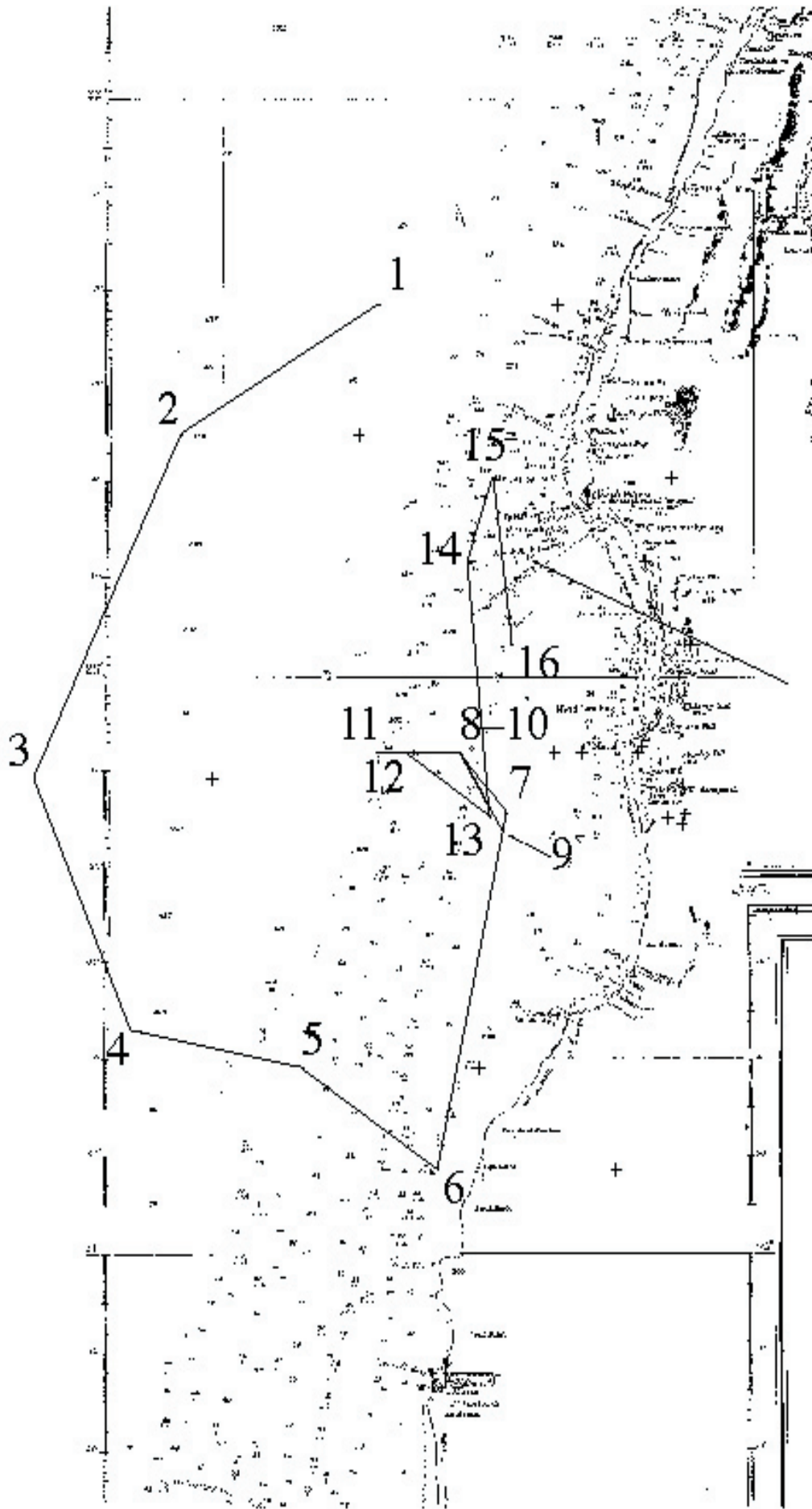
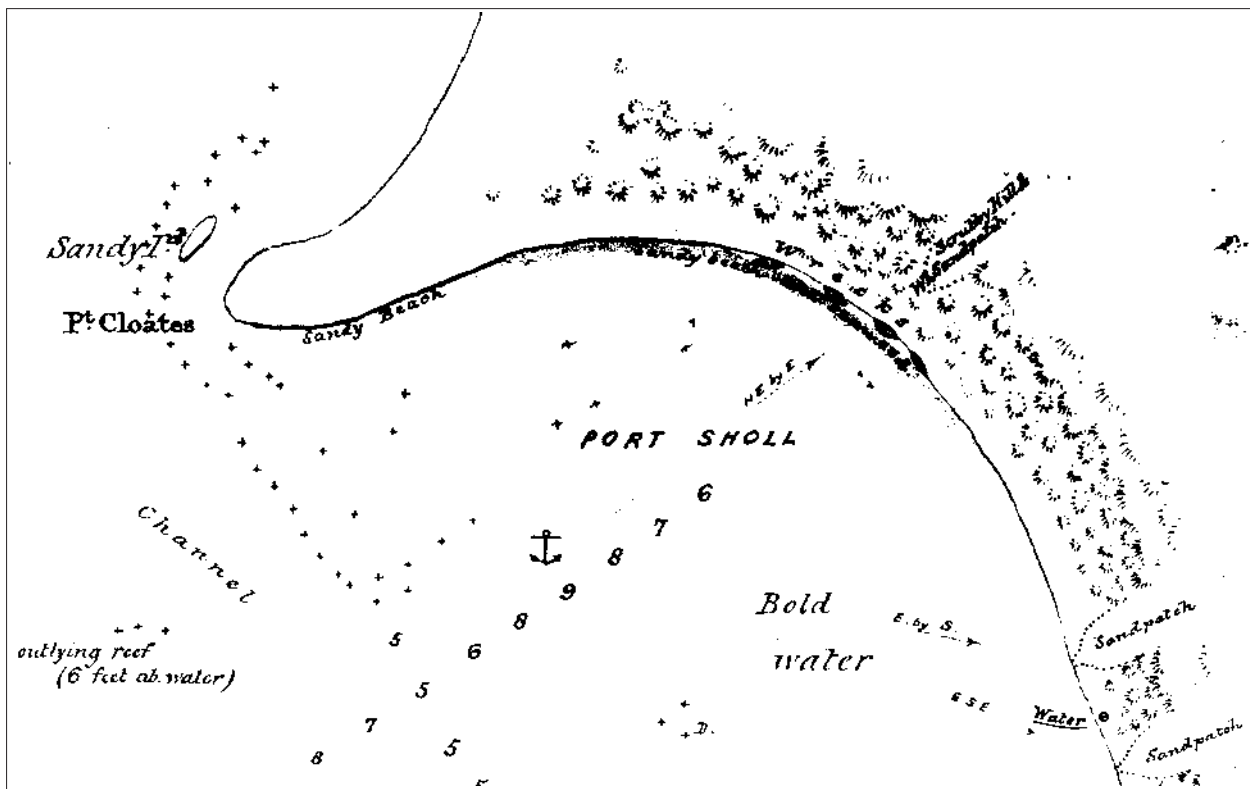


Figure 13. Plot of the course of the *Emillia* showing the true positions (crosses) and a course based on an approximation for the true longitude.

3 June	7	23°14'28"	113°52'20"	Position of patch
	8	23°08'00"	113°47'00"	Reef
		23°16'44"		observed position, trees 84°NE 7M
4 June	9	23°16'02"	113°51'30"	New deduced position of trees
		23°08'00"	113°47'00"	
	10	23°08'00"	113°37'30"	
			113°25'00"	estimated log of above
	11	23°08'00"	113°40'37"	large patch 47°SE
5 June	12	23°14'48"	113°50'20"	deduced position of patch
	13	22°48'12"	113°47'45"	Position. Rock 18°NE 9M?, reef CdA lost 48°SE
	14	22°39'30"	113°50'46"	
6 June	15	22°56'50"	113°52'47"	

It is interesting to note that in Figure 13 where the above positions are plotted on a modern chart there are considerable discrepancies with the longitude. The crosses show the true positions, as given above. The plot (1–15) with the lines joining the points has been moved eastward so that point No. 6 is in a logical position. It is obvious that the longitude position was wrong by about ten nautical miles. We can assume that latitude was correct to at least one nautical mile. Therefore the position given on 5 June is critical. At this time the rock, which I assume to be Frazer Island, was 18° NE at nine nautical miles. This gives an approximate position of longitude shown in Figure 4. From this position, the ambiguous statement that the *Correo de Azia* was lost 48° SE of this point is a little more clear, suggesting that the site is somewhere on the section of Ningaloo Reef lying directly north of Bateman Bay. This reef is eight nautical miles long; there must be a more archival information obtained to help identify the position.



The Walcott Maps

Figure 14. The Walcott map taken from Henderson & Henderson's *Unfinished Voyages, Western*

Australian shipwrecks 1851–1880

In 1876, Pemberton Walcott was given command of the schooner *Victoria* with orders to proceed to the Point Cloates area and search for survivors of the wreck *Stefano*. The accuracy of Walcott's report is questioned by Henderson & Henderson (1988) but it is quite clear that three if not four or five different shipwreck remains were sighted by Walcott. His sketch map, Figure 14 shows four separate wrecks, although it is likely that these were not complete wrecks, but rather remains of parts of the vessels that would have been wrecked on the outlying reefs.

Conclusions and Recommendations

Emma? site

This site requires a complete survey at some point in the future. It is recommended that the paper presses be left for the present as they are not at risk nor is it likely that they would have documents in them. The two presses were much more likely to be an order of some sort for the Northwest.

Maud Landing

It is strongly recommended that a detailed survey and assessment of this site is carried out in the near future. The site, after assessment, should have management recommendations made to the Heritage Council. Some archaeological sampling would be appropriate to assess the archaeological potential of the site.

Correo de Azia site

It is unlikely that this site will be discovered without either a major survey operation along the whole of the main reef, or detailed archival research to locate more precise information about the site. The latter has already been initiated and it is recommended that no further work is undertaken until there is more information.

Benan site

This site needs a detailed survey. The site will be difficult to work on because of the exposed nature of the reef. It is recommended that the site be protected under the *Historic Shipwrecks Act* as the Ningaloo unidentified possibly the *Benan*.

Rapid

No further work required.

Walcott sites

These sites should be further investigated. This would require a small team using a small boat and a magnetometer to conduct a shallow water survey and then a small dune motor-tricycle to do the same thing on the beach.

SS Fin

This site requires no major work, although a detailed survey of the site should be made at some point in the future.

Frazer Island lighthouse

This site should be carefully documented as it is likely that the structure will not last very much longer before it will begin to break up. It is recommended that following a survey and assessment

it should be considered for protection under the Heritage Act.

Zvir

No further work required although the site should be properly surveyed at some point in the future.

Chofuku Maru

As this site was not located because of inadequate visual transits and compass bearings, it is recommended that in the near future it should be located using a magnetometer. The Fisheries Department have offered to assist by providing a boat. The operation would require one person to fly to Exmouth, meet with the Fisheries and proceed to the site. The whole operation would take no longer than three days. It should be noted that diving will not be possible, but visual confirmation should be possible by snorkelling.

Lloyd Anchor

It is likely that this is a lugger anchor; it is certainly not a lighter mooring. Possibly the anchor was abandoned when a vessel got into difficulties. It may be worth raising at some future date. It is not appropriate to protect under legislation. A letter of recognition should be sent to Lloyd.

Mildura

No further work required although the site should be properly surveyed at some point in the future.