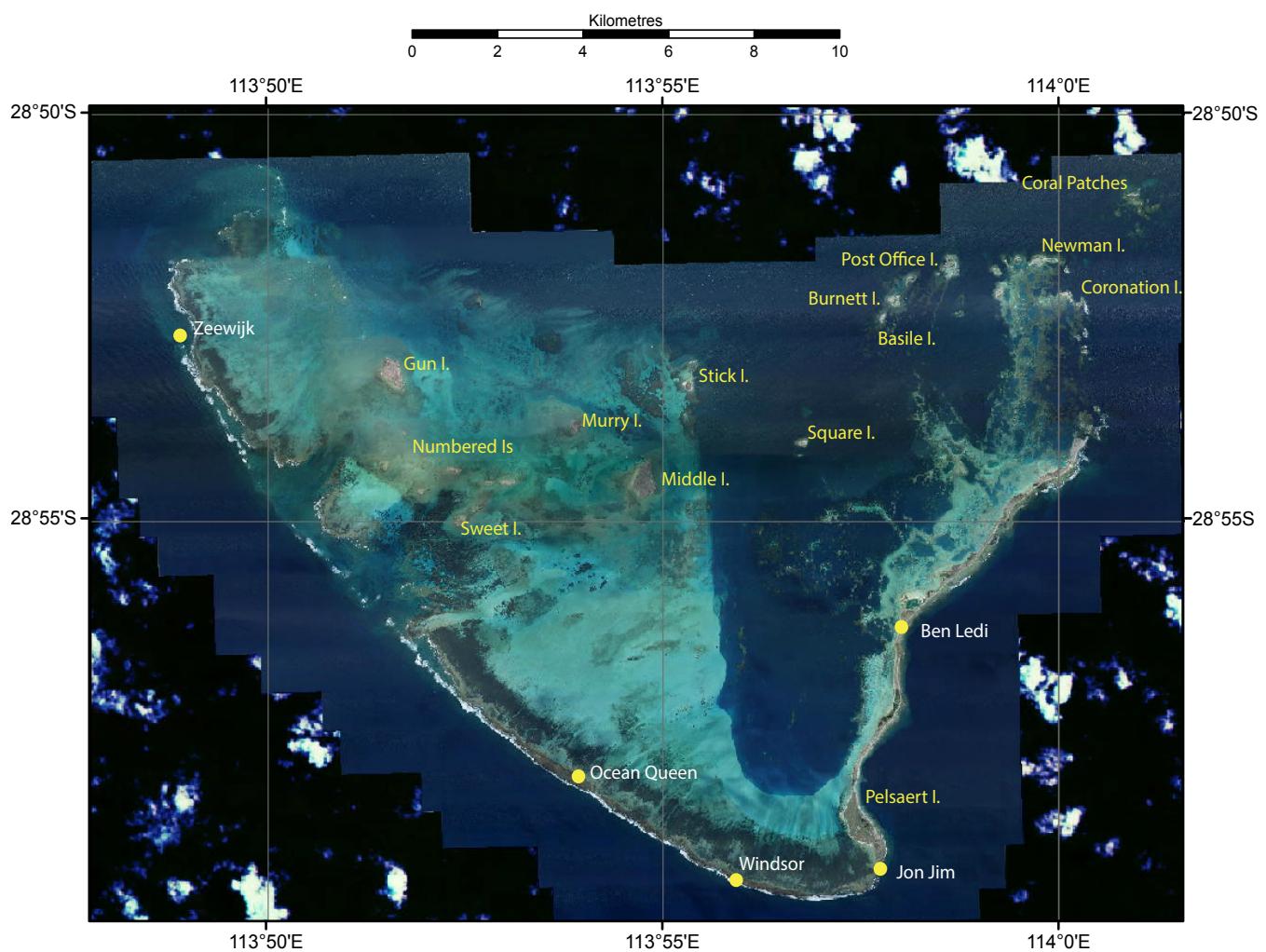


# The mystery of the missing VOC shipwreck in the Houtman Abrolhos Islands, Western Australia

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# Contents

Abstract	1
Introduction	1
The 18th-century journals	2
Subsequent events	5
The 18th-century charts	7
The 19th century	10
The 20th century	14
The Museum expeditions in the 1970s	19
The 2008 aerial magnetometer survey	22
The 2014 survey	23
The 2016 aerial magnetometer survey	27
Museum investigation of the targets 2016	32
Archival evidence vs archaeological evidence—discussion	36
The <i>Ridderschap van Holland</i>	36
The <i>Fortuyn</i>	37
The <i>Aagtekerke</i>	38
Ships involved in the inter Cape–Batavia trade	38
Another European vessel	38
Flotsam from a wreck elsewhere	38
The elephant tusks	38
The ivory trade	39
The DNA analysis of the elephant tusks	40
The likely origins of the ivory	41
The question of ordnance on the <i>Zeewijk</i> site	42
Conclusions	42
Acknowledgements	43
References	43

# Figures

Figure 1.	Extract from Steijns' Journal referring to hand grenade.	3
Figure 2.	Extract from van der Graeff's Journal referring to hand grenade.	3
Figure 3.	Extract from Anonymous Journal referring to dead seal.	4
Figure 4.	Steijns' first chart.	7
Figure 5.	Steijns' second chart.	7
Figure 6.	Van der Graeff's first chart.	8
Figure 7.	Van der Graeff's second chart.	8
Figure 8.	The anonymous chart.	9
Figure 9.	Stokes' Gun in the Royal Armouries.	11
Figure 10.	Illustration from Goldsmith (1946): 48.	15
Figure 11.	Illustration from Goldsmith (1946) of material reputed to be from the <i>Batavia</i> .	16
Figure 12.	Undated illustration from the WA Museum of Broadhurst Collection.	16
Figure 13.	The Mildura cannon shown in <i>The West Australian</i> , May 1953.	18
Figure 14.	The Boschetti Cannon.	19
Figure 15.	Site plan produced in 1978 showing the major features of the <i>Zeewijk</i> site.	20
Figure 16.	Conditions on the outside reef area during survey work in 1978.	21
Figure 17.	Large section of hull timber on inside reef area, found almost 2 km from main wreck site.	21
Figure 18.	The 2008 Fugro aerial magnetometer survey.	22
Figure 19.	The key points located in 2014 to geo-reference the Museum site plan.	23
Figure 20.	Landgate images of the Two Cannon site 2006 (left) and 2015 (right).	23
Figure 21.	The aerial photograph showing Cannon 4 on Landgate aerial photograph in 2006.	24
Figure 22.	The Two Cannon site.	24
Figure 23.	The 2008 Fugro magnetometer targets and the 1978 survey overlaid on the Landgate 2006 aerial photograph, showing close alignment of targets to site plan.	25
Figure 24.	Area D–E showing the coral lump on the 1978 site plan exactly corresponds with Landgate's 2015 aerial photograph (brown lump).	26
Figure 25.	Railway iron site.	26
Figure 26.	The 2015 Landgate aerial photograph showing features (yellow arrow, left) that correspond with the 12 Cannon site on the Museum's 1978 plan (right).	27
Figure 27.	Aerial survey area of Pelsaert Group.	28
Figure 28.	The 2016 magnetometer survey showing targets.	28
Figure 29.	Pelsaert Group showing the targets; note green circles are targets examined.	32
Figure 30.	Targets ZW052–053 on side-scan (left), feature shown with red arrow; enhanced image of sonar record (right).	32
Figure 31.	Target ZW077.	33
Figure 32.	Targets ZW115, ZW116, ZW117 (left) & target ZW118 (right).	34
Figure 33.	Main Site and target ZW002 to north.	34
Figure 34.	Target areas at south end of Pelsaert Island (left), all associated with Department of Transport moorings; targets associated with <i>Ocean Queen</i> (right).	35
Figure 35.	Pearl farm debris shown on aerial photograph in 2006 (left); same area in 2015 (right).	35
Figure 36.	African ivory DNA types (after Coghlan, Bunce & Green, 2016).	40
Figure 37.	Map showing the geographic distribution of elephant mtDNA subclades across Africa (from Ishida, <i>et al.</i> , 2013).	41

## **Abstract**

The *Zeewijk*, a VOC *retourschip* (returning vessel) sailed for the Indies in 1726; it was wrecked in the Pelsaert Group of the southern Houtman Abrolhos islands in the following year. The survivors managed to reach a nearby island, where they lived for nine months. Using material salvaged from the wreck, they built a rescue vessel and eventually reached their intended destination of Batavia. A number of extant documents, recording the events that occurred, refer to evidence, seen by the survivors, of a second wreck in the area. In the 19th century, after European settlement in Western Australia, early surveyors also reported finding evidence of both the *Zeewijk* and a second wreck. These written reports led to speculation, after the discovery of the main *Zeewijk* site in 1968, about the possible location of a second wreck site. In the 1970s the Western Australian (WA) Museum conducted three major survey and excavation projects on the *Zeewijk* but found no evidence relating to a second site. Subsequently, in 2008, a privately sponsored aerial magnetometer survey was undertaken of the northern section of the southernmost group of the Houtman Abrolhos, with ambiguous results; but no evidence of a second site. Finally, in 2014, the Museum, with private sponsorship, commissioned an extensive aerial magnetometer of the whole of the group. A number of interesting magnetometer targets were identified and subsequently investigated; however, once again there was no evidence of a second wreck. This paper discusses, in detail, the historical evidence, and the archaeological findings. It draws some tentative conclusions; in particular, given that there is a large number of independent written records of a second wreck, the archaeological findings do not support this theory, raising the significant question of the veracity of archival information.

## **Introduction**

The *Zeewijk* was a VOC *retourschip* that departed from Middelburg (Netherlands) for Batavia (the headquarters of the VOC in the East Indies) on 7 November 1726 (all dates are given in the New Style or Gregorian Calendar) with a crew of 208. The vessel was 145 *voet* long (*voet* is the Dutch word for foot; this was probably the Amsterdam *voet* which equals 0.283 m) and carried 36 cannon (10 of 12 lb; 20 of 6 lb; 6 of 3 lb) and 8 swivel guns. The skipper was Jan Steijns and the understeersman, Adriaen van der Graeff (note: spelling of peoples' names in the archival texts of the 18th century was flexible; Adriaen van der Graeff is taken from his journal, although his name is spelt differently elsewhere). The vessel stopped for 24 days at the Cape of Good Hope and departed for Batavia on 19 April 1727 with a complement of 153. The vessel was wrecked on Half Moon Reef in the Pelsaert Group of the Houtman Abrolhos on 9 June 1727. At the time of the wreck there were 137 people on the ship of whom eventually 82 survived, arriving at Batavia on 30 April 1728.

When the ship struck the reef it remained largely intact and, after much difficulty, the survivors managed to reach a nearby island, now known as Gun Island. In July 1727 the survivors dispatched the ship's boat to obtain help from Batavia; however, the boat and its crew of 12, were never sighted again. As the *Zeewijk* remained intact on the reef, the survivors were able to obtain supplies from the vessel, with some living on Gun Island and others on board the vessel. They also supplemented their diet by foraging for food and water on the nearby islands. In October 1727, with the growing realization that the rescue attempt had failed, the survivors commenced building a vessel in which they could sail to Batavia. The vessel was a kind of sloop (Jong, 2016), possibly called *Tortelduif* (Anonymous Brussels manuscript inventory number II 2586) or *Slooptie* (letter of Steijns and Nebbins, 23 April 1728). It was the first European vessel built in Australia and was completed using timber from the *Zeewijk* and wood from the mangroves on the nearby islands. Ten chests of specie and a variety of cargo and supplies were recovered from the *Zeewijk* and loaded on board. Surprisingly, the *Zeewijk* was still largely intact at the time they set sail (March 1728) and people were still on board up to the very day of departure stripping it of goods.

A VOC patrol vessel encountered the sloop in the Straits of Sunda and the vessel was then impounded. On the sloop's eventual arrival at Batavia, the journals and charts of Steijns and van der Graeff were recovered and examined and an inquiry into the loss of the vessel found that Steijns had falsified one of the journals. Steijns was convicted of gross negligence in the loss of the ship and was sent home in 1729. In the course of the trial it was noted that the journals and charts referred to wreckage attributed to a second wreck site, believed by the *Zeewijk* survivors to lie somewhere in the vicinity of the *Zeewijk* wreck, although no complete shipwreck was ever noted, only wreckage.

Thus, the *Zeewijk* was largely forgotten for over 100 years until, in 1830, Commander John Wickham and Lieutenant John Lort Stokes in HMS *Beagle* visited the Houtman Abrolhos in the course of the first colonial survey of the Western Australian coast. They reported finding traces of wreckage at the southern end of an island in the southern group (Stokes, 1846). They must have had copies of documents relating to

both the *Batavia* and the *Zeewijk*, because this led them to mistakenly identify the wreckage as being associated with the *Batavia*, a VOC ship that was lost in 1629 further north, in the Wallabi Group of the Abrolhos. The surveyors named the group of islands where they discovered wreckage after Pelsaert, the commander of the *Batavia*; the bay where they found the wreckage, Batavia Roads; and the point nearby (on what was later named Pelsaert Island), Wreck Point. Proceeding north in the Pelsaert Group, they then found evidence of the *Zeewijk* survivors on what they called Gun Island, named after a small bronze VOC swivel gun found there. So Wickham and Stokes had no doubt that there were two wreck sites in the Pelsaert Group.

Later in the 19th century, guano mining took place on both Pelsaert Island and Gun Island and material was recorded from both sites, thought then to be from the *Zeewijk* (Gun Island) and the *Batavia* (Pelsaert Island).

The *Batavia* wreck site was discovered in the Wallabi Group in 1963 (Drake-Brockman, 1963; Edwards, 1966), and the *Zeewijk* wreck site, in 1968 (Edwards, 1970). The question of the second site in the Pelsaert Group, however, was never resolved and controversy over its existence continues.

In the 1970s, Catharina Ingelman-Sundberg led three WA Museum expeditions to the *Zeewijk* site during which 1115 hours of in-water work was undertaken to survey the underwater wreck site, both on the inside and outside of the reef where the wreck occurred (Ingelman-Sundberg, 1976a & b; 1977a & b; 1978; 1979). In addition, test excavations were undertaken on Gun Island. No evidence was noted of a second purported wreck site, although much of the Pelsaert Group was explored.

In 1998 an aerial magnetometer survey of the northern part of the Pelsaert Group was carried out, in the belief that the second wreck was located close to the site of the *Zeewijk*. Results from this survey were inconclusive. In 2014 a brief expedition was organized to the Pelsaert Group, to identify objects on the 1978 plan located in shallow water areas in order to be able to geo-reference the plan (Green, 2014).

In 2016, as part of an Australian Research Council Linkage Grant, Roaring Forties: a Maritime Archaeological Reassessment of some of Australia's Earliest Shipwrecks (LP130100137), further research was planned to try and determine the location of the second site. It was decided that this would be best accomplished by carrying out another, more extensive, aerial magnetometer survey, this time to cover the whole of the Pelsaert Group. The survey would attempt to determine, through remote sensing, if there was any evidence of a second shipwreck. In addition, all the documents relating to reports of a second shipwreck were to be carefully re-examined to ensure that the references were clearly understood and that the 17th-century orthography was properly interpreted. Following the aerial survey, an expedition was sent to examine the most promising of the magnetic targets using side-scan sonar or visual inspection.

This report represents a review of the total current evidence relating to the second shipwreck.

### **The 18th-century journals**

Details relating to the second wreck are recorded in the four contemporary journals and five maps extant today. Although two journals were previously known, research by Menno Leenstra located three more journals. In 2012, the Netherlands Embassy in Canberra funded, through the WA Museum, the Centrum voor Internationale Erfgoedactiviteiten (CIE, Centre for International Heritage) to produce an 'Inventory and analyses of archival sources in the Dutch East India Company (VOC) archives in the Netherlands in order to contribute to possible locations and identification of VOC shipwrecks off the Western Australian Coast' (CIE, 2013). This resulted in an extensive document detailing the information available in the archives, translations and transcriptions of all the relevant journals and documents relating to the loss of the *Zeewijk*.

All the journals describe the events that occurred in the Houtman Abrolhos in the period between the morning of Monday 9 June 1727, when the *Zeewijk* struck Half Moon Reef, and 26 March 1728, the day of the remaining survivors' departure for Batavia in the sloop that they had built. Some journals, however, record different periods prior to the loss. As the so-called 'falsified van der Graeff journal' is an exact copy of the original van der Graeff journal except for minor changes made by Steijns to the ship's position, it will not be considered in the discussion.

The accounts of the vessel striking the reef are interesting as they show how the position of the vessel changed over time and how it survived. The journals state the vessel struck the reef on her starboard side and then 'turned so, with the head under the wind to W. by S.' (van der Graeff) and '...she then lay N: and N: by E: -ward turning with the head to the W:S:W' (Steijns). This means that the vessel had turned, from the reef being on starboard side, through about 180° from her original course (NE by E), so that the bows were WSW. The journals then go on to state that the main mast broke and went overboard and then later the crew cut down the fore and mizzenmasts. As the skies lightened on the Tuesday morning, a tangle of masts and rigging from the ship could be seen lying on the nearby reef, two ships lengths astern (presumably to the N). It was decided at this point to

start to abandon ship. By Saturday they had managed to get one person, by swimming, onto the wreckage on the reef and, later, using a homemade catamaran, three more people. Thus, by the end of Saturday 14 June 1727 there were four people on the reef. In the meantime the sea picked up and the ship started to move:

...since the breakers rolled on so strongly that we feared at every moment the ship would be smashed to pieces by them. Threw our lee-side guns overboard because the ship began to shift in such way over starboard or the lee-side that we feared we would be capsized because water and air seemed to be one element due to the severe storm and ferocious surf ...severe storm and horrifying breakers as we have never had so heavy as this night because the ship was taken up by the breakers and hitting with great force shifted over starboard so that we who had sit before with the stem at W by S, sat by midnight towards W by N: $\frac{1}{2}$ N: wherefore the S:Wly: sky-high breakers ever so more fell upon our port side and we believed every moment to be swallowed up by this wild element (Steijns' journal, 15 June).

In the fore-night there arose so terrifyingly big breakers of heavy seas as we had not yet had during the time that we sat here because the wreck was constantly wholly lifted up and being struck with great force and driven over to starboard so that around the midnight we found whereas before the wreck sat with the head at S.W. by S., it was now sitting W.N.W. $\frac{1}{2}$ W such that the breaking seas fell now much more upon the port side... (van der Graeff, 15 June).

By the following Saturday the vessel's bow was slightly north of west and it seems like the ship had turned through 270° from its original impact. Attempts to get a line secured from the ship to the reef were fraught with difficulty and at least eight men drowned in the process. By Saturday, 22 men were on the reef. It is at this point in Steijns' journal, as the last entry for Sunday 15 June, that we have the first reference to another wreck:

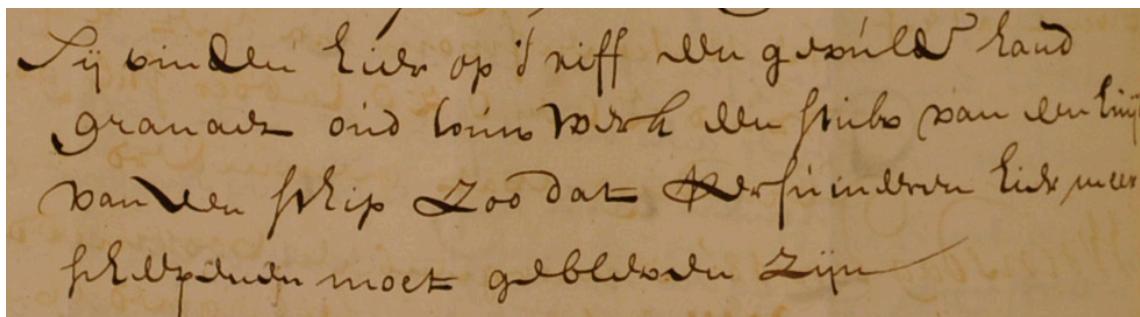


Figure 1. Extract from Steijns' Journal referring to hand grenade.

...zij vinden hier op't rif een gevulde handgrenaet oud touwwerk een stuk van een huid van een schip zoo dat persumeeren hier meer scheepen moet gebleven zijn. (...here found at the reef a filled hand-grenade old rope work a piece of the skin of a ship so that presume more ships must have been lost here).

Van der Graeff's journal for the Monday 16 June states:

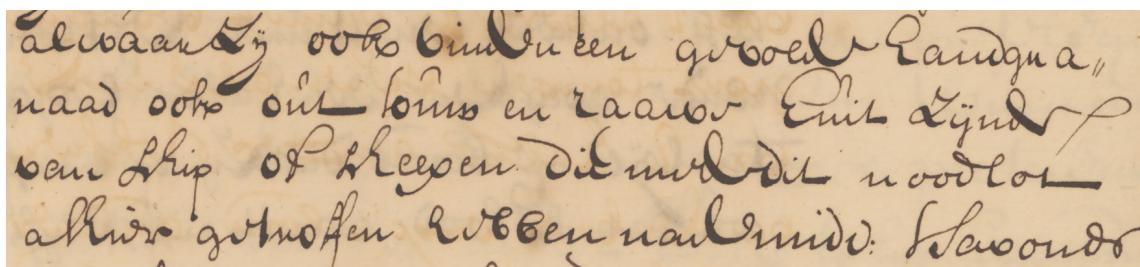


Figure 2. Extract from van der Graeff's Journal referring to hand grenade.

...alwaar zij ook vinden een gevulde handgranaat ook oud touw en raauwe huid zijnde van schip of scheepen die mede dit noodlot alhier getroffen hebben (...where they also find a filled hand-grenade, also old rope and raw skin being from a ship, or ships which had met here also this ill fate) and in the margin: *Vinden een gevulde hand granaat ook een stuk raauwe huid en oud touw* (find a filled hand-grenade, also a piece of rawhide and old rope).

An anonymous journal also refers on the 16 June to finds of earlier wreck material on the site:

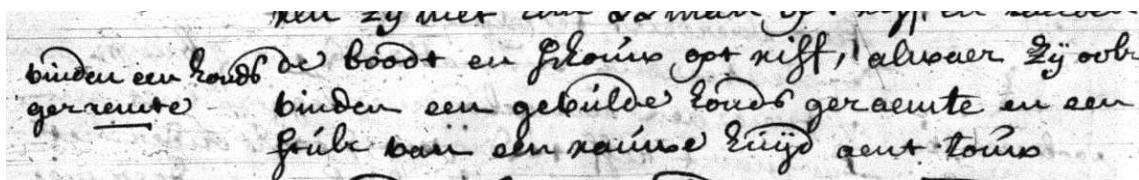


Figure 3. Extract from Anonymous Journal referring to dead seal.

...alwaer zij ook vinden een gevulde hondt geraemte en een stuk van een rauwe huid aent touw (...where they also find a skeleton of a seal, filled up and a piece of rough skin on the rope) and in the margin: vinden een hondt geraemte (find a seal skeleton).

These three accounts were the first of a series of descriptions of other wreck material found by the survivors on the nearby islands, although these three were the only ones relating to finds at the *Zeewijk* wreck site itself (Table 1).

Table 1. List of reports of wreck material found in the Pelsaert Group by the survivors of the *Zeewijk*.

Date	Author	Folio	Original	Description
27 Aug. 1727	van der Graeff (NB: on this day he did not visit island but reported Steijns' visit)	86v	...vinden ook aan de W cant van het selve eijland een stuk van een schip off vrak zitten en vinden het beelt van de scheeg onder een klip leggende, konnende daer zoo veel van bekennen dat 't een vrouwe beelt was geweest.	...find sitting at the W side of the same island [Pelsaert I.] a piece of a ship or wreck and find the sculpture from the head knee lying underneath a cliff, able to make out as much of it that it had been a female figure.
26 Aug. 1727	Anonymous		...waren daer de 23 <sup>e</sup> aen gekommen, vindende daer onse schuit leggen en aen der W kant vant eijland een stuk van een schip zitten ent beeldt vant scheegh zijnde een vrouwe beeldt onder een klip leggen...	...had arrived there the 23rd finding lying there our schuit and on the west side of the island a part of a ship aground and the statue of the stem being a woman's statue lying under a rock...
27 Aug. 1727	Steijns		...daar aan Strand ons schuit gevonden en aan de west kant van't Eijland een stuk of wrak van een schip sittende...	...there at the beach we found our schuit and sitting on the west side of the Island a piece or wreck of a ship...
3 Sept. 1727	van der Graeff		...hebbende aldaar op dat eijland daar op den 27. Pasado breder van gesproken is over de 4. etmael geweest en is door den schipper aldaar gevonden volgens dat hij mijn op zijn aankomst gesegt heeft een vrak gel: op den 27. pasado aangeteijkend is vinden aldaar ook onse schuit en 2. vloten met een halve sonnethent van ons gewesene schip die zij sloopten... op dit eijland van den zij nog een stuk rooster werk ende bovenste schoorsteen en enige ledige (sledige) vaten een nagthuijs eenig blok werk een wiel van een rompeert en meer andere kleijnigheden alle versch en dien volgende van ons gewesene schip.	...and is found there by the skipper, according to what he told me at his arrival, a wreck, as is notated on the 27 passato. Finding there also our schuit and 2 rafts with a half awning deck from our former ship... On this island they also found yet another piece of grating and upper chimney, and a number of empty barrels, a binnacle, some blocks, a wheel of a gun carriage, and some more trifles, all recent and hence from our former ship.
3 Sept. 1727	Anonymous		...en de schipper zijde een vrak van een schip gesien te hebben en vinden daer ook twee vloten van onse sonne tent daerde de schuit mede versien hebben...	...and the skipper said to have seen there a wreck of a ship and found there also two rafts of our sun-awning deck with which they repaired the schuit...
3 Sept. 1727	Steijns		...wij hadden daar gevonden een partij boutwerken van een wrack van een schip een nagthuijs, een schoorsteen enige ledige vaten een rooster werk twee vloten de halve zonnetand zijnde dit goede altemaal nog nieuw dies halven van ons gebleven schip...	...we had found there an amount of timber-work from a wreck of a ship, a binnacle, a chimney, some empty barrels, a grating work, two rafts, the half the awning deck, this stuff all being new therefore from our former ship...
28 Jan. 1728	van der Graeff	130v	...en hebben op't groote eijland gevonden een linne schaar die nog niet volkommen vergaan was dog na onse presunatieve te lang gelegen om van ons schip te kunnen zijn.	... and have found on the big island a pair of linen scissors which were not yet wholly disintegrated, but lain for too long by our presumption to have come from our ship.
28 Jan. 1728	Anonymous		...hebben opt groot ijland een schaer gevonden die nogh niet ten vollen wasvergaen dogs near onse gedragten teoudt om van ons schip te zijn.	...have found on the big island a pair of scissors which was not completely decayed, but to our idea too old to be of our ship.
28 Jan. 1728	Steijns		...een verroest schaar gevonden.	...found a rusted pair of scissors.

There is undoubtedly evidence that the survivors did see material from another wreck, although the extant journals are not consistent and they are, at times, ambiguous. This ambiguity is perhaps not surprising as one is dealing with journals that have been transcribed, possibly on several occasions. They are not the original handwritten journals of Steijns or van der Graeff since Steijns' journal is dated 24 August 1729 and van der Graeff's journal 9 September 1729, both are signed by G. s Schuijlenburg, sw: clerk. Their veracity is also uncertain, as the people transcribing the original journals in Batavia would not have been familiar with the situation on the islands, and could have easily put their own interpretation of the events when transcribing them. In addition, there may have been an attempt by the authors of the original journals to imply that they were not the only people who had been wrecked there and were, thus, less culpable.

It appears, however, that the Governor General and Councils in Batavia were less tentative in their opinion. They wrote to the *Heeren XVII* in the Netherlands on 31 October 1728, stating:

*...alwaar gevonden sijn niet alleen Sommige gegrave putten, maar ook Enige tekenen van Een nederlands Schip vermoedelijk land schip Tegens het voorm: riff meede verbrijeld, Twelcke soude kunnen geweest zijn de fortuyn of aagtekerk waarvan de menschen door gebrek Souden kunnen gstorven ofte op Zee vergaan zijn in hunne herwaarts koms...*

...the position of the Isles, on the outer reef of which the *Zeewijk* was stranded, is shown on a map that goes with this document...Here they found not only some wells that were dug, but also some signs of a Dutch ship that has probably been shattered at the aforementioned reef. This could have been the *Fortuyn* or the *Aagtekerk*, the crew of which might have died of shortage [of food or water], or else at sea during their journey to this place...(31 October 1728, Heeres 1899: 94).

Thus, the VOC, from the evidence of the survivors, speculated that this other wreck could have been either the *Fortuyn* (1724) or the *Aagtekerk* (1726). Of particular interest, though, is the reference to 'wells that were dug'. The journals and the maps indicate that a number of natural wells were found, but there is no mention that they were man-made. The letter to the Netherlands clearly states that they found wells that were dug, so this is either based on undocumented communication with the survivors, or misinterpretation by the authorities in Batavia.

### Subsequent events

The survivors eventually established themselves on Gun Island and started foraging for food and water. Fortunately, the ship remained remarkably intact and the survivors spent the next nine months recovering stores, provisions and, ultimately, parts to build a rescue vessel. Food was not scarce; seals were found on nearby islands and fresh water was found in wells. On 20 August 1727 flocks of birds arrived on the islands (almost certainly shearwater) and these were a welcome supplement to their diet.

On 10 July the ship's boat with a crew of 12 had been dispatched to seek help at Batavia—the vessel and its crew were never heard of again. Realizing by late 1727 that there was no rescue coming, the survivors began to build a boat large enough to carry the 88 survivors on Gun Island, supplies for the journey and salvaged Company's goods, including 10 chests of money. On 23 March 1728 this vessel set sail for Batavia arriving at the Straits of Sunda on 23 April when they were met by a VOC patrol vessel. Steijns gave its commander a letter or letters that accused the crew of stealing his money. It is assumed that Steijns was suffering from some form of delusion, possibly caused by deprivations during the long voyage. Meanwhile, the patrol vessel sailed ahead to alert the Company at Batavia. Four vessels were sent to intercept the sloop, the money chests were taken into custody and the crew searched. To the relief of the VOC, the 10 chests of money containing 315,834 guilders were all intact. When the crew were searched, however, they were found to have a considerable amount of money in their possession, almost certainly private trade. The 88 survivors finally arrived at Batavia on 30 April. Subsequently, the Council of Justice deliberated on the question of what should happen with the private money and the case continued in the courts into late 1729.

What is more significant, is the investigation by the Council of the Indies into the loss of the *Zeewijk*. Initially, the Advocate Fiscal arranged for the ship's journals to be examined by the Equipage Master and Commissioned Skippers at Batavia (NL-HaNA, VOC, 1.04.02 inventory number 9353). The two journals, one of the skipper, Steijns, and the other of understoersman van der Graeff, were examined; however, it soon became clear that the skipper, who had borrowed the understoersman's journal (possibly in Batavia), had falsified parts of it. It is assumed that the examiners had a copy of the original journal of van der Graeff, so they were able to detect the falsification (the so-called 'falsified van der Graeff journal'). A comparison of the journals showed that Steijns had altered van der Graeff's journal to the effect that the course logged as sailed, after sighting Amsterdam Island, had been reduced by about 68 miles, thus making it conform to the

skipper's journal. It was concluded that Steijns, for some reason, had deliberately sailed further east than was stipulated in the VOC sailing instructions. His falsification of the van der Graeff journal was to cover this up and make van der Graeff's journal match his. Thus, at the time of the court case, the evidence under examination included three journals (Steijns', van der Graeff's and the falsified van der Graeff) as well as four maps of the wreck site (Figure 4–Figure 7 on page 8).

Van der Graeff returned to the Netherlands in early 1729. Steijns, after a long series of court cases, was convicted of negligence and banished from the Indies in November 1729. Copies of the various journals and maps were sent to the Netherlands in 1730; a fourth journal of anonymous authorship, probably made separately from the courts cases was found in the 19th century in the Belgian archives. This fourth journal included another map of the wreck site (Figure 8 on page 9).

The reason for the survival of these journals is probably related to the court cases, as it is surprising to find four original VOC journals and five maps extant from a single ship. It was customary for every VOC ship arriving at its destination, in this case Batavia, to have the various journals that were kept during the voyage transcribed. Multiple copies would be variously kept at Batavia, sent home to the Netherlands, sent to the Cape of Good Hope, or elsewhere. Three of the four *Zeeuwijk* journals reside in the Nationaal Archief in The Hague: that of the skipper, Jan Steijns (Cape to Batavia in three separate parts, NL-HaNA, VOC, 1.04.02 inventory number 9353 (Steijns, 1727; de Jong, 2015b)); that of understeersman Adriaen van der Graeff (Netherlands to Batavia, NL-HaNA, VOC, 1.04.02 inventory number 11417 (Graeff, 1727; Leenstra & Paesie, 2014; de Jong, 2015a)); and the second (falsified) van der Graeff journal, a word-for-word copy of his original except for the change in geographical coordinates made by Steijns (Cape to Batavia, NL-HaNA, VOC, 1.04.02 inventory number 9353). The fourth journal, that of an anonymous source, is held in the Bibliothèque Royale de Belgique in Brussels (from the shipwreck to Batavia, manuscript II 2586, page 77, Anonymous, n.d.; Zuiderbaan, n.d.). This journal is part of a collection of manuscripts most probably gathered or written by the VOC-skipper Wouter Thomasz van Dijk in the period between 1704 and 1734. He was in Batavia between 9 February and 2 October 1729 (Leenstra, pers. comm., 25 June 2015). As already noted, Steijns' journal and the falsified van der Graeff journal are almost word-for-word alike, whilst the anonymous journal, although it is not clear who the author was, appears to be derived from van der Graeff's journal. In addition, there are five maps showing the area where the *Zeeuwijk* was wrecked (two attributed to Steijns (4.VEL.512 & 512A); two to van der Graeff (4. VEL.513 & 513A); and one bound in the anonymous journal (Anonymous, n.d.)).

## The 18th-century charts

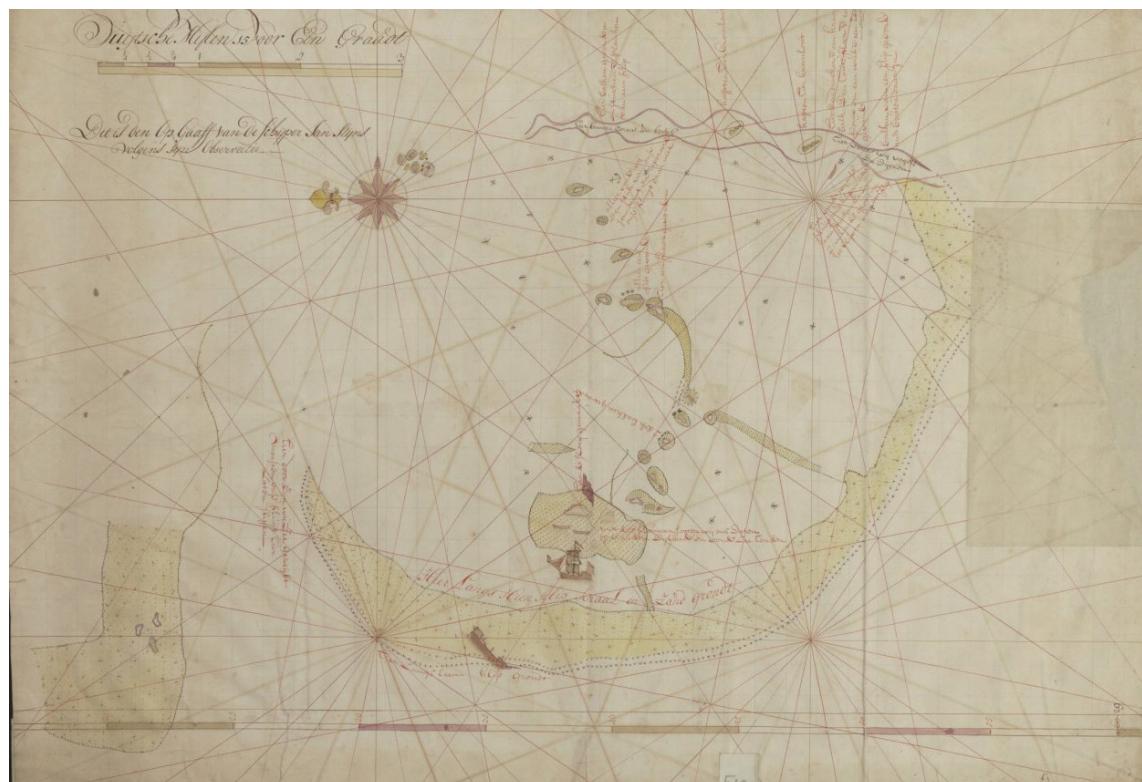


Figure 4. Steijns' first chart.

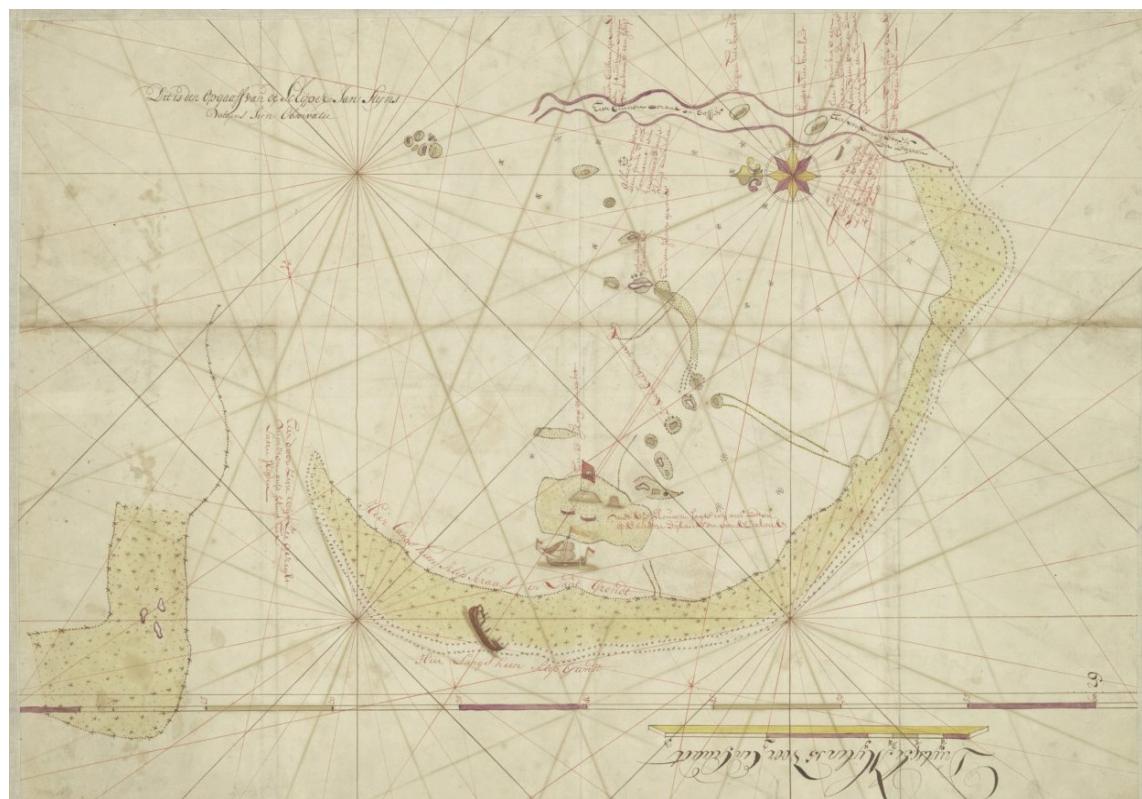


Figure 5. Steijns' second chart.

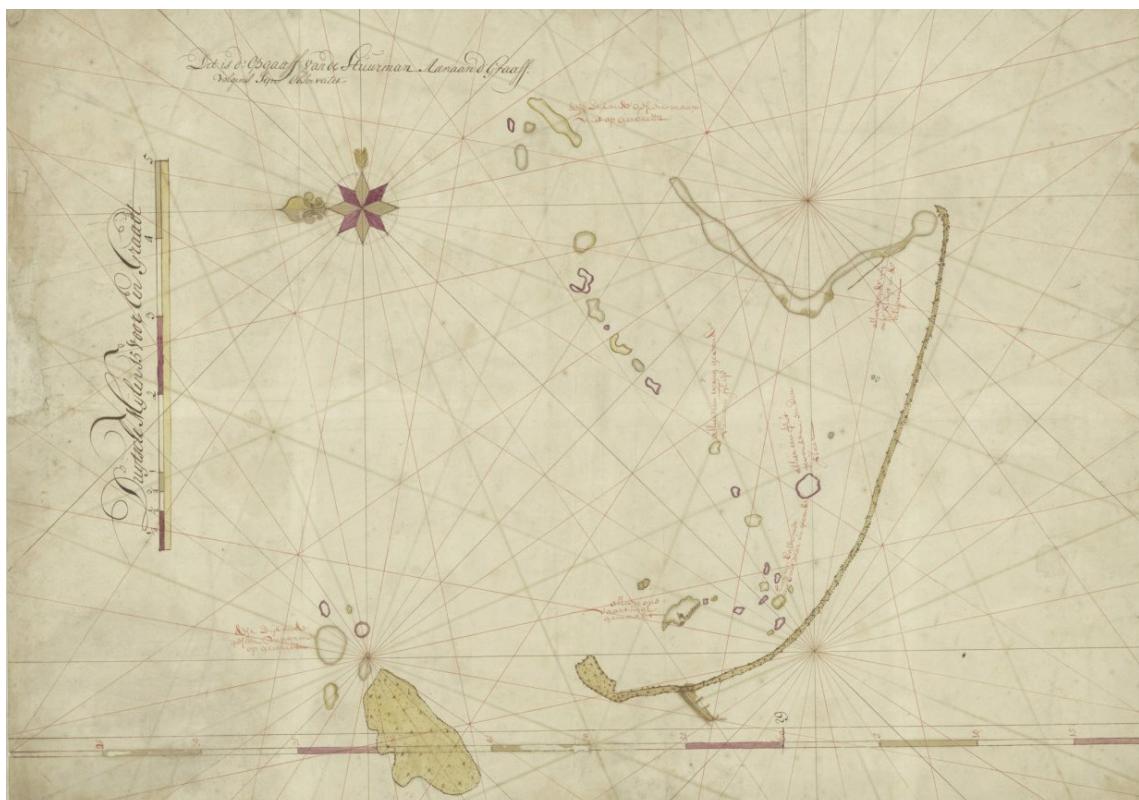


Figure 6. Van der Graeff's first chart.

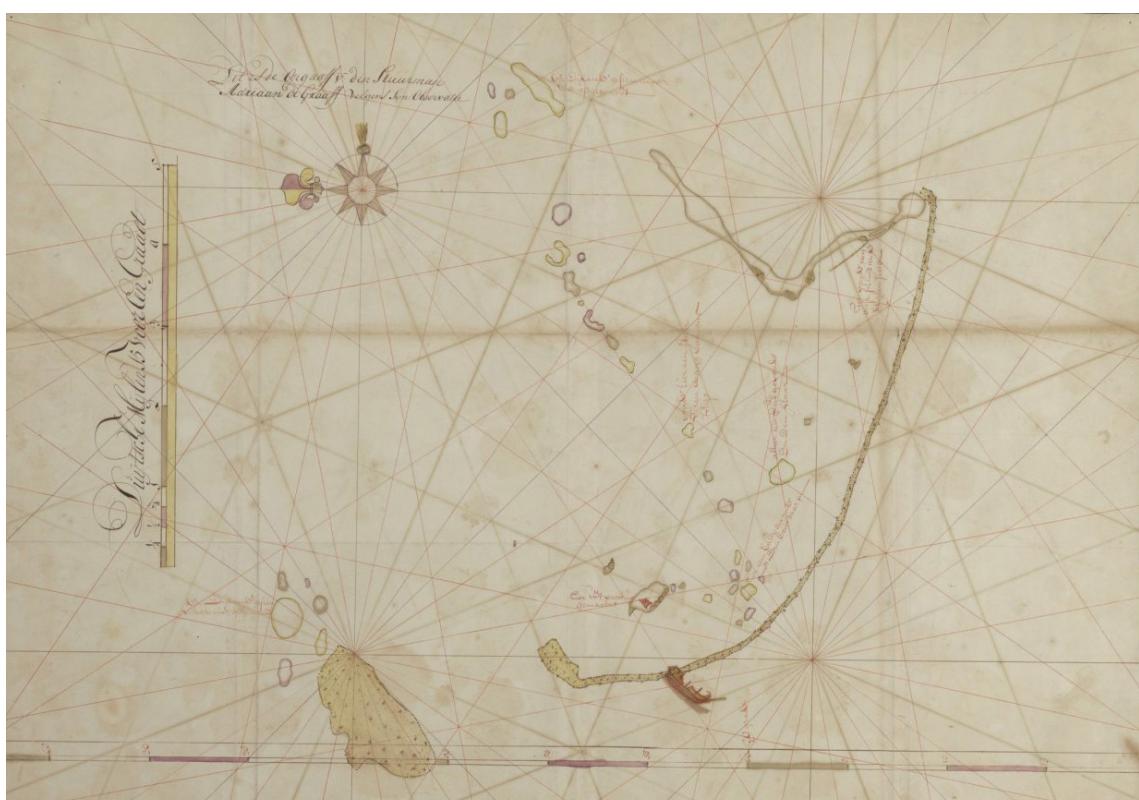


Figure 7. Van der Graeff's second chart.

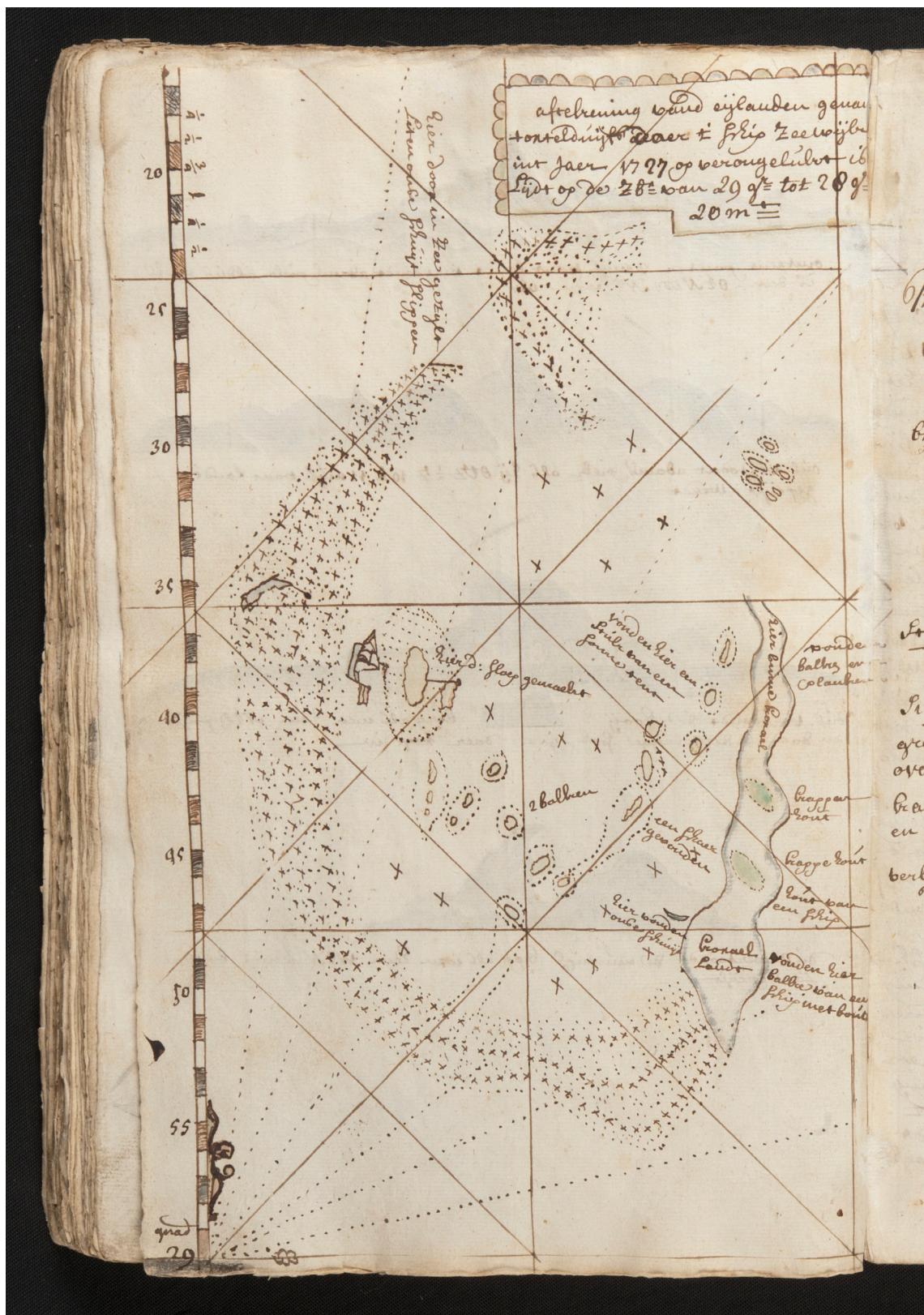


Figure 8. The anonymous chart.

Five charts exist that relate to the loss of the *Zeewijk*: two by Steijns and two by van der Graeff, which are held as separate items in the archives; the fifth chart is bound in with the anonymous journal. According to Leenstra (pers. comm., 20 May 2015):

The VOC-archive does contain documents sent off from Batavia in November 1628, as preserved in the archive of the Chamber Amsterdam [NA 1.04.02, VOC, inventory number 2082]. This book [the collection of documents in this volume] starts with a modern inventory of these documents [as can be found on-line in Tanap] followed by the original inventory, which came with the documents. I assume that the documents were originally sent as separate items, each with their own number and only later bound in one book with numbered folio-pages. The modern inventory mentions a short description and the folio-pages of the documents. A large number of documents are mentioned, in both inventories, but the documents concerning the *Zeewijk* are those numbered 8–13. Number 10 is named “*twee kaartjes wegens de Constitutie van het riffende eylanden hier boven gem*” [two maps of the reef and the islands mentioned before]. This document number 10 is missing in the book, as are the folio-pages 350 and 351, which, according to the modern inventory should contain the two maps. Although no page-numbers can be found on the scans the 4.VEL-description states that the maps 512 and 513 are these missing pages. It is known that most maps were taken out from the original VOC-documents around 1865 by the archivist Leupe and put into a separate collection, now named 4.VEL. No perfect account is available of the documents in which they were originally. In the margin of the original inventory the names of the ships with which the documents were to be transported are mentioned. In front of most documents are placed the names of the ships. So we may assume that two copies of each of these documents were made and sent by these two ships to the appropriate Chamber. The Chamber Amsterdam collected all documents sent from Batavia by a specific fleet in one series of books [the one for 1729 beginning with the inventory number 2082, mentioned above]. The Chamber Zeeland however put the documents, arriving in successive years, more or less chronologically in separate collections each concerning a specific VOC-settlement. The collection of documents, sent over from Asia to this Chamber have a lot of imperfections. In the case of the *Zeewijk*-documents 8–13, of which, according to the inventory, a copy must have arrived with the *Valkenisse* [on 26 June 1729], there must have been [and still is] the problem of ascribing it to a specific VOC-settlement. It seems very probable that Leupe found the document with maps and also put these in the map-collection as the “*2e exemplaren*” now available. This theory explains that the *1e* and *2e exemplaren* are made by the same hand, but have small differences. The question that I could not solve is where Leupe may have found “*2e exemplaren*”-maps. A collection of documents in the VOC-archive of the Chamber Zeeland in which the *Zeewijk*-documents 8–12 could have been stored are those of the VOC-inventory numbers 7528–7595: *Missiven van gouverneur-generaal en raden en (bij uitzondering) van andere colleges in Batavia aan de Heren XVII of de kamer Zeeland. Met bijlagen. Gedeeltelijk kopieën 1684–1792*. The documents 8–12 were more or less annexes [*bijlagen*] to the *generale missive* of November 1728, being No. 1 in the inventory. In this series the years 1726–1731 are now missing. The series of documents of the Raad van Justitie in Batavia in which I was able to find a large number of documents concerning the *Zeewijk* does not, as far as I could see, contain the documents 8–13 mentioned above. It would not have been appropriate to store them there, as they are not documents provided for or by the Raad of Justitie.

### The 19th century

Following European settlement in Western Australia in 1829, a number of early explorers of the Houtman Abrolhos noted evidence of the wreck of the *Zeewijk*, recovered material they found on the islands from the wreck, and recorded material that they thought came from the other wreck.

In 1830, Commander John Wickham and Lieutenant John Lort Stokes, in HMS *Beagle*, were conducting the first colonial survey of the Western Australian coast when they visited the Houtman Abrolhos. There they found traces of wreckage at the southern end of an island (Pelsaert Island) in the southern group:

On the south west point of the island the beams of a large vessel were discovered, and as the crew of the *Zeewijk*, lost in 1728 [sic], reported having seen the wreck of a ship on this part, there is little doubt that the remains were those of the *Batavia*, Commodore Pelsart [sic], lost in 1627 [sic]. We in consequence named our temporary anchorage Batavia Roads, and the whole group Pelsart [sic] Group. It was the wreck of this Dutch ship that led to the discovery of this part of the continent of Australia, Commodore Pelsart [sic] himself having crossed over to it in a boat in search of water (Stokes, 1846).

Crawford Pasco, who was midshipman on the *Beagle*, wrote in 1853:

Finding anchorage for our ship at the S.E. part of the southern group, near to a narrow strip of sand on the edge of the reef, which was scarcely large enough to be called an island, we found on it some remains of large timber, evidently a beam of a ship, through it an iron bolt of considerable dimensions; but corrosion had gone on so steadily so many years, that the slightest touch reduced it to the size of small wire. Near this were found various other fragments, which most probably had been part of the same vessel; but the most remarkable item was a copper coin of the East India N. Company, a *doit* bearing the date 1620 (I think), which was good evidence that these were some of the remains of commodore Pelsart [sic], in the ship *Batavia*. So the anchorage which we occupied was named by us Batavia Roads, and that particular group Pelsart's [sic] Group (Pasco, 1897: 116–17; Reay, 2012).

The *Batavia* was, in fact, lost further north, in the Wallabi Group, in 1629. Continuing their survey work, Wickham and Stokes went north to another island in the Pelsaert Group where they found evidence of the survivors of the *Zeewijk*, including a small bronze breech-loading swivel gun (now in the Royal Armouries Museum collection, UK (Blackmore, 1976, number 6: 50. now located in Fort Nelson, G15, Object Number XIX.238) see Figure 9). Thus, they named the island Gun Island.



Figure 9. Stokes' Gun in the Royal Armouries.

Apparently, even one hundred years after the loss of the *Zeewijk*, there was still evidence of wreckage, possibly the same that the survivors had noted on the island. It is interesting that Wickham and Stokes erroneously concluded that the *Batavia* was lost in the southern part of the Pelsaert Group. The *Beagle* obviously carried historical documents that recorded the loss of both the *Batavia* and the *Zeewijk*. In his journal Pelsaert described the tammar wallaby (*Macropus eugenii*), which is only found on the two largest islands of the Houtman Abrolhos ... (East and West Wallabi islands). In fact, Pelsaert's was the first recorded European description of a marsupial. For some reason, however, the first printed adaptation of Pelsaert's handwritten journal, titled *Ongeluckige Voyagie van't Schip Batavia nae de Oost-Indien* (Jansz., 1647), omits his description of marsupials. Various other printed versions, such as Thevenot's French translation of parts of the journal, *Relations de Diverse Voyages Curieux* (Thevenot, 1695); and excerpts from the journal translated into English respectively by John Harris (1748) and John Pinkerton's *Modern Atlas* 1808–1814 (Pinkerton, 1812), were based on Jansz.'s publication; and, thus, also omitted Pelsaert's observations of wallabies on the islands near the *Batavia* wreck site. Clearly, Wickham sighted the wallabies on his voyage, as evidenced by the name Wallabi Group that he gave to the islands in this area. It is also clear that Wickham and Stokes only had a printed version of Pelsaert's journal with them. If they had possessed a copy of his original journal, with its description of marsupials, they would almost certainly have attributed the *Batavia* wreck to the Wallabi Group.

Wickham and Stokes reported the presence of fish and guano in the Abrolhos and by 1844 vessels were collecting guano in the islands. In 1847 the Pelsaert Fishing Company was established on Pelsaert Island and

reports of discovery of relics began to appear in the newspapers:

#### CURIOS DISCOVERIES ON THE ABROLHOS ISLANDS

During the late occupation of these Islands by the Pelsart Fishing Company, numerous discoveries have been made—relics of the wreck of Houtman and the visit of Admiral Pelsart [sic]. They consist of part of a sword on which is the name of "Houtman," an officers epaulette, belt buckles, skeletons, coins, &c. The discovery of the first skeleton was made by Mr. Willis, on the spot where he had spread his blanket, and in the morning finding his pillow harder than was exactly pleasant, looked for the cause, when he found his bed composed of human bones. Mr. Willis also discovered water on a third Island, contained in a well in the rock, by the side of which in the rock, was an iron bolt, firmly fixed, most probably left by Houtman; this Island has been appropriately called "Bolt Island," also a large round hole, with a great quantity of bones in it. On one of the Mangrove Islands, skeletons were found, also a quantity of Dutch bottles, evidently thrown away as they had been emptied during a carouse. The coins bear the date 1716 and are of copper, these must be relics of Houtman's party who was wrecked in 1727 [sic]; but the skeletons most probably are those of the mutineers who were shot [sic] by Admiral Pelsart (*The Perth Gazette and Independent Journal of Politics and News*, Saturday 15 April 1848: 2).

There were later reports of two bronze guns and a box believed to contain treasure from the *Zeewijk*:

Considerable curiosity has been excited during the past week by the rumour that the *Champion* had sailed for the Abrolhos Islands, with Mr. Gregory, for the purpose of removing, a quantity of treasure, discovered in that neighbourhood by the people in the employment of the Pelsart Company. As usual in reports of this kind, much that is rumoured is mere fable; according to what we have been able to gather the facts are as follows: On the formation of the Pelsart Company's establishment on the islands, instructions were given to Mr. Gregory and the men under his command, to search for the remains of the Dutch vessel wrecked there in the year 1727 it appears that during their search they discovered two brass cannon both in the water, one lying on a reef and the other on sand a short distance off, and between the two, the corner of what they supposed to be an iron chest, sticking out of the sand. No report of this discovery was made to their employers, but on the arrival of Captain Fitzgerald, Mr. Gregory communicated the particulars to him, suggesting that the supposed chest might contain treasure which the wrecked vessel (the *Zeewyk*) was conveying to Batavia for the pay of the troops. Upon this information His Excellency directed Lieut Helpman to convey Mr. Gregory in the *Champion* to the locality and bring away what might be discovered. Should anything valuable be found, the Pelsart Company have presented what must be considered a just claim for salvage, on the ground of its having been found by persons, in their employ, and, who had in fact special orders to search for what there might be left of the wreck. We cannot consider the Company have been justly treated in the matter by the individuals in their employ. We understand His Excellency assured the Company that, in case any should be found, the whole particulars would be sent to the Home Government for their decision (*The Perth Gazette and Independent Journal of Politics and News*, Saturday 26 August 1848).

Nothing, however, seemed to eventuate and the *Champion* returned to Perth without any comment about discoveries (*The Perth Gazette and Independent Journal of Politics and News*, Saturday 2 September 1848).

The guano industry continued in the islands. In 1883, the company Broadhurst and MacNeil (often spelt McNeil) leased the Houtman Abrolhos for guano, mining it on Gun Island and other islands in the Abrolhos; in 1890 they moved their plant from Rat Island to Pelsaert Island (Stanbury, 1980). Several newspaper reports referred to the discovery by the company of coins and other items in the Pelsaert Group:

...two silver coins, bearing the date 1665 and 1726, a number of copper coins bearing the date 1702 and 1726, a number of iron cannon balls about 3 inches in diameter two brass mortars, one of which has been spiked with an iron nail, several wine glasses, some large demijohns, nearly four feet in circumference, one small jug, a lot of pistol bullets some rude fish-hooks and sinkers, pipes, square-gin bottles and other similar articles, together with a brass tobacco box, bearing, on one side, an inscription of the name of the vessel and on the other the name of the owner of the box. On two large silver buttons also discovered with the other articles there is a depiction of Joseph escaping from Potiphar's wife (*Daily News*, 7 November 1891: 2).

Later, in 1894, a further description of coins is given in the newspapers. The *Geraldton Telegraph* states:

We have been shown by Mr F.C. Broadhurst a most interesting collection of old coins, numbering in all 52 pieces. These

coins have been unearthed at Gun Island (Abrolhos) one or two at a time, since January 1st of the present year. Ten of the coins are silver and the remainder copper. Of the former the largest are: (1) two Spanish dollars bearing the effigy of Phillip IV of Spain, the respective dates of which are 1633 and 1638; (2) what is probably a "Piece of Eight" although this is not in a sufficiently well preserved state as to allow of anyone but an expert speaking of it with certainty; (3) a large Dutch coin about the size of an English crown, the coinage being of the City of Utrecht. Of the smaller Silver pieces four are Dutch coins of the Province of Frisia, on one only of which is the date legible, this being 1707; two of the Province of Zealandia, bearing date 1722 and 1724, and another of the Province of Hollandia 1709. The copper coins are with two exceptions Dutch, their dates ranging from 1702 to 1724. One of the exceptions is a British coin of George I of England, 1720, while the other, strange to say, is a Chinese "cash" the inscription showing it to have been coined in the reign of Mon Late [unknown emperor] 335 years ago. All these coins which bear an earlier date than 1710 are no doubt relics of the *Zeewyk*, while the others, it is safe to presume, are relics of other Dutch wrecks referred to in Major's "Early voyages to Terra Australis" published by the Hakluyt Society of the British Museum in 1859 (*The West Australian*, 21 April 1894: 4).

The most comprehensive list was given in *The West Australian*, 27 August 1897:

#### THE TREASURE TROVE OF THE ABROLHOS

In this year's volume of the transactions of the Royal Geographical Society of Australasia is published an interesting list of the relics found on Gun Island, of the Abrolhos Group, since the occupation of the same by Messrs. Broadhurst, MacNeil and Co. They are conjectured to be relics from the Dutch vessel *Zeewyk*, wrecked on the Abrolhos in 1727:—To the Hon. Secretary Royal Geographical Society of Australasia, Victoria. Dear Sir, The following is an accurate list of the relics found on Gun Island of the Houtman Group since our occupation. Articles sent by us to Sir John Forrest, and now in the Perth Museum: 3 large and 24 small cannon balls, 15 flagon-shaped bottles, 1 earthenware jar, 14 rosary beads, 9 lead sinkers, 22 clay pipes and stems, 5 copper fishhooks, 5 knives (much corroded), 6 pieces of lock flint, 7 brass buttons, 5 leaden weights, 16 pistol bullets, 2 copper kettles, 1 glass demijohn, 1 leaden inkpot, 2 coloured tumblers, 1 brass tap, 1 copper pot, 1 copper vessel with cover for padlocking, 1 wine glass, 2 pieces ordnance, 1 silver coin, Phillip IV of Spain; 3 copper coins, between 1702 and 1724; sundries, including a small piece of copper marked "Zeeland" and two remains of lignum vitæ block sheaves; 1 silver coin sent to Wm. Marden, Esq., 14 Fenchurch Street, London, E.C. (a rix-dollar of the city of Utrecht, date 1726). In possession of Mrs. G. A. Clifton, Perth: 2 wine glasses of very antique fashion. In possession of M. Brown, Esq., Geraldton: 1 wine glass, similar to above. A few copper coins, and sundry of the flagon-shaped bottles, besides a few odds and ends have got into the hands of the public through our employees. They could not be traced or enumerated. The following articles now in Perth Museum: 3 large silver coins of Phillip IV of Spain, dated 1633 and 1638 respectively [*sic*]; 1 Chinese copper coin. An educated Chinaman tells me it is of the reign of Mon Late, 835 [*sic*: possibly 335] years ago. 1 silver coin supposed to be a piece of eight, date not decipherable, has been hammered, rather was so when found; 2 silver coins (denominations 6s.), dated 1685 and 1690 respectively; 1 large rix-dollar, city of Utrecht, 1726; 3 silver coins (denomination 2s.), Zealandia, dated 1703, 1722 and 1724 respectively; 1 silver coin (denomination 2s.), Hollandia, dated 1709; 1 silver coin, West Frisia, 1707; 1 silver coin, Frisia, 1652; 5 silver coins (4 Frisia, 1 Zealandia) of 17th century, dates not decipherable; 1 British half-penny, George I., 1720; 1 Dutch copper coin, inscribed, i Dater, S.M., reverse. Publica Fide and figure of Liberty, date 1710; 45 copper coins, as below, all inscribed Hollandia, on reverse, lion standing in centre of kraal holding hat on staff in attitude of defiance (supposed to be design for the Dutch East India Company)—12 not decipherable owing to corrosion, 8 dated 1702; 1, 1707; 1, 1710; 1, 1714; 2, 1715; 1, 1716; 10, 1720; 4, 1721; 4, 1723; 1, 1726;—45 in all. Summary of coins: 18 silver and 43 copper. 2 copper pieces off muskets, one inscribed "Kamer Zaeland," the other "Cameer Zoeland." A large number of copper articles, comprising fishhooks, manufactured on the spot; roughly made copper dishes for using grease lights in; numerous kinds of buckles, some of which are apparently gilt, more or less; ordinary pins (of copper) with old-fashioned heads; sundry scissors, several spoons and part of spoons; numerous brass buttons; sundry curtain rings; musket fittings; funnel; tap; seaman's hanger guard; copper parts of blocks and sundry small articles of different kinds, all copper. A number of iron articles including remains of knives; several cannon balls, two sizes; two shells for ordnance (one of these had still black matter resembling powder in it); chest locks, chest handles, sundry pieces corroded iron. A number of leaden articles; fishing sinkers; weights; spoon; and upwards of 1,000 pistol bullets of varying sizes. One pair very fine silver buttons (for officer's cape) legend on them, Joseph escaping from Potiphar's wife. These are just now in London.

Several varieties of work in Lignum vitæ wood.

Several lumps of pitch excavated 6 feet deep.

A number of different shaped bottles of various sizes.

Two tobacco boxes with devices, town of Leyden on one, on other Dutch house and figures of woman and departing mariner on lid, on bottom figure of ship departing and woman waving hand, also, Dutch proverb:

"Eerst 't Gelt ver bungt" (on top),

"En Dan 't Zeegat uyt" (on bottom).

Translated by Mr. Siebenhaar, of Perth, as:

... "First spend the money, And then go to sea again."

A number of sundries: clay pipes and stems, broken wine glasses and broken tumblers, fossilised cork, several hundred rosary beads, broken pottery, pieces of slate, bone razor handles and buttons, part of old flint gun lock with undecipherable Dutch inscription; sundry pieces flint. List of coins found on Gun Island, Houtman's Abrolhos, since January 1, 1894. Three silver coins about the size of an English half-crown piece; Latin inscription all fairly decipherable. Dates 1633, 1638, 1638, Phillip IV King of Spain and the Indies (PHIL. IIII, D.G., HISP. ET. INDIAR. REX). The monarch in the centre, this on one side, and on the other a coat of arms with a lion standing on each side, and the inscription ARCHID. AVST. DVX BRVG. BRAB.; 1 small silver coin, Dutch, 1657, Frisia; 1 medium-size silver coin, Dutch, 1690, Lat. inscriptions; 1 small silver coin, Dutch, 1709, Hollandia; 1 small silver coin, Dutch, 1722, Zeelandia; 1 small silver coin, Dutch, 1724, Zeelandia; 4 silver coins, dates not decipherable; 37 copper coins, dates from 1702 to 1723, Dutch; 1 British coin, copper, George I., 1720; 1 Chinese coin, which a Chinese merchant in Geraldton tells me belongs to the time of Mon Late, King of China, 835 years ago; 52 coins in all, besides 2 pieces of gun locks marked "Cameer Zeeland," and other odds and ends. Besides the foregoing list, Captain J. Lort Stokes of H.M.S. *Beagle*, discovered a piece, of cannon in 1840, and other articles mentioned in Major's "Early Australian Voyages." Surveyor-General S. J. Roe, of Western Australia, also found some articles in the sixties; and finally Sir John Forrest during his visit to the Abrolhos in 1882 made some further finds of clay pipes, etc.

Our own discoveries complete the history of those relics to date.

We trust you will find these particulars useful and mentioning that press copies of this communication are being furnished by us to the British Consul in Amsterdam and to the hon. secretary of the Hakluyt Society, British Museum, we remain, dear sir, yours faithfully, Broadhurst, MacNeil and Co. (*The West Australian*, 27 August 1897: 3).

In 1900, the director of the Dutch Koloniaal Museum in Haarlem to the Curator of the Western Australian Museum and Art Gallery stating:

I duly received your letter of 25th September from which I noted that you propose to forward your offer of the relics of the Dutch vessel "Zeewijk" to the Curator of the Museum of Antiquities. This I did, but the Trustees of the Nederlandsch Museum van geschiedenis en kunst don't like to have them. Indeed the historic value of the objects is not very interesting! What do you say from a fragment of wineglass; a gin bottle; a fragment of knife with a bone handle, etc, etc? Spoons, bullets, buckles, metal rings, they are all kinds of necessities for a ship! I remain dear sir, faithfully, yours, Marleven, Director of the Koloniaal Museum (letter dated 10 November 1900).

## The 20th century

While the findings of Wickham and Stokes and, later, Broadhurst and MacNeil showed that the *Zeewijk* survivors had lived on Gun Island, by the beginning of the century the main *Zeewijk* wreck site had still not been found. Nonetheless it was obvious that the ship had struck Half Moon Reef somewhere in the vicinity of Gun Island.

By 1900 the Broadhurst collection was located in the WA Museum. Various photographs have been taken of the collection; there are three illustrations in Goldsmith (1946: 48), taken when the collection was displayed in the Perth Public Library. Two are attributed to the *Zeewijk*: one showing a tobacco box; the other, a collection of material including two human skulls, a number of copper or alloy items including a large container, a kettle, keg taps, scissors and also some beads (Figure 10 on page 15). The latter items were said to have been found on Gun Island. The third illustration (Figure 11 on page 16) published in Goldsmith (1946) is of artefacts attributed to the *Batavia* and shows pewter jugs; glass material including an onion bottle and wine glasses; a very unusual inlaid water container of a *narghile* (an Oriental smoking pipe, sometimes known as a hookah); a fishhook; and a clay-smoking pipe. The caption refers to un-illustrated coins. All of the material appears to be 18th century, apparently not collected on Gun Island, but possibly Pelsaert Island where the company had another guano mining site. An illustration of the Broadhurst collection in the WA Museum was shown in 1904 (*The Western Mail*, 25 December 1904: 18). The newspaper article includes an account taken from the journal of Adriaen van der Graeff and a picture of the Steijns map that Broadhurst had earlier obtained 'under the supervision of Professor Heeres, LL.D., of the Dutch Colonial Institute at Delft' (*The Western Mail*, 25 December 1904: 24). There is

also an undated photograph in the Museum archive showing a very large collection of material including the two skulls and several items shown in the Goldsmith photograph. Many of the objects in the undated photograph (Figure 12 on page 16) can be identified in the Museum's present-day collection.

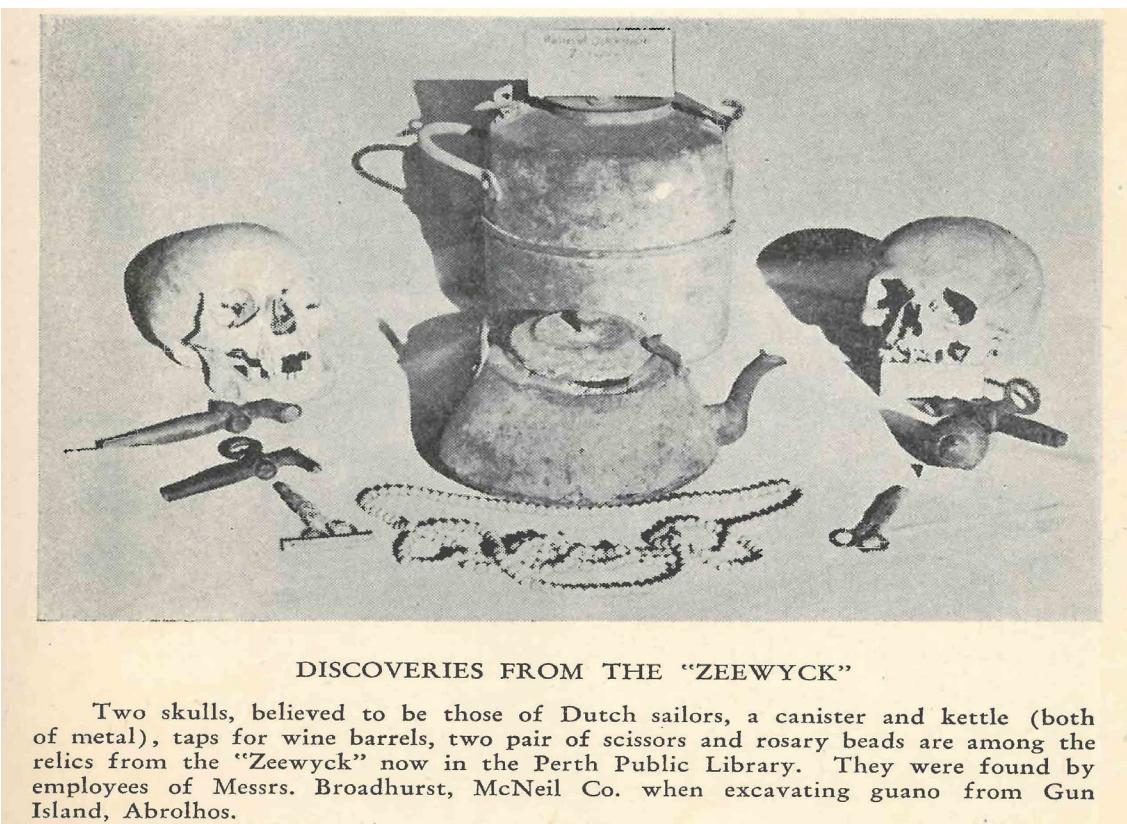


Figure 10. Illustration from Goldsmith (1946): 48.

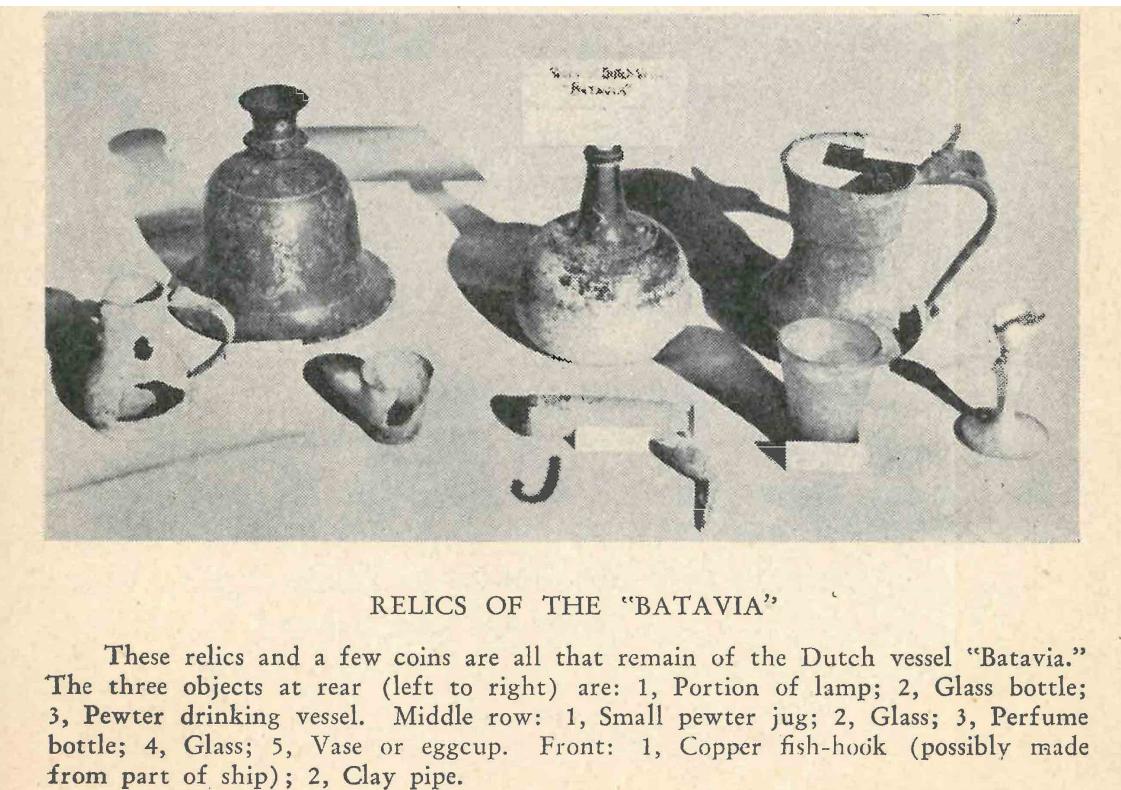


Figure 11. Illustration from Goldsmith (1946) of material reputed to be from the *Batavia*.



Figure 12. Undated illustration from the WA Museum of Broadhurst Collection.

In 1953, a local Geraldton fisherman, T. Newbolt, reported that he had found a cannon on Half Moon Reef;

subsequently, the HMAS *Mildura* visited the site and recovered three iron cannon. The cannon were reported to comprise ‘...the Long Tom which weighs about 11 tons [*sic*] and the other two cannons which weigh about one ton’ (*The West Australian*, 8 May 1953: 6) (Figure 13 on page 18). Thus, the location of part of the wreck site had been found, but obviously not the main site. This, it was thought, lay outside the main reef in an area that was difficult to reach except on rare occasions because of the extremely large Indian Ocean swells that occurred there.

Journalist and author Hugh Edwards with a group of divers finally discovered the main *Zeevijk* wreck site in 1968, on the outer side of Half Moon Reef, opposite where the initial wreckage had been found (Edwards, 1970). Various items, including elephant tusks, and two iron cannon were recovered during the expedition (Edwards, 1963). In 1968 a small bronze breech-loading swivel gun was recovered from the reef area by A. & N. Boschetti and is now in the Museum collection, Registration Number ZW1049 (Figure 14 on page 19). In 1964 two cannon and an anchor were said to have been recovered by the Geraldton Fisherman’s Co-op (Edwards, pers. comm., 4 June 2015), although there is no trace of them in Museum records or in newspapers of the time.



NAVAL SHIPS BRING  
OLD CANNON BACK

## "Kiss Me, Kate" Is A Gay Romp

(By "Fidelio.")

Kate was soundly kissed in the last five minutes at His Majesty's, and we all trooped from the theatre last night in an appreciative simper after a very lively time with Shakespeare and trimmings—mostly trimmings.

There can be little doubt that J. C. Williamson's latest "musical" to reach us will capture Perth. It deserves to, for it is a gorgeous romp, close-packed with fun, attractive tunes, and a good deal of beauty.

## WILL AIDS THE HOME OF PEACE

A breath of adventure was brought to Fremantle yesterday afternoon when the ocean minesweepers Mildura and Fremantle returned from a voyage to the Abrolhos with a Long Tom cannon and two smaller cannon which may be 200 or 300 years old.

Shown with the Long Tom aboard H.M.A.S. Fremantle are Able-Seamen R. C. Whittlefield, who is carefully chipping away barnacles, and Lieuts. I. H. Nicholson (left) and S. A. King, who are studying a chart of the area from where the cannon were salvaged.

News of the cannon was first given by Mr. Tom Newbold, a professional fisherman, of Geraldton. The Mildura located them on a reef of the Pelsart group in the Houtman Abrolhos.

The Mildura, with the Fremantle, anchored about three miles north west of the Pelsart group reef and began salvage operations.

Difficulty was experienced in raising the Long Tom, which weighs about 1½ tons, and the other two cannon, which weigh about one ton. Thickly encrusted with rust, coral and oysters, they are of cast iron.

It is believed that the cannon are from the Dutch East Indiaman, Zeewyk, which was wrecked in 1727. However, they may be from the Batavia, which was wrecked about 100 years earlier.

The commander of the Mildura (Lieut.-Commander M. R. Bromell) intends to approach the Western Australian Historical Society about the find.

Figure 13. The Mildura cannon shown in *The West Australian*, May 1953.

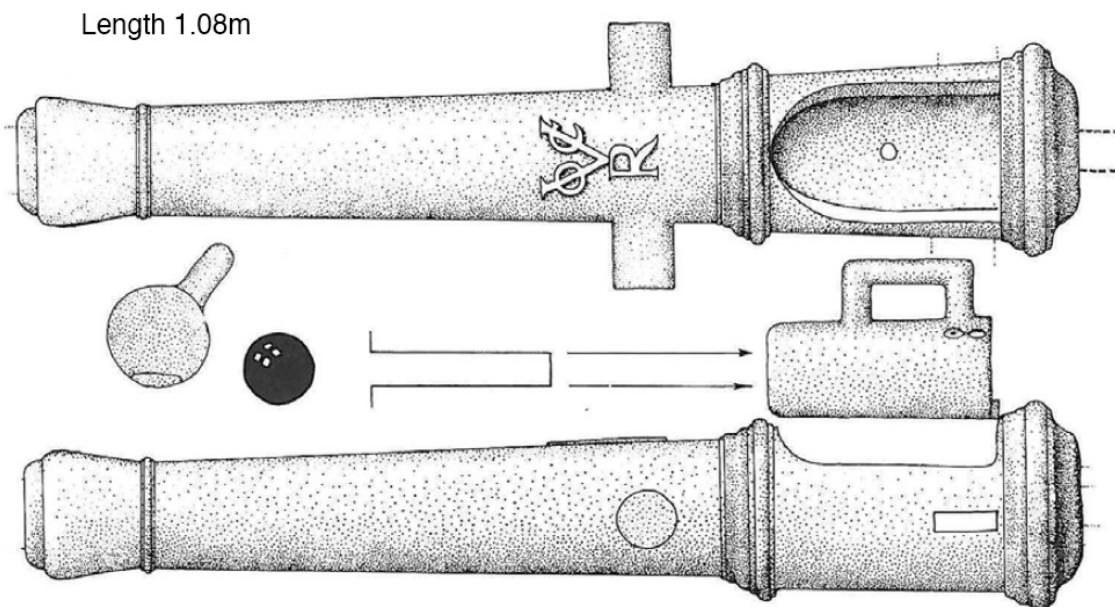


Figure 14. The Boschetti Cannon.

#### The Museum expeditions in the 1970s

Between 1976 and 1979, the WA Museum, Department of Maritime Archaeology conducted three expeditions, under the direction of Catherina Ingelman-Sundberg, to investigate the *Zeewijk* wreck site (Ingelman-Sundberg, 1976a & b; 1977a & b; 1978 & 1979). The project included a detailed survey of the material washed onto the inside of the reef from the main wreck site (Figure 15 on page 20). Work on the outside of the reef, where the main site was located, proved to be extremely difficult; the area was subject to very large swells, at times up to 5 m in height (Figure 16, p. 19). During a period of extremely flat, calm conditions in 1978, the outside site was finally surveyed. By the end of 1979 a detailed plan recorded the location of a total of 34 iron cannon, 8 anchors and other wreck material including part of a bronze breech of a swivel gun. The majority of the items were accurately located on the outside reef area, except for 4 cannon that were noted in the breakers but not surveyed (Ingleman-Sundberg, 1978). Four of the cannon were found in the inside reef area together with a section of hull structure almost 2 km from the main wreck site (Figure 17 on page 21).

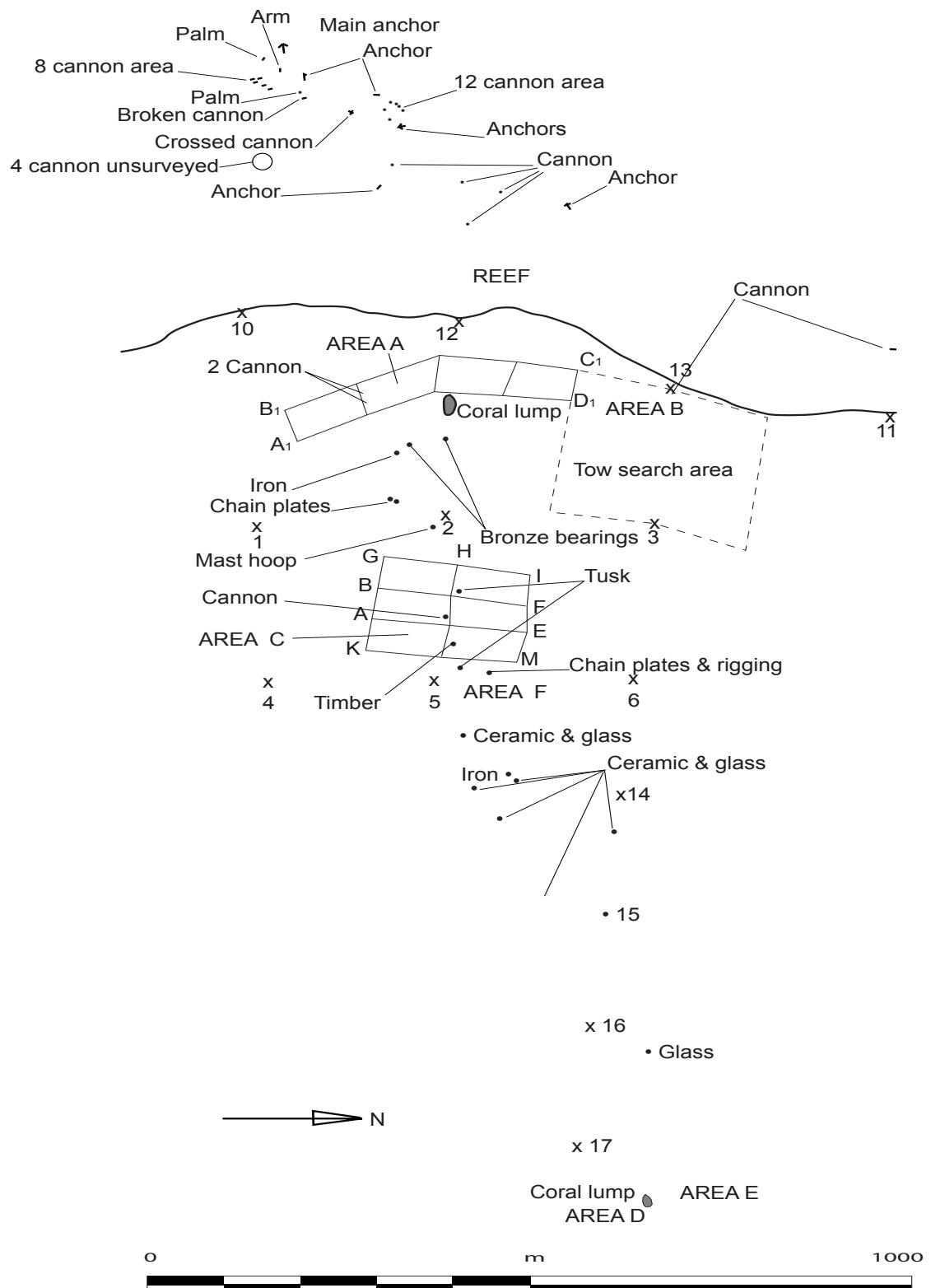


Figure 15. Site plan produced in 1978 showing the major features of the *Zeewijk* site.



Figure 16. Conditions on the outside reef area during survey work in 1978.



Figure 17. Large section of hull timber on inside reef area, found almost 2 km from main wreck site.

The pre-GPS survey work was a mixture of trilateration with tape measures to provide detailed site plans, theodolites and a tellurometer to connect the various plans to a base line on nearby Gun Island. In addition, test excavations were conducted on Gun Island and all the islands referred to in the journals were visited and surveyed. High-quality plans were produced of all the artefacts on both the main, outside reef area as well as wreckage located on the inside reef. The survey covering an area approximately 2 km long by 1 km wide was accurate to about 1–2 m over the whole area, but it was not possible at that time (pre-GPS) to give geographical coordinates (latitudes and longitudes) to the objects.

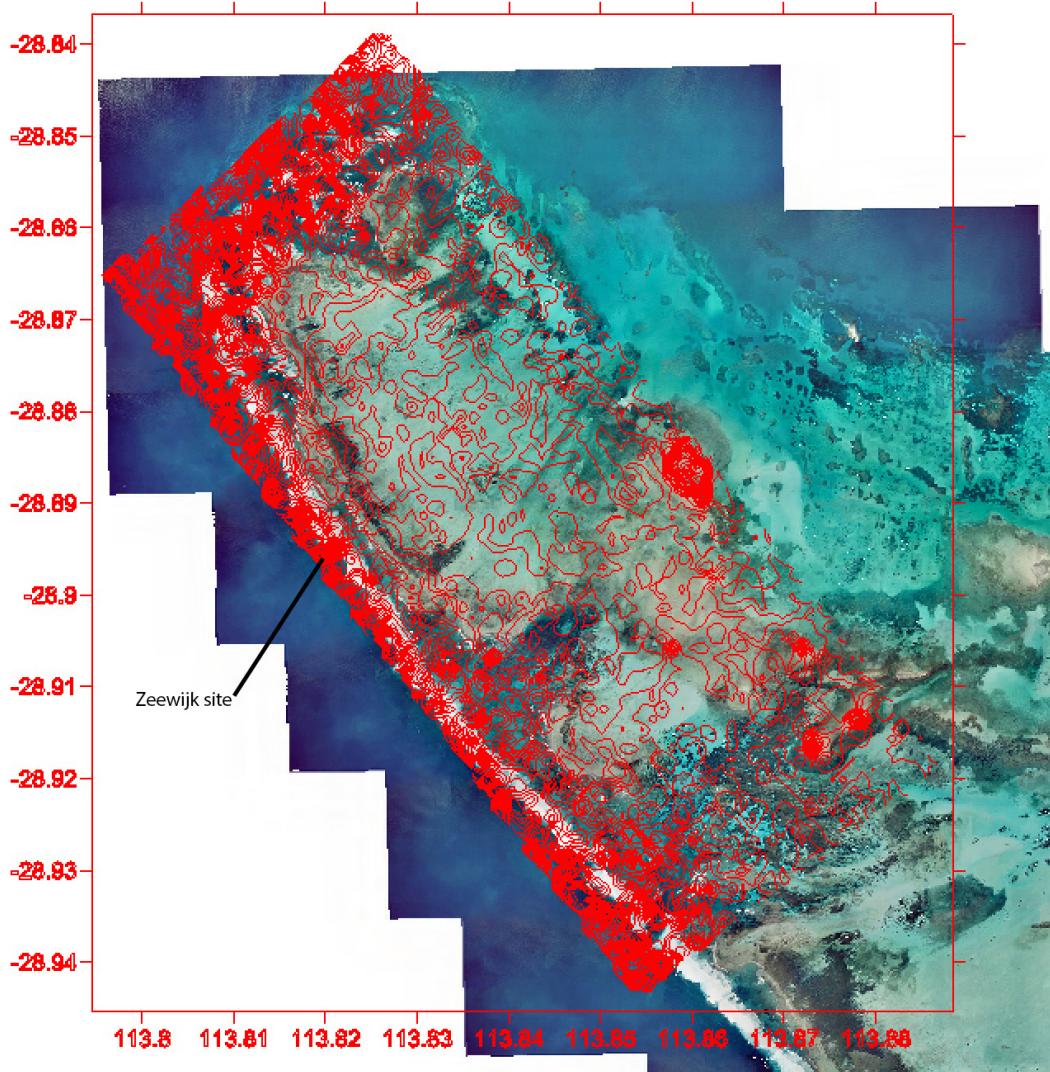


Figure 18. The 2008 Fugro aerial magnetometer survey.

#### The 2008 aerial magnetometer survey

In 2008, an aerial magnetometer survey, financed by businessman Kerry Stokes on behalf of Hugh Edwards, was flown by Fugro Airborne, a Western Australian geophysical company (Fugro, 2008) (Figure 18). It was undertaken in an attempt to locate what was believed to be a second 18th-century wreck site, thought by Edwards to have been lost in the neighbourhood of the *Zeewijk*. The results of the survey were disappointing for a number of reasons. Firstly, due to the lack of precise geographical locations (latitudes and longitudes) for the cannon and anchors on the Ingelman-Sundberg plan, it was difficult to reconcile the magnetic anomalies encountered in the aerial survey with the objects in the plan. In addition, the aerial magnetometer survey was flown over areas with two completely different sea states: one on the inside reef where the sea was very calm; and the other on the outside reef area where the sea was extremely rough with large swells. Magnetometers are affected by what is called 'swell noise', which is induced magnetism caused by the sea, which is itself a conductor, moving, with the swell, up and down through the Earth's magnetic field (Green, 2004). The induced magnetism disrupts the normal field, making it difficult to locate magnetic anomalies. Furthermore, it is difficult to apply a filter to the data to remove short- and long-term magnetic effects, because two different filters are required for the two areas and it is not known what level of filtering was used. As a result, Edwards was unable to locate or verify the anomalies that were shown on the Fugro survey.

### The 2014 survey

The fact that the early Museum plan was created pre-GPS and, thus, could not be geo-referenced (i.e. given a precise latitude and longitude) meant that the positions of magnetic targets on the Fugro survey could not be correlated with the cannon and anchors on the Museum plan. The relative positions of the cannon, anchors and other wreck material were accurately positioned in the plan, probably to about  $\pm 0.5$  m over distances of 2–3 km, objects having been trilaterated with tapes and linked together using a theodolite on the reef and a tellurometer on Gun Island. At that time, however, geographical coordinates (latitude and longitude or UTM coordinates) could not be given to the objects. This led to a great deal of confusion in interpretation of the Fugro magnetic data.

Obtaining the requisite GPS positions of the cannon and anchors on the outside reef, which is subject to the Indian Ocean swell, would involve not only a major expedition, but also waiting for suitable conditions in order to relocate items and obtain the GPS coordinates. This, in itself, is not an easy task, as the main wreck area is subject to rough seas almost all the time, whereas the GPS must be held on the surface, precisely located above the object on the seabed. The outer wreck plan, however, had been linked to objects on the inside reef area, where conditions are generally calm. Thus, in 2014, a start was made with a brief trip to the inside reef area, to obtain GPS positions of some of the cannon and other features in an attempt to geo-reference the Museum plan.

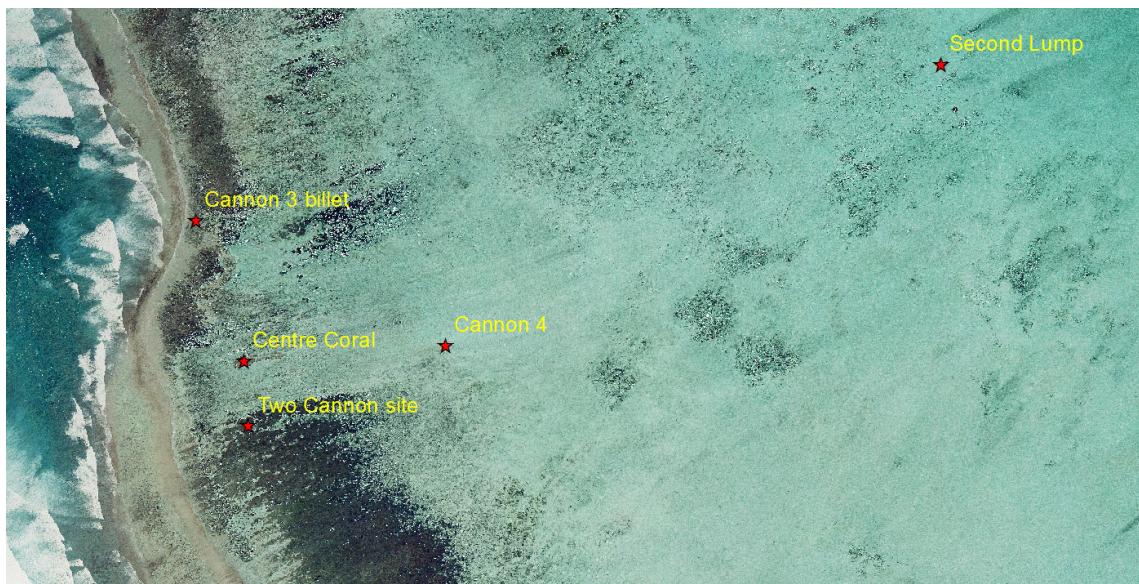


Figure 19. The key points located in 2014 to geo-reference the Museum site plan.

The large coral lump (Centre Coral, Figure 19), a prominent and well-known feature on the plan, was easily located. This object appears clearly on the Landgate (the Western Australian government department responsible for land information) aerial mosaics of the Pelsaert Group that were photographed in 2006 and 2015 (shown in Figure 20). The GPS coordinate of the centre of the lump was verified against the Landgate plans. A GPS position was then obtained for Cannon 3 and for a group of iron billet boxes.

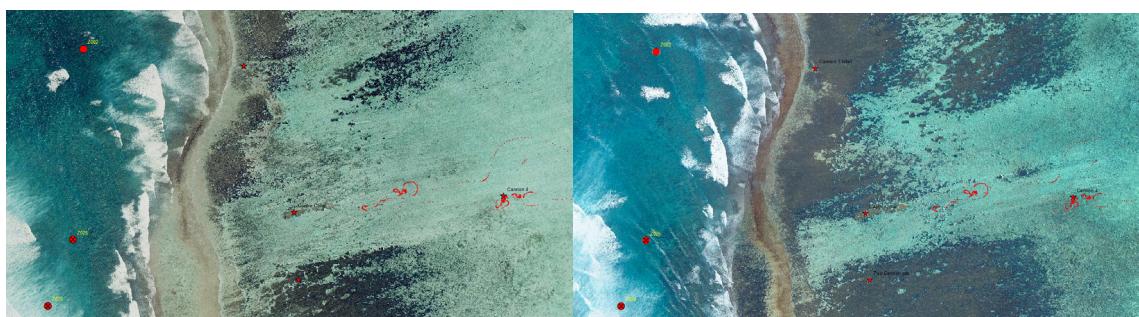


Figure 20. Landgate images of the Two Cannon site 2006 (left) and 2015 (right).



Figure 21. The aerial photograph showing Cannon 4 on Landgate aerial photograph in 2006.

Cannon 4, which curiously did not appear on the 2008 Fugro aerial magnetometer survey, had been recorded on the 1978 site plan 350 m to the east of the coral lump. This was relocated in the 2014 survey using an ArcMap GIS, linked to a GPS. With this system it was possible to track the position of the boat during the 2014 survey on the aerial mosaic from the 2008 survey. On approaching the area, Cannon 4 was seen on the sandy seabed. Surprisingly, at the same time, the cannon was also observed on the aerial photograph on the GIS (see Figure 21), something that earlier had been completely overlooked. Thus, three accurate positions, or control points, for artefacts or features on the Museum plan were established (Cannon 3 & 4 and the coral lump) in the 2014 survey. These points were ideally located for geo-referencing as they were at right angles to each other and approximately 300 m apart. This then enabled the original 1978 survey plan to be geo-referenced on ArcMap GIS using these three control points and, for the first time, it was possible to obtain latitude and longitude for all the features on the plan.

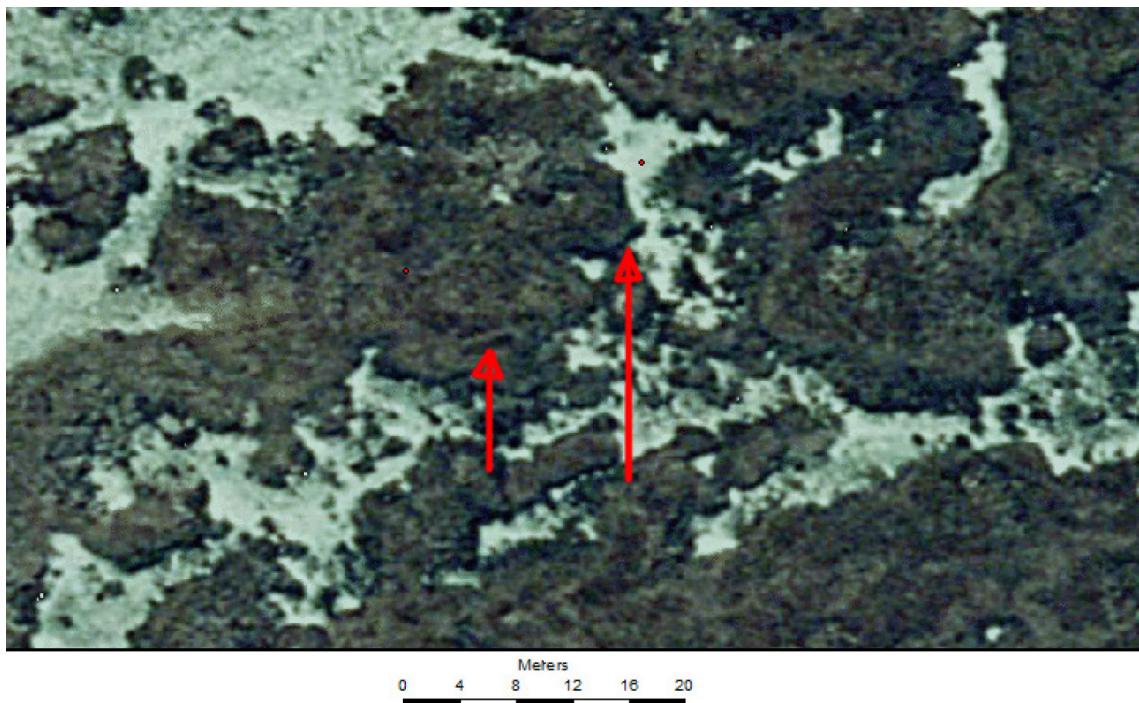


Figure 22. The Two Cannon site.

The 2014 survey (Green, 2014) resulted in some interesting discoveries. A search around the Two Cannon site on the 1978 site plan, in an area where the Fugro survey indicated that there was a magnetic target, failed to find anything. This was possibly due to the shallow water and the increased stag-horn coral in that area. Examination of the site on Landgate's 2015 aerial photograph, however, revealed two objects resembling cannon (Figure 22). It was noted that there was an increase in the coral growth on the Landgate images of 2006 and 2015 (Figure 20 on page 23).



Figure 23. The 2008 Fugro magnetometer targets and the 1978 survey overlaid on the Landgate 2006 aerial photograph, showing close alignment of targets to site plan.

The 2008 Fugro survey recorded the outline of the main *Zeewijk* wreck site on the outside of the reef. This exactly corresponds with the Museum's 2014 survey of the main wreck site after geo-referencing, confirming the validity of the Fugro survey (Figure 23). The isolated coral lump recorded at the very eastern end of the Museum survey area (Area E, about 1300 m east of the main coral lump) showed on the 2006 Landgate photomosaic about 22 m south of that recorded on the Museum plan, indicating that the geo-referencing was remarkably accurate (Figure 24 on page 26) given that the survey covered several kilometres. This point was then used to further geo-reference the plan.

The large magnetic anomaly recorded in the Fugro survey to the north of the main survey area (cluster of six red dots in Figure 23) was discovered to be a collection of iron railway lines of unknown origin (Figure 25 on page 26).

Examination of the outside reef area on the Landgate 2015 aerial mosaic showed features that could represent cannon and anchors corresponding to the 12 Cannon area (Figure 26 on page 27) (Green, 2014).

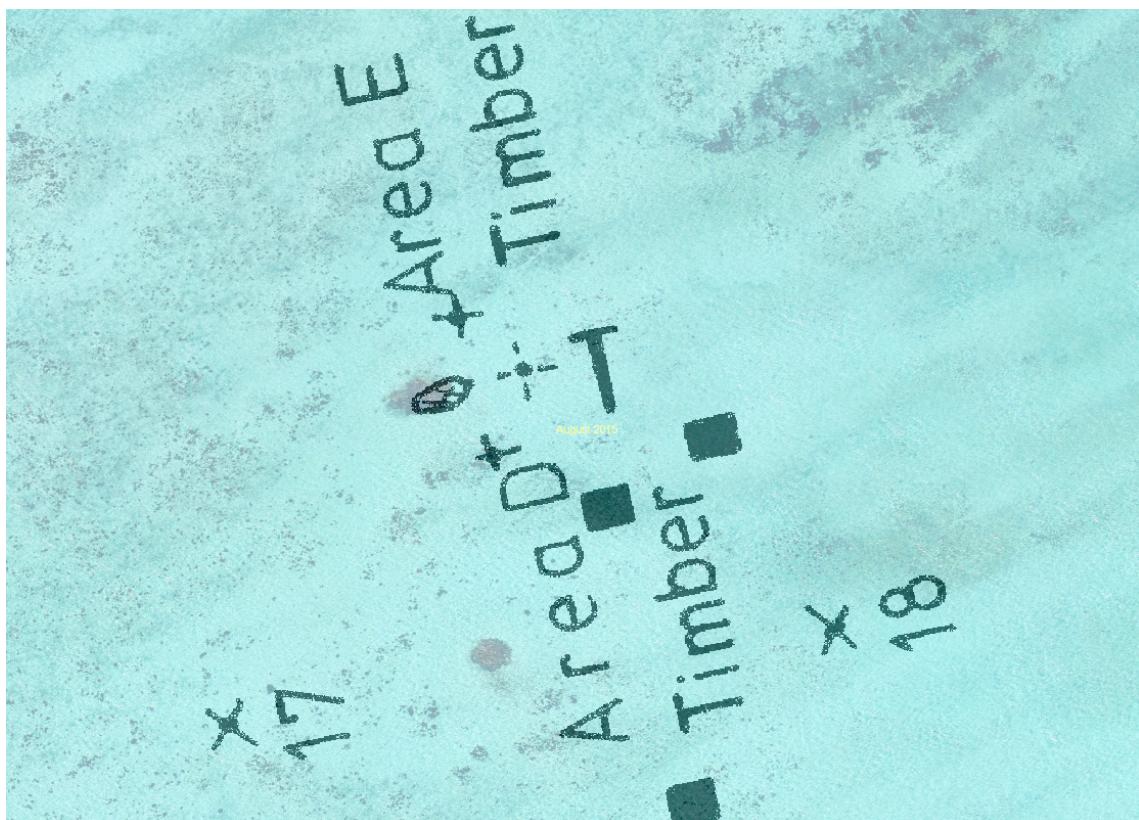


Figure 24. Area D–E showing the coral lump on the 1978 site plan exactly corresponds with Landgate's 2015 aerial photograph (brown lump).



Figure 25. Railway iron site.

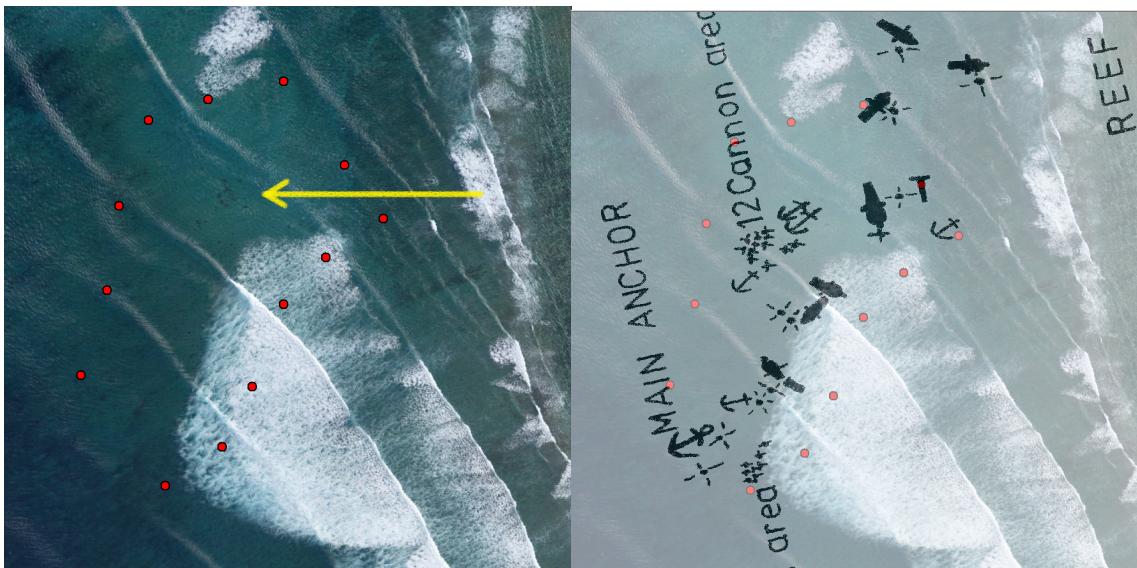


Figure 26. The 2015 Landgate aerial photograph showing features (yellow arrow, left) that correspond with the 12 Cannon site on the Museum's 1978 plan (right).

### The 2016 aerial magnetometer survey

In 2016 Mr John Rothwell, Managing Director of Austel Shipbuilding, generously offered to fund an aerial magnetometer survey of the Pelsaert Group. The WA Museum contacted David Abbott, Thomson Aviation to carry out the survey and discussions commenced on the most likely areas to conduct the survey. A committee was set up under the Chair of Mr Rothwell, including Alec Coles (CEO, WA Museum), Hugh Edwards (author and journalist), Geoff Glazier (GPS expert and pearl farmer in the Pelsaert Group), David Abbott (Thomson Aviation), Bill Peters (Southern Geoscience) and Ed Punchard (Prospero Productions). This committee reviewed and advised the Museum on the operation.

Owing to the high cost of the aerial magnetometer survey, it was necessary to ensure that it covered only the most likely areas where a second wreck might be located. It needed, firstly, to re-survey the original Fugro area to confirm that the *Zeewijk* wreck site area had been covered adequately in that survey; and to determine if there was any new evidence of a second site in that general area. Secondly, in view of the Houtman Abrolhos' proximity to the continental shelf and the extreme drop-off on the seaward side of Half Moon Reef, it was decided that the survey would not proceed beyond the 50 m depth contour. It was considered that if a VOC vessel did strike Half Moon Reef or the seaward side of Pelsaert Island, it would have been travelling in a northerly direction and, on running aground, it was unlikely to drift very far away from the reef or island. The only exceptions were the end of Pelsaert Island where a vessel could have clipped the end of the island and then drifted NW into deeper water, and at the area beyond the NE end of Pelsaert Island where a similar event could have happened. At the southern end of Pelsaert Island, the water becomes deep quickly and probably beyond 50 m depth, which is both outside conventional diving operations and also reaching the limit of detectability with the magnetometer.

A survey area was defined and agreed upon with Thomson Aviation following the considerations discussed above. The survey was flown from 5 to 9 March 2016 covering a line-survey distance of 5267 km (Thomson Aviation, 2016). The flight path is shown in Figure 27 on page 28. The data was then processed by Bill Peters and the results produced on a DEM with a list of anomalies (Table 2 on page 29).

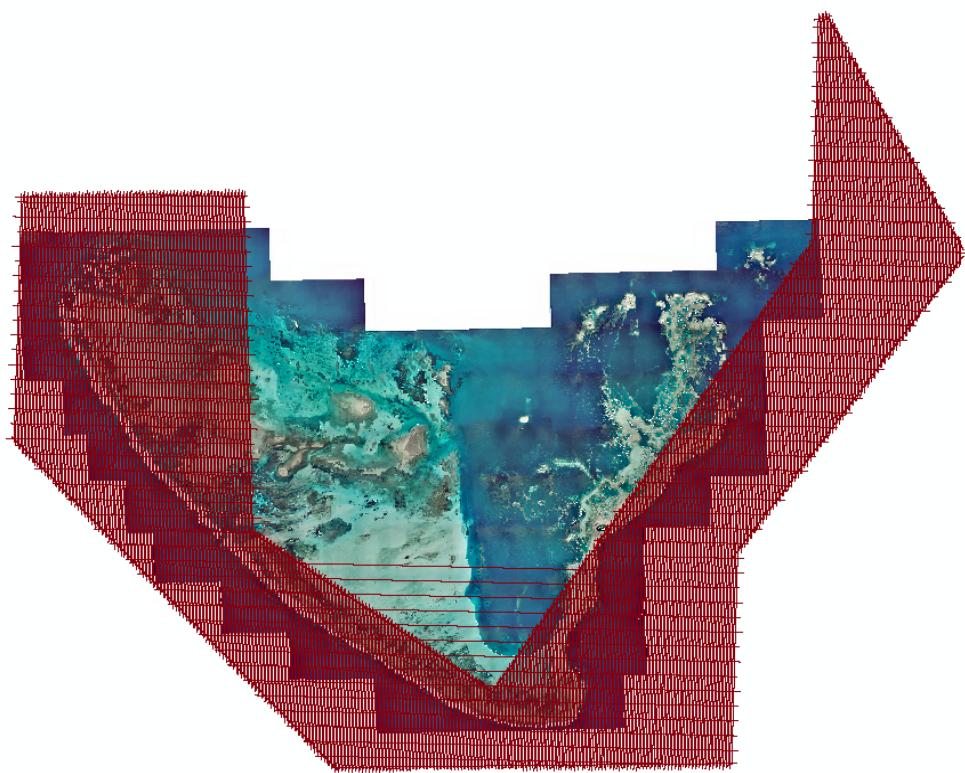


Figure 27. Aerial survey area of Pelsaert Group.

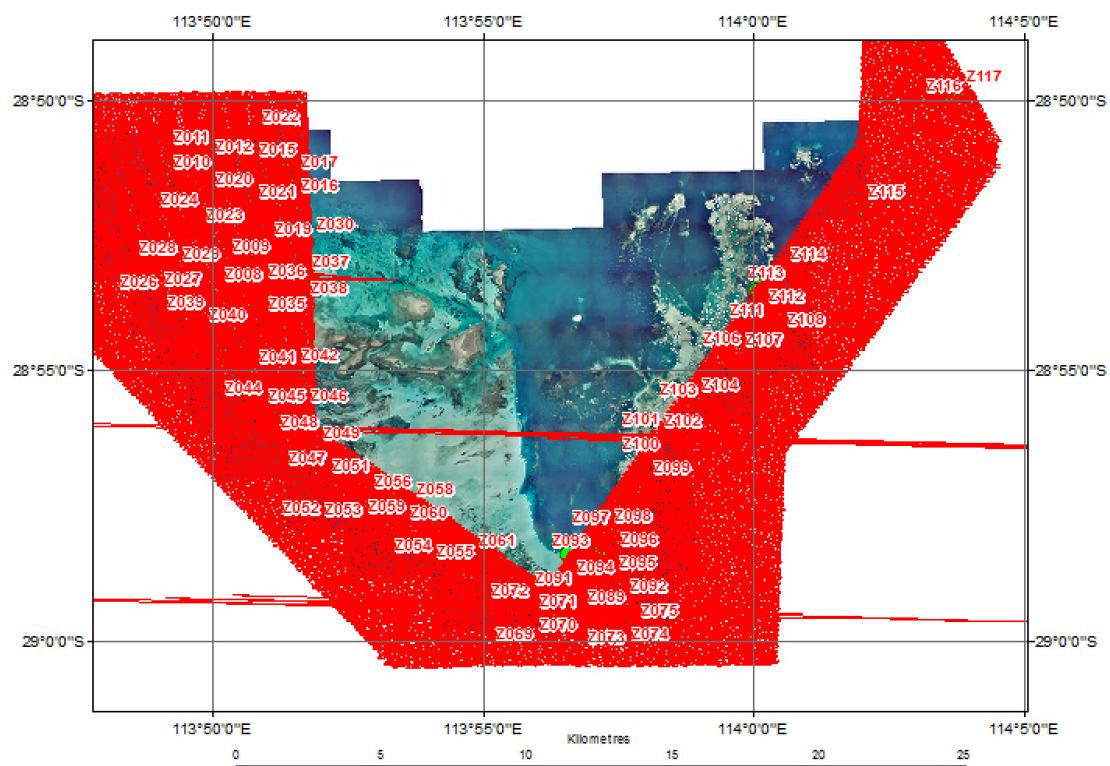


Figure 28. The 2016 magnetometer survey showing targets.

## RESULTS OF THE AERIAL SURVEY

Bill Peters firstly prioritized the list of targets based on the nature of the magnetic anomaly. A magnetic anomaly can originate from a number of different sources; thus, it was important to try and classify the sources to differentiate geomagnetic from non-geomagnetic (Figure 28).

Possible sources could be:

1. Geomagnetic, usually from differing magnetic susceptibility of the underlying geology, generally recording large variation over long distances;
2. Electromagnetic noise, caused by sparks or lightning. Generally, surveys are not conducted during electromagnetic storms;
3. Sun spot activity causing an unexpected spike in the magnetic field intensity;
4. Cultural deposits such as iron objects, both modern or historic, showing up as sharp and small anomalies; and
5. Swell noise, which is caused by the movement of the sea (the swell) relative to the earth's horizon; as the sea itself is a conductor, it moves through the Earth's magnetic field inducing a small magnetic field which adds to that of the Earth, thus disrupting it.

The size of a magnetic anomaly is based on the Hall Equation (Hall, 1966):

$\Delta M = 10 \frac{AW}{Bd^3}$  where  $\Delta M$  is the size of the anomaly in Nano Tesla, W is mass in kilogrammes, d is distance from centre of object in metres and A/B is the length (A) to breadth (B) ratio. It can be seen that the size of the magnetic signal diminishes by the inverse cube of distance from the object.

Table 2. Shows the target number, Bill Peters' confidence rating; depth estimate; and his comment; Jeremy Green's depth estimate; comment; Longitude and Latitude of target; and if target has been examined.

Target	Significance	Confidence	Depth	BP Comment	Depth	JG Comment	Long.	Lat.	Seen
ZW008	A	Moderate	0		Shallow	Unknown	113.851634	-28.879546	YES
ZW009	A	Moderate	2	Round Object			113.853533	-28.88379	YES
ZW011	A	Moderate	4		5 m	Unknown	113.822801	-28.850215	YES
ZW012	A	Moderate	0		Shallow	Unknown	113.836	-28.852959	YES
ZW016	A	Moderate	25	~60 m deep		Unknown	113.857452	-28.85625	YES
ZW017	A	Moderate	22	~20 m deep		Unknown	113.857399	-28.857685	YES
ZW030	A	Low	0		Shallow	Unknown, nothing	113.862416	-28.87735	YES
ZW001	AA	Moderate	0	Cannon & Billet Box	Known	Cannon 13	114	-28.9	YES
ZW003	AA	High	0	Two Cannon	Known	Two cannon	114	-28.9	YES
ZW004	AA	Moderate	0	Isolated cannon		Isolated cannon	114	-28.9	YES
ZW015	AA	Moderate	28	~20 m deep	26 m	Unknown, deep	113.857504	-28.854021	YES
ZW052	AA	Moderate	45	~20 m deep	Over 40 m	Unknown	113.863923	-28.964605	YES
ZW053	AA	Moderate	45	20 m deep	Over 40 m	Unknown	113.868	-28.965186	YES
ZW077	AA	High	50	~10 m deep	50 m	Unknown, deep	113.968583	-28.980581	YES
ZW108	AA	Moderate	0		10 m	Unknown	114.007416	-28.894268	YES
ZW111	AA	Moderate	0				114.003237	-28.890465	YES
ZW112	AA	High	0				114.00182	-28.890704	YES
ZW113	AA	Moderate	0				114.00179	-28.891823	YES
ZW115	AA	High	25	~10 m deep	30 m	Unknown, deep	114.032313	-28.86722	YES
ZW116	AA	High	25	~100 m deep	30 m	Unknown, deep	114.059266	-28.834529	YES
ZW117	AA	High	10	~120 m deep			114.06281	-28.831391	YES
ZW118	AA	High	10	~150 m deep	10 m	Unknown, deep	114.049877	-28.81323	YES
ZW013	B	Moderate	3		Shallow	Possibly nets	113.847191	-28.859831	YES
ZW018	B	Moderate	3		Shallow	Possibly nets	113.854153	-28.863752	YES
ZW019	B	Moderate	5	~20 m deep			113.853878	-28.865309	YES
ZW020	B	Moderate	4	~20 m deep			113.848249	-28.8633	YES
ZW054	B	Moderate	0				113.899861	-28.963113	YES
ZW055	B	Moderate	0				113.899792	-28.965054	YES
ZW056	B	Moderate	0				113.893411	-28.956523	YES
ZW057	B	Moderate	0		Shallow	Unknown	113.893372	-28.957327	YES
ZW058	B	Moderate	0				113.893099	-28.958587	YES
ZW078	C	High	0	Mooring	Shallow	Unknown	113.951559	-28.975635	YES
ZW080	C	High	0				113.952466	-28.976896	YES

ZW081	C	Moderate	0				113.95246	-28.978104	YES
ZW082	C	High	0	Linear feature	Shallow	Unknown	113.954123	-28.97961	YES
ZW086	C	High	0		Shallow	Unknown	113.953784	-28.978508	YES
ZW090	C	High	2		Shallow	Unknown	113.944958	-28.973272	YES
ZW091	C	High	2				113.943494	-28.973015	YES
ZW093	C	High	2		Shallow	Unknown, guano	113.953147	-28.971604	YES
ZW097	C	High	7	~10 m deep	Shallow	Unknown	113.953098	-28.967357	YES
ZW098	C	High	7	~20 m deep	Shallow	Unknown, guano	113.953983	-28.966751	YES
ZW095	L	High	2				113.955571	-28.968493	YES
ZW101	0	High	0	<i>Ben Ledi</i> wreck	Known	<i>Ben Ledi</i> wreck	113.969425	-28.936791	SHALLOW
ZW102	0	High	0	<i>Ben Ledi</i> wreck			113.969966	-28.937428	SHALLOW
ZW039	A	High	0		Shallow	Unknown	113.829963	-28.900857	SHALLOW
ZW047	A	Low	0				113.863774	-28.936105	SHALLOW
ZW061	A	Moderate	0		Shallow	Unknown	113.912811	-28.974342	SHALLOW
ZW029	AA	Low	0			Shallow	113.821118	-28.886176	SHALLOW
ZW041	B	Low	0				113.850442	-28.917681	SHALLOW
ZW048	B	Low	0				113.861924	-28.937822	SHALLOW
ZW049	B	Low	0				113.864658	-28.94139	SHALLOW
ZW050	B	Low	0		Top reef		113.876405	-28.950881	SHALLOW
ZW051	B	Low	0		Top reef		113.875359	-28.951264	SHALLOW
ZW059	B	High	0	<i>Ocean Queen</i> wreck	Shallow	<i>Ocean Queen</i>	113.891043	-28.963935	SHALLOW
ZW060	B	Moderate	0				113.891596	-28.965745	SHALLOW
ZW073	C	Low	0				113.955432	-28.991352	SHALLOW
ZW074	C	Low	0		Shallow	Unknown	113.95947	-28.990487	SHALLOW
ZW076	C	Moderate	0		Shallow	Unknown	113.956323	-28.983025	SHALLOW
ZW083	C	Moderate	0				113.955248	-28.979829	SHALLOW
ZW087	C	Moderate	0				113.954403	-28.978269	SHALLOW
ZW005	0	High	2	Pearl farm			113.844814	-28.883911	NO
ZW006	0	High	2	Pearl farm			113.845039	-28.886116	NO
ZW007	A	Moderate	0		Shallow	Unknown	113.853669	-28.879421	NO
ZW010	A	Moderate	10			Reef object	113.825611	-28.844627	NO
ZW021	A	Moderate	3	~40 m deep	Shallow	Unknown	113.844295	-28.867127	NO
ZW040	A	Low	0			Rough out reef	113.829253	-28.904931	NO
ZW042	A	Low	0		Shallow	Unknown	113.857648	-28.917275	NO
ZW044	A	Low	0			Rough out reef	113.849127	-28.927694	NO
ZW045	A	Low	0				113.857496	-28.930024	NO
ZW046	A	Low	0		Shallow	Unknown	113.860347	-28.930045	NO
ZW002	AA	Moderate	0			Unknown	113.816013	-28.87776	NO
ZW025	AA	High	0				113.815835	-28.88103	NO
ZW109	AA	Moderate	3		Shallow	Unknown	114.005533	-28.89045	NO
ZW110	AA	High	5		Shallow	Unknown	114.00632	-28.887555	NO
ZW114	AA	Moderate	5		10 m	Unknown	114.00847	-28.886415	NO
ZW014	B	Moderate	3		Shallow	Possibly nets	113.850124	-28.86105	NO
ZW022	B	Low	28	~40 m deep			113.845549	-28.843936	NO
ZW043	B	Low	0				113.862551	-28.92409	NO
ZW026	X	High	0		Known	<i>Zeewijk</i> outside	113.815404	-28.882166	NO
ZW027	X	High	0		Known	<i>Zeewijk</i> outside	113.815094	-28.883192	NO
ZW028	X	High	0				113.814763	-28.883857	NO
ZW023	0	High	0	Railway iron	Known	Railway iron	113.828112	-28.873809	N/A
ZW062	0	High	0			<i>Windsor</i>	113.932053	-28.982655	N/A
ZW063	0	High	0			<i>Windsor</i>	113.932407	-28.983594	N/A
ZW064	0	High	0			<i>Windsor</i>	113.93291	-28.985063	N/A
ZW065	0	High	0			<i>Windsor</i>	113.933762	-28.986505	N/A
ZW066	0	High	0			<i>Windsor</i>	113.931972	-28.985994	N/A
ZW067	0	High	0			<i>Windsor</i>	113.932484	-28.986668	N/A
ZW068	0	High	0			<i>Windsor</i>	113.93166	-28.986921	N/A
ZW069	0	High	7			<i>Windsor</i>	113.930486	-28.990383	N/A
ZW070	0	High	0			<i>Windsor</i>	113.930693	-28.987925	N/A
ZW071	0	High	0			<i>Windsor</i>	113.931095	-28.988692	N/A

ZW072	0	High	2		<i>Windsor</i>	113.930819	-28.989474	N/A
ZW024	A	Moderate	0	Grounding site	Shallow	Unknown	113.814421	-28.86926 N/A
ZW038	A	Moderate	0		Shallow	Unknown	113.86032	-28.896599 N/A
ZW107	AA	High	0	Visible wreck	Shallow	Unknown	114.005227	-28.899756 N/A
ZW034	B	Moderate	0			Gun I jetty	113.862584	-28.888342 N/A
ZW036	B	Moderate	2				113.861471	-28.891108 N/A
ZW037	B	High	0			Gun I jetty	113.861616	-28.887416 N/A
ZW031	L	High	0				113.860284	-28.887444 N/A
ZW032	L	High	0				113.859403	-28.888185 N/A
ZW033	L	High	0				113.860521	-28.886357 N/A
ZW035	L	Moderate	0				113.861488	-28.889863 N/A
ZW075	L	High	0		Known	<i>Jon Jim</i> wreck site	113.962208	-28.985782 N/A
ZW119	L	High	0			Lighthouse	114.041346	-28.80021 N/A
ZW079	C	High	0		Beach	Unknown	113.958475	-28.976105 LAND
ZW084	L	High	0	Iron objects	Land	Ignore	113.956183	-28.980629 LAND
ZW085	L	High	0				113.955777	-28.978987 LAND
ZW088	L	High	0		Land	Ignore	113.957796	-28.98035 LAND
ZW089	L	High	0	Iron objects	Land	Ignore	113.959371	-28.980171 LAND
ZW092	L	Moderate	0				113.959767	-28.981488 LAND
ZW094	L	High	0		Beach	Unknown	113.956969	-28.971096 LAND
ZW096	L	High	0				113.956625	-28.968407 LAND
ZW099	L	Moderate	0				113.967109	-28.942569 LAND
ZW100	L	Moderate	0		Beach	Unknown	113.966576	-28.943672 LAND
ZW103	L	Moderate	0		Beach	Unknown	113.980989	-28.926695 LAND
ZW104	L	Moderate	0				113.982	-28.925139 LAND
ZW105	L	Moderate	0		Beach	Unknown	113.998887	-28.907762 LAND
ZW106	L	Low	0				113.995131	-28.910795 LAND

The table is a compilation of Peters' original data and the initial comments and the subsequent investigation. As can be seen from the above table, a number of anomalies were seen to be deep and obviously geological; others were given a priority in terms of potential interest ranging from AA, A, B and C; L indicated a target on land; and 0 and X indicated known targets.

Peters produced a number of shape files that could be placed in the *Zeewijk* GIS, produced using Esri ArcMap. This enabled the precise placement of the targets onto the GIS, which had a series of aerial photographs layered on the plan together with the geo-referenced Museum site plans from the 1970s. It was immediately obvious, without even having to visit the Houtman Abrolhos, that many of the targets corresponded to features that were already known and could be identified on the modern aerial photographs. The known wreck sites *Windsor*, *Ben Ledi*, *Jon Jim*; a modern pearl farm; and a site known to consist of a scatter of abandoned railway lines were easily identified. Figure 29 on page 32 shows the GIS with the targets overlaid on the aerial photograph. It was also clear that the system was working because a small magnetic anomaly on the north end of Pelsaert Island, when examined on the aerial photograph, appeared to be the remains of a modern crayboat.

The targets of main significance were those around the *Zeewijk* site, where it was important to resolve the speculation about a second site and the lack of agreement relating to the findings of the 2008 Fugro magnetometer survey. Another priority was to classify the targets and create a list of sites that needed to be investigated, using marine-based remote sensing (magnetometer and side-scan sonar) for deep targets and visual inspection for the shallower ones. The most interesting targets were in three groups: ZW052 & ZW053; ZW077; and ZW115, ZW116, ZW117 & ZW118. The first group was in about 45 m of water lying off Half Moon Reef; the second target lay off Wreck Point in just over 50 m of water (this was thought by Bill Peters to be interesting, in that it was unusual that there were no corresponding anomalies on adjacent lines, and it was thus possibly a surface vessel transiting the survey line); the third set was thought to be deep, possibly geological, but of significance. ZW002 was also of interest as it was a small magnetic target beyond the north end of the main *Zeewijk* outside reef area, possibly a new cannon.

The other targets, which were checked on the GIS, could be eliminated because they were associated with obvious modern material (such as pearl farm infrastructure and moorings). This then left a list of important targets (AA), less important targets (A) and targets considered worth examining in order to attempt to categorise the different types of anomalies (B and C). It was generally considered at this point that there was no significant evidence of a large, new shipwreck of the size of a VOC vessel either in the general area of the *Zeewijk* or within

the survey area. It was decided, therefore, to mount an expedition to the Pelsaert Group to investigate the anomalies, to complete the operation.

## Museum investigation of the targets 2016

The WA Museum mounted an expedition to the Pelsaert Group in November 2016 with the objective of inspecting the deep-water sites with a marine magnetometer and side-scan sonar and visually inspecting the shallow water sites.

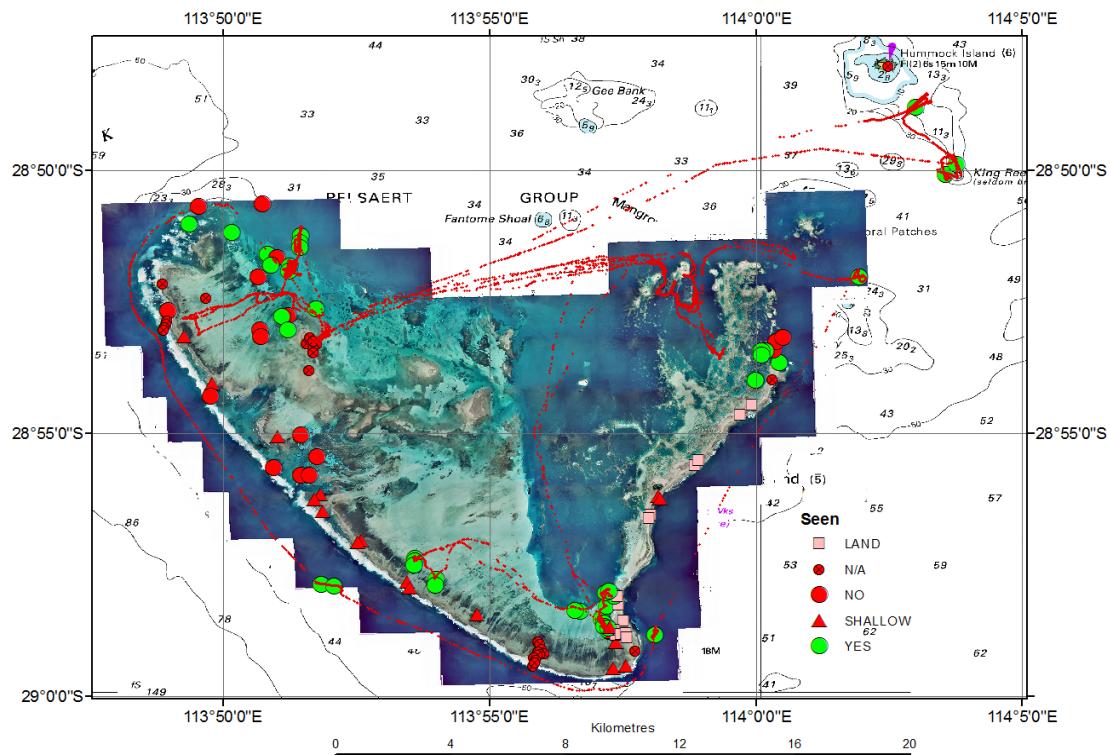


Figure 29. Pelsaert Group showing the targets; note green circles are targets examined.

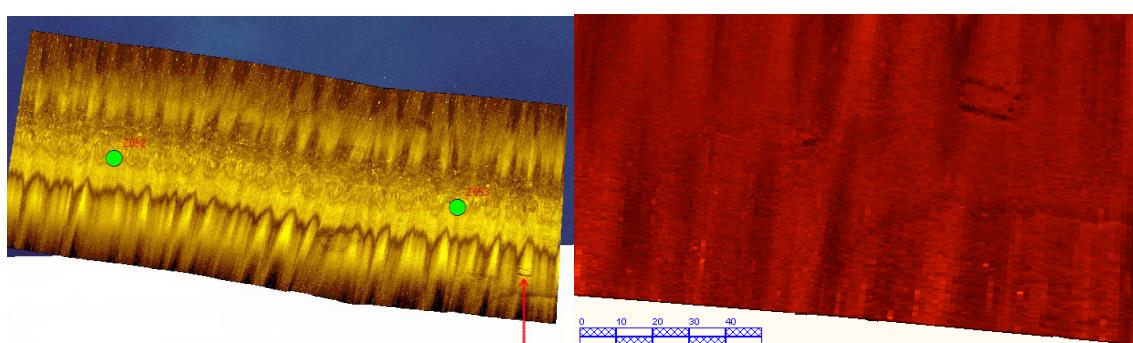


Figure 30. Targets ZW052–053 on side-scan (left), feature shown with red arrow; enhanced image of sonar record (right).

## TARGETS ZW<sub>052</sub> & ZW<sub>053</sub>

These two targets had no magnetic signature but showed up as a prominent target on the side-scan run. Given the limited time available and the weather conditions on the outside reef, the survey was unfortunately brief.

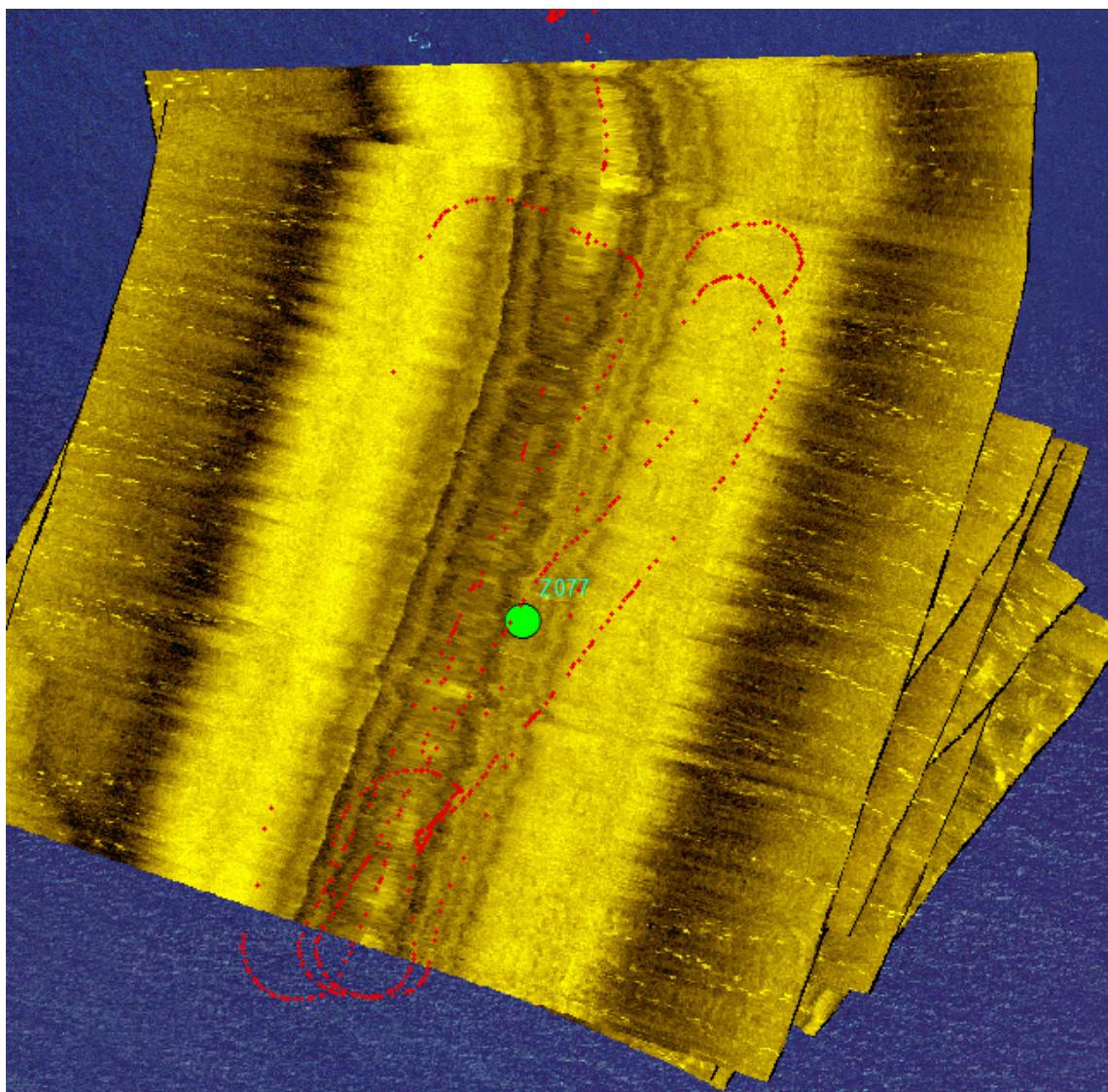


Figure 31. Target ZW077.

#### TARGET ZW077

This target showed no evidence of either a sonar or magnetic anomaly. It was concluded that the initial interpretation that the anomaly was the result of a fishing vessel transiting the survey line was correct.

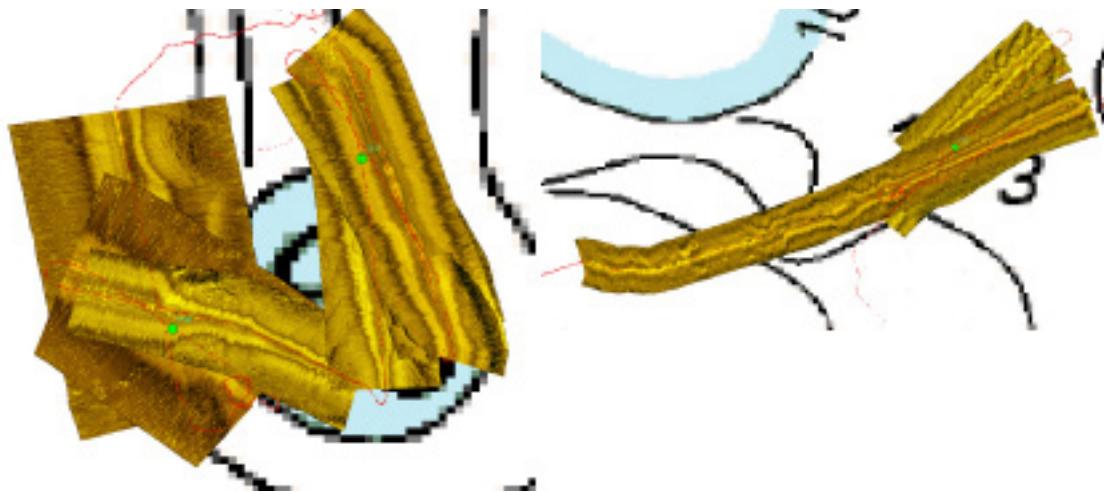


Figure 32. Targets ZW115, ZW116, ZW117 (left) & target ZW118 (right).

#### TARGETS ZW115, ZW116, ZW117 & ZW118

The investigation of these four targets was complicated; the sonar showed no evidence of anything other than reef structure but in several cases magnetic targets were detected. It was assumed that the targets were geologically associated with reefs.

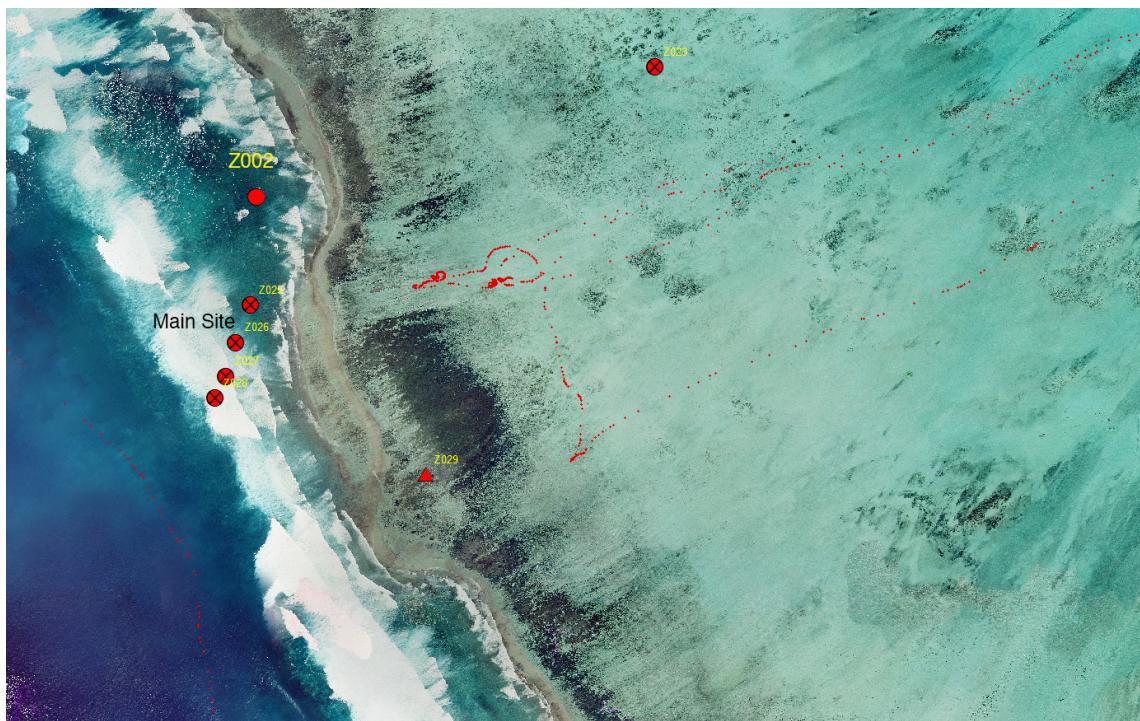


Figure 33. Main Site and target ZW002 to north.

#### INVESTIGATION OF ZW002

Unfortunately, swell conditions precluded the possibility of diving on this target. It will require unusually good conditions for this to be possible; and it is, therefore, unlikely to be examined in the near future.



Figure 34. Target areas at south end of Pelsaert Island (left), all associated with Department of Transport moorings; targets associated with *Ocean Queen* (right).

#### INSHORE TARGETS AT SOUTHERN END OF THE PELSAERT GROUP

The conclusive evidence in this area was that the aerial magnetic survey targets corresponded exactly with chain and anchors associated with boat moorings. Investigations in the shallow reef area inside the *Ocean Queen* site were inconclusive because the very low tide prevented access and a clear view of the seabed.

#### TARGETS INSIDE REEF NEAR ZEEWIJK SITE

Unfortunately, the extremely low tide made the examination of magnetic targets on the inside reef extremely difficult. It was hoped to be able to locate the two cannon south of the prominent coral lump but the tide was so low it was impossible to swim over the coral.



Figure 35. Pearl farm debris shown on aerial photograph in 2006 (left); same area in 2015 (right).

#### TARGETS NORTH OF GUN ISLAND

Whilst working on Gun Island, an opportunity occurred to investigate the targets to the north of the island. Examination of the Landgate aerial photographs of the Pelsaert Group showed in 2006 a mass of what looks like fishing infrastructure that had come adrift, possibly related to pearl farm activity. This was seen to be floating in the general area of the magnetic anomalies; and, in 2015 aerial photographs it is no longer visible. Possibly it had sunk with the iron chains and anchors associated with it. This would explain the small anomalies in this area.

### **Archival evidence vs archaeological evidence—discussion**

There are a number of different explanations to account for the discrepancy between the archival evidence, which indicates there is a wreck somewhere, possibly in the Pelsaert Group, and the archaeological evidence, which does not support this. The Centre for International Heritage Activities (CIE, 2014) published an extensive research report (*Inventory and analyses of archival sources in the Dutch East India Company (VOC) archives in the Netherlands in order to contribute to possible locations and identification of VOC shipwrecks off the Western Australian Coast*). This dealt with a number of questions relating to the question of the second shipwreck being the *Aagtekerke*, lost in 1726 (see below); and the following discussion will draw on the findings of this document.

If there were a second shipwreck, it could be one of a number of possibilities:

- An outward-bound VOC vessel known to have been lost between the Cape of Good Hope and Batavia;
- A homeward-bound VOC vessel known to have been lost between Batavia and the Cape of Good Hope;
- A VOC vessel known to have been lost anywhere on outward or homeward voyage;
- A VOC vessel involved in the Cape of Good Hope–Batavia trade;
- A vessel of another European nation involved in the East Indies trade; and
- Flotsam of a vessel wrecked somewhere else.

The question of vessels lost on this section of the route to the Indies has been well researched. Even after the loss of the *Zeewijk*, the VOC were aware of three ships that were known to have been lost en route for Batavia: the *Ridderschap van Holland*, the *Fortuyn* and the *Aagtekerke* were lost after leaving the Cape of Good Hope, on 5 January 1694, 18 January 1724 and 27 January 1726 respectively.

#### *The Ridderschap van Holland*

It is interesting that, in 1728, the Governor General and Council in Batavia did not mention the *Ridderschap van Holland* as a possible candidate for the other wreck on the Pelsaert Group. De Vlamingh, on his voyage of exploration in 1696, was instructed among other things to search for the survivors of the *Ridderschap van Holland*.

Coming near the shore [Saint Paulo and Amsterdam islands] they shall fire a shot with a cannon from half an hour to half an hour and keep proper lookout to see whether from shore any signal is made in return be it with fire, smoke or otherwise. Shall also observe closely whether they can discover anywhere any remains of wrecked ships which may have been washed on to the beach or sandbanks or rocks. If they come to learn of such indications of such people or pieces of wrecked ships they shall, as much as is possible, try obtain further information thereof, and so, to this end, and also in order to explore said islands further, they shall take care whether they may find somewhere any harbour, bays or roadsteads where they could come to anchor without obvious danger in order to go ashore with longboat or pinnace and to make a closer and more thorough inspection of everything. If it should happen that they come to find any people there, be it from the ship *Ridderschap* or any other wrecked ship or ships, they shall have to comfort the same to their upmost ability and succour them with refreshments, and further whatever they may need, and the crews could spare; also distributing the same, if the number should not be too great, among the ships, continue the voyage, or also, if there is occasion [fol. 987] to transport the same to the nearest and most suitable port under the control of the Company, as shall be approved in the Broad Council. Finding no people they shall, however, also explore the aforesaid two islands somewhat closer and conduct themselves therein in the same way as has been prescribed to them heretofore relating to the islands of Tristan da Cunha and in so far as the same is applicable here. But shall be prepared, before separating the ships from each other for sailing around the aforesaid islands, in order to ensure that the ships on the lee or east side of the same islands join the other again, to order suitable signals, places and signs, so that each reports his findings to the others, as well as to continue the voyage together. (Order instructions for Skipper Willem Vlamingh and Broad Council, sailing in the frigate *Geelvinck*, the hooker *Nijptangh*, and the galliot 't *Weseltje* via Cab de Bonne Esperance to Batavia. 23 April 1696, cited in Schilder, 1985: 163).

François Valentijn's *Oud en Nieuw Oost-Indien* (Keijzer (Part 3) 1858: 63), in 1696, records:

*Deze heer is in 1684 of 1685 uit Holland met het schip de Ridderschap naar Indien vertrokken en behouden aan de Kaap gekomen, alwaar zijn schipper hoog oodig oordeelde, om hier een andere groote mast in te doen zetten, daar die, welke hij nu had, niet deugde en hij met regt vreesde, dat zij hiermede de reis niet krijgen zouden. De heer Cooper keurde dit veranderen van mast af, behield de oude en onder nam de reis naar Batavia hier mede; doch men heeft sedert nooit taal of teeken van dit schip of van iemand van dit volk gehoord, dan dat er eenige jaren daarna een gerucht kwam dat de oude heer van der Stel, die met*

*hen vertrokken was, op Madagascar nog leefde, doch alles kwam op niets uit, zoodat hij naar allen schijn met an en muis in de zee gebleven is.* (This gentleman is in 1684 or 1685 departed from Holland with the ship *de Ridderschap* to the Indies and safely arrived at the Cape, where his skipper judged [it] highly urgent to renew the mainmast with another here, there the one he now had was considered unsafe and he feared rightly so, that they would not be able to complete the travel with this one. The gentleman Cooper disapproved of changing the mast, [to] keep the old [one] and undertake the trip to Batavia from here though no one has since heard a sound or sign of this ship or its people other than a few years after when the rumour came that the old gentleman Van der Stel who departed with them, was living on Madagascar though it turned out to be nothing, so that he in all likelihood stayed at sea with man and mouse.)

Halls (1965) quoting from the same source stated:

...when the *Ridderschap* arrived at the Cape, one of her masts was sprung and her skipper, Dirck de Lange, ordered a new one stepped, but Couper, the senior Company official on board, impatient of any delay, in his haste to return to the Indies, overruled him and countermanded the order. Therefore the ship sailed from Table Bay with one of her masts in a dangerously weakened state; subsequently it broke and the skipper steered a course for the nearest land, Madagascar, where she was lost with all hands. No doubt Skipper Dirck de Lange would have steered for Fort Dauphin, at the southeastern corner of Madagascar; there he probably intended to obtain timber from which a new mast could be fashioned and stepped. He may not have been aware that Fort Dauphin was a pirate stronghold, because the southern coast of the island was generally avoided by all Dutch ships owing to the hostility of the native inhabitants, who massacred a French garrison there in 1671 (Halls, 1965: 5–6).

This, therefore, seems to disagree somewhat with the description in Valentijn above.

On 20 November 1699, the Cape records reported:

Report of Jan Coin, skipper of the yacht *Tamboer* dispatched to Madagascar to search for the missing ship *Ridderschap*, and obtain information concerning the new Netherland pirates. ‘We left Table Bay on the 2nd May, and after a stormy passage anchored on the 27th June about 3½ leagues below the bay Tollinare, where a Frenchman and seven blacks boarded and informed us that they had been sent by their king, Captain Samuel. On the 3rd July, we anchored in the bay before mentioned in 5½ fathoms sandy bottom before the demolished French fort “the Dauphine,” and a pistol shot distant from the shore. I at once sent a letter to the king, written in English, informing him of the reason of my visit...[Description of the bay and position of the Fort Dauphin]. I endeavoured to collect information from some old inhabitants and various Europeans who had long wandered about in this neighbourhood, regarding the *Ridderschap*, and everything connected with the pirates. In the latter case I was at the proper spot. I was told that heavy pieces of wreckage had been washed up on the south side of Madagascar four years ago and near the Isle St. Marie, but that no human beings were observed. A reef here runs out to sea about 15 Dutch miles long. Seven or eight miles to the north of this, at Mangeranga, about the same time, pieces of heavy masts, &c., were washed on shore, where also 14 graves were found. No one could tell who made them, or who were buried there. This was all that I could discover about the *Ridderschap*.’ (No. 119: 631, in *Précis of the Archives of the Cape of Good Hope, Letters Received, 1695–1708*, 12 April 1696: 228, C.V. Leibbrandt, 1896).

The CIE report (CIE, 2013) concluded that, while the wreckage reported in Madagascar by the *Tamboer* was almost certainly that of the wreck of the *Ridderschap van Holland*, ‘the VOC, for a long time kept open the possibility of another destination’. So, unless some new information becomes available, we may safely assume that the *Ridderschap van Holland* is not a contender for the second wreck, leaving the other two known losses, the *Fortuyn* and the *Aagtekerke*.

#### The *Fortuyn*

On 17 January 1724, the *Anna Maria*, *Doornik*, *Hogenes* and *Fortuyn* departed from the Cape of Good Hope.

The ships must have lost contact along the way though, because the *Anna Maria* arrived in Batavia on April 1st, the *Doornik* on April 16th, and the *Hogenes* at the 21st of that same month. Not much later, the ‘*Graveland*’, that had left the Cape on February 3rd, reached Batavia as well. Both the *Noorderkwartier* and the *Fortuyn* had not yet arrived by that time. This must have been alarming, especially since the ‘*Graveland*’ had encountered flotsam along the way. On the 1st

of May, it was decided in Batavia to send the frigate *Windhond* on a reconnaissance-mission (CIE, 2013).

After the *Windhond* was dispatched, the *Noorderkwartier* arrived, on 26 May. So the wreckage seen by 's *Graveland* clearly was not the *Noorderkwartier*, although there seems to be no subsequent speculation as to what the wreckage might have been. The *Windhond* returned on 27 July, having visited the Cocos Islands and the Isle of Money (Christmas Island) and finding no traces of wreckage or survivors. The Governor General and Council concluded that the *Fortuyn* had been lost, but did not attribute the wreckage seen by 's *Graveland* to the *Fortuyn*. In fact, in 1728, the Governor General and Council in Batavia suggested that the wreckage reported by *Zeewijk* survivors might be from the *Fortuyn*.

#### The *Aagtekerke*

The *Aagtekerke* left the Cape of Good Hope on 27 January 1726 in company with the *jacht Westvriesland*, which arrived at Batavia on 27 April. The *Aagtekerke* never arrived and there is no record of the Governor General and Council discussing the matter further (CIE, 2013). It is known that the *Aagtekerke* loaded elephant tusks from Mozambique at the Cape of Good Hope (see The elephants' tusks below) and it is also known that the *Zeewijk* did not officially carry tusks. So the discovery of tusks on the wreck site has lead to speculation that the second ship could be the *Aagtekerke* (Halls, 1966; Henderson, 1978; Edwards, 2016), lying in the same general position as the *Zeewijk*; this issue is also discussed below.

#### Ships involved in the inter Cape–Batavia trade

It is possible that the mooted second vessel might belong to this category. There is almost no catalogued information of losses of vessels involved in this trade. We know that the vessels utilized the same routes as the *retourschips* of the VOC sailing both to and from the Cape, so they would fit into this scenario as a possibility. A number of interesting VOC vellum charts of the Indian Ocean exist belonging to the early 18th century (Helminck, n.d.; and Schilder & Kok, 2010). These charts, which were obviously used by the skippers of the ships, show routes taken by VOC ships in the Indian Ocean, but at least one voyage does not seem to correspond with a known *retourschip* departure or arrival and, thus, possibly relates to this trade.

#### Another European vessel

A number of European nations were involved in the East Indies trade, including those represented by the English, French, Danish, Swedish, Ostend and Austrian companies; however, little has been recorded from the archives of these companies about their voyages or losses. It is feasible that another European vessel might have been lost on the Western Australian coast; but we only know of the English East India Company ship *Trial* (1622) (Green, 1977b), and the Portuguese advice ship *Correio da Azia* (1816) (Green, 2011).

#### Flotsam from a wreck elsewhere

This possibility is of particular interest. Pelsaert Island is known to be a place where flotsam washes up. The combination of the prevailing south-westerly winds and the swirling of the generally southward movement of the Leeuwin Current (Phillips & Huisman, 2009) tends to deposit material on the seaward shore of Pelsaert Island. This corresponds to the places of wreck finds reported by the *Zeewijk* survivors and Wickham and Stokes. Nonetheless, while the 'figurehead' found by the *Zeewijk* survivors is indicative of another wreck, the survivors refer to:

...piece of grating and upper chimney, and a number of empty barrels, a binnacle, some blocks, a wheel of a gun carriage and some more trifles, all recent and hence from our former ship (van de Graeff, 3 September 1727).

So, it is obvious that material is also drifting from the wreck to Pelsaert Island. As far as can be seen there is nothing in the accounts of the *Zeewijk* or *Beagle* to indicate that the wreckage found on Pelsaert Island is other than flotsam.

#### The elephant tusks

Edwards found a number of small elephant tusks when the site was first discovered. Later, in the 1970s, the WA Museum recovered more tusks. Currently there is a total of eight tusks in the Museum collection and several in private collections. Edwards has suggested that the elephant tusks were not from the *Zeewijk*, but from another

ship, possibly the *Aagtekerke*, which constituted further evidence supporting the hand grenade report in the journals (see page 3).

The presence of tusks on the wreck site raises questions: Where did they come from and why were they there? Were they from the *Zeewijk*? Or did they come from the *Aagtekerke*, which would then lend support to the second wreck theory? Two things are known about the ivory trade in this period: the VOC did not officially export ivory from the Netherlands between 1720 and 1729; and it is recorded that the *Aagtekerke* was the only vessel to carry officially East African ivory from the Cape of Good Hope to the Indies in this period. Bearing this in mind, there are five possible explanations for the presence of ivory tusks on the *Zeewijk* site:

1. The tusks were on board the *Zeewijk* as unofficial trade from the Netherlands;
2. The tusks were on board the *Zeewijk* as unofficial trade from the Cape;
3. They were official trade on board the *Aagtekerke*, which had loaded tusks at the Cape of Good Hope and, thus, support the theory of a second wreck;
4. They were unofficial trade from the Netherlands on the *Fortuyn*; and, thus, support the theory of a second wreck but an alternative to the *Aagtekerke*; and
5. The tusks are from an unknown wreck, which seems unlikely.

#### The ivory trade

In the 17th and 18th century large quantities of elephant tusks were exported to the Indies by the VOC. This was part of a trade from West Africa, undertaken by the Dutch Geocroyerde Westindische Compagnie (GWC or Chartered West India Company). The GWC exported ivory and slaves from the West African coast, taking the slaves to the Caribbean, and the ivory onto the Netherlands. In the Netherlands the ivory would have been available for purchase for the extensive European ivory market to make combs, knife handles and decorative objects. The VOC would have been one of the contenders for the acquisition of ivory, which they transported to the Indies where it would have competed with the local Southeast Asian ivory trade. Over half a million pound weight of ivory was sent to the Indies by the VOC between 1634 and 1658 (Green, 1977a), with the trade continuing throughout the 17th and 18th centuries. Between 1720 and 1729, however, the VOC did not export tusks from the Netherlands, but bought ivory at their trading post at Fort Rio dela Goa (Maputo), in Mozambique. The tusks were then taken to the Cape of Good Hope where they were loaded on vessels bound for the Indies (CIE, 2014). The East Africa trade was probably an attempt to avoid having to purchase the tusks from the GWC; and, thus, because the VOC bought the ivory cheaply in Mozambique, it increased the profits of the company. This period exactly corresponds with the voyages of the *Zeewijk*, *Aagtekerke* and *Fortuyn*.

The records at the Cape indicate that tusks from Rio dela Goa, Mozambique, had been brought to the Cape in the brigantine *Feynoord* on 26 October 1725 and loaded on board the *Aagtekerke*. The list of tusks from the *Feynoord* was recorded as 214 pieces weighing 2941 Amsterdam pounds, as well as 198 tusks weighing 2081 Amsterdam pounds and 16 tusks of 860 Amsterdam pounds; the latter are listed as weighing: 45, 20, 27, 81, 22, 84, 49, 64, 35, 60, 42, 73, 50, 75, 108, and 25 Amsterdam pounds. It is concluded, therefore, that these tusks were forwarded to Batavia in the *Aagtekerke* (CIE, 2013: 77).

According to the records of the Bookkeeper General, none of the other ships arriving in Batavia that left the Cape between 26 October 1725 and 3 January 1726 carried elephant tusks. In view of the corresponding number and the almost corresponding weight, the above specified elephant items were almost certainly shipped in the *Aagtekerke*. Apparently, a small correction has been made on weight in the Cape (CIE, 2013: 77). The CIE (2013) report also states:

The private trade in elephant tusks was prohibited, but was still presumed to occur and contested by the VOC...the supply of tusks over land from areas near the VOC establishment at the Cape, as well as smuggling in ships that belonged either to the VOC itself or to other nations that came by the Cape, was most probably happening. A clear sign is the fact that an earlier prohibition of the trade in elephant tusks was published again in 1724 with the threat of confiscation and punishment. The VOC at the same time offered the possibility for citizens who had elephant tusks in their possession to sell them to the Company for the then valid nominal value for which they were accounted when shipped to Batavia. The cost of the tusks in the exchange-circuit at Rio dela Goa was much lower than this value. The smuggling of tusks from Rio dela Goa to Cape Town was thus most certainly lucrative, and smuggling from the Cape to Batavia could still be profitable as well. The differences between the nominal values of tusks from the Cape and Asian tusks, and the profits that could be gained in India clearly testify this. The cost price at Rio dela Goa was so low that it was almost negligible (when converted

to the cost of exchanged goods as beads or copper-ware). The nominal value at the Cape varied somewhere between 6 to 14 stuivers per pound, dependent on the size of the tusks. At Batavia Asian tusks were booked for 1 to 2 guilders (20 to 40 stuivers) per pound. When they were sold a light profit was normally being made over this price. For tusks from the Cape of Good Hope, the profit when sold in Surat in India, which was the standard selling place for almost all VOC ivory, was frequently over 100 percent. This means that for a monthly salary of a sailor several pounds of ivory had to be smuggled. Since we know that the VOC took steps in 1724 to prevent this smuggling, it was an illegal activity that was most certainly undertaken in the period that the ships under consideration left the Cape. Presence of elephant tusks in one of the ships under discussion, even when no mention of it is being made in VOC archives, is thus not to be excluded. In terms of numbers and dimensions, very little can be said with certainty about this illegal cargo (CIE, 2013: 33–34).

Thus, at first sight, the most likely explanation for the tusks on the *Zeewijk* site is that they were illegal trade on the *Zeewijk*—either from the Netherlands or the Cape; or, if we accept that there is a second shipwreck on the *Zeewijk* site, they were illegal trade on the *Aagtekerke* (as the ship carried legal East African ivory and the VOC was not exporting legal West African ivory from the Netherlands at that time), or legal or illegal trade on the *Fortuyn*, or some other vessel.

#### The DNA analysis of the elephant tusks

In 2014, the Trace and Environmental DNA (TrEnD) Laboratory, Department of Environment and Agriculture at Curtin University conducted DNA analysis on the elephant tusks from the *Vergulde Draeck*, a VOC ship wrecked off the WA coast in 1656 (Green, 1977) and the *Zeewijk*. The analysis showed that the DNA extracted from the *Vergulde Draeck* and three tusks from the *Zeewijk*, were Central African location (Coghlan & Green, 2016) (Figure 36). This indicates that the tusks were exported from West Africa.

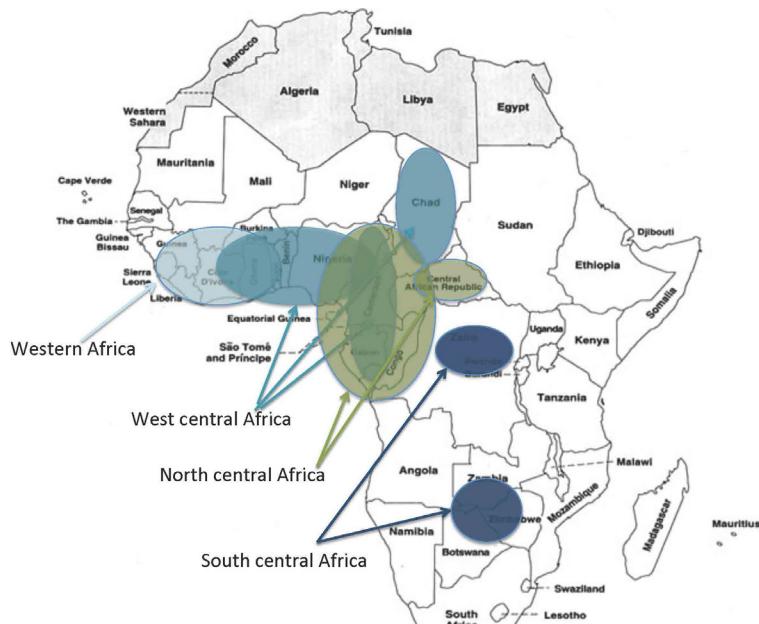


Figure 36. African ivory DNA types (after Coghlan, Bunce & Green, 2016).

In 2017 a private expedition to the *Zeewijk* site led by Hugh Edwards found another tusk on the site. This tusk was also subject to DNA analysis by Megan Coghlan at the TrEnD Laboratory, and was shown, like the rest of the ivory, to match most closely with African forest elephants from the west-central African countries. Coghlan noted:

...there are two species of African elephant, the forest elephant (*Loxodonta cyclotis*) and the savanna elephant (*Loxodonta africana*). The forest elephant is typically smaller in size than the savanna, and is most commonly found in countries in west, central-west, north central, and south central Africa in areas of forest habitat. Whereas the savanna elephant typically

inhabits bush/savanna habitats in countries in eastern, east-central and southern savanna African countries. The *Zeewijk* and *Vergulde Draeck* tusks all had DNA sequences that most closely match the smaller forest (*L. cyclotis*) species. However, I don't believe that the fact that the tusks are from forest elephants necessarily supports the hypothesis that they were from the *Aagtekerke*. There is no way to prove that these tusks were from the *Aagtekerke* based on the DNA results. I think that it is more likely that the tusks that were recorded as being loaded onto the *Aagtekerke* at Mozambique were probably from savanna elephants rather than forest elephants. I agree with you that it is unlikely that smaller forest elephant tusks would have been carried all the way to Mozambique, when there would have been larger, more profitable savanna tusks to acquire in that location for the *Aagtekerke* to export. Based on the DNA results, I'm inclined to think that the *Zeewijk* was carrying illegal west African tusks that were loaded in the Netherlands, which were never reported (Megan Coghlan, pers. comm., 13 December 2017).

Figure 37 shows African elephant samples were grouped geographically into the localities represented by the large pie charts, which show the frequency at each of the localities of the eight major mtDNA subclades identified by the study. The small circles represent subclades present allocations sampled by previous mtDNA studies, which were assigned using diagnostic sites for subclades. The map shows tropical forest (dark green) and mixed (light green) habitat zones, which correspond approximately to the range of the forest elephant.

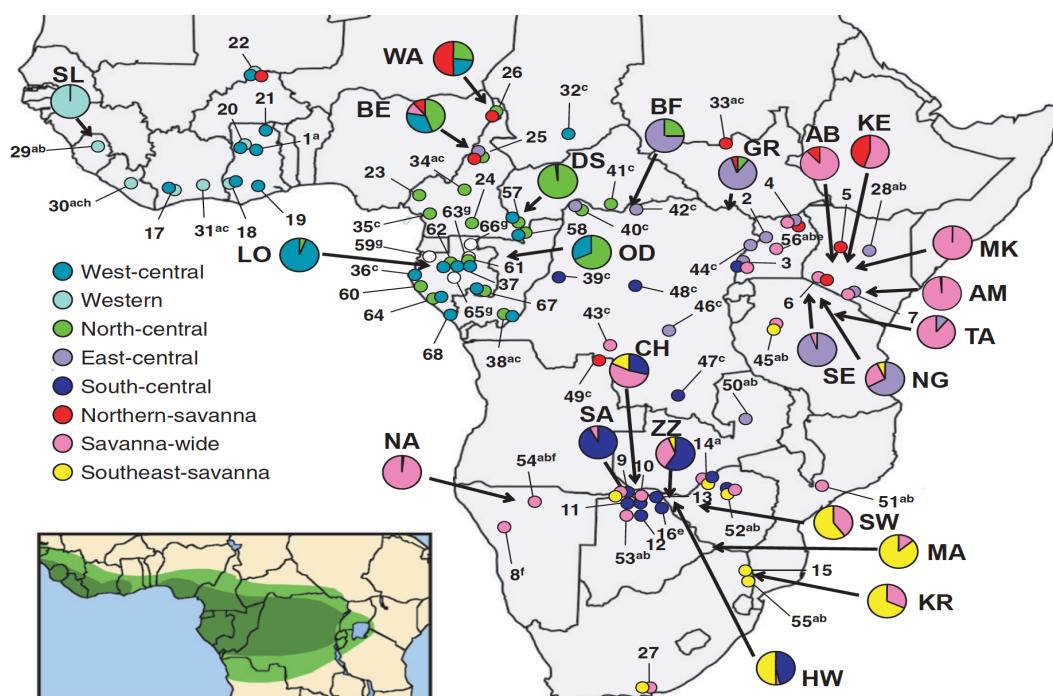


Figure 37. Map showing the geographic distribution of elephant mtDNA subclades across Africa (from .Ishida, *et al.*, 2013).

#### The likely origins of the ivory

The fact that the ivory on the wreck site was of West African origin almost certainly discounts the *Aagtekerke* as its carrier. The *Aagtekerke* was known to carry East African ivory; and, also, any legal or illegal trade from Mozambique via the Cape would have been in East African ivory. In the unlikely possibility of illegal West African ivory trade taking place on the *Aagtekerke*, the vessel's large consignment of East African ivory would have been the major component of ivory on the wreck site. We know the *Zeewijk* did not call in to West Africa, so the most likely suggestion is that the tusks were illegal trade in the *Zeewijk* from the Netherlands, or possibly illegal trade from the Cape, although that is less likely. The illegal trade theory is supported by the abandonment of ivory by the *Zeewijk* survivors on the wreck site because to bring it back in the rescue vessel would have almost certainly ended up with its discovery. Coins, however, were a much easier item to hide. Illegal trade was known

to be an enormous problem for the VOC, as recorded by the large amount of money the survivors of the *Zeewijk* had on arrival at Batavia and the published VOC restrictions on private trade in ivory (see above). Given that the survivors spent considerable time recovering the Company's goods from the wreck, their abandonment of the West African tusks on the wreck site suggests that the items may have been illegal and were left because they would have been too large to hide. It is unlikely that the ivory was from the *Fortuyn*, a possible contender for the second wreck at the *Zeewijk* site, as the ivory would have almost certainly been illegal and so the survivors would have been in the same situation as the *Zeewijk* survivors with illegal ivory on their hands.

### The question of ordnance on the *Zeewijk* site

Before the 1978 *Zeewijk* expedition, it was known that there were two main sites on the outside reef area, with wreck material situated about 300 m apart; one containing a bow anchor and 8 iron cannon (there were no bronze cannon found, except for the small swivel guns); the other, a cluster of 12 cannon lying in close proximity to each other. In between these two areas, various cannon and anchors had been spotted but the accurate relationship between the different wreck remains was not established; and prior to the Museum expeditions there was no outer reef site plan ever published. Subsequently, the Museum conducted an extensive survey of the inside and outside wreck site areas.

...As a result of the sextant and triangulation surveys of the site 26 cannon and 5 anchors were positioned on the outside reef...On an exceptionally calm day, the calmest in three years according to the local fishermen, 4 cannon were sighted approximately 60 m east of the 8 cannon area. These cannon are situated in the line of breakers in 'white water' and are normally inaccessible to the divers. These have so far not been possible to plot accurately as is the case with the northernmost anchor and cannon on the site (Ingelman-Sundberg, 1978).

By the end of the 1978 expedition, 30 cannon had been recorded on the outside reef and four on the inside reef areas—a total of 34. Add to these the three guns recovered by HMAS *Mildura* and two recovered in the 1960s by the finders; these recovered items correspond to the five iron cannon in the Museum collection (ZW 5572; 5573; 5574; 5575 & 5578), giving a total of 39 cannon.

It is known from the journal of Adriaen van der Graeff that the *Zeewijk* sailed with 36 cannon. Ingelman-Sundberg (1978) concluded: 'It is unlikely that any major [new] wreckage from the *Zeewijk* will be encountered as already extensive searches have been carried out and all the cannon have been found'. So, although there might be one or two cannon still undiscovered, it is unlikely that this site represents two wrecks. If, as suggested, the remains of the *Aagtekerke* were in the vicinity, in ordnance alone one would expect a minimum of 84 cannon dispersed in the area, as the *Aagtekerke* carried 48 (CIE, 2013).

While the number of cannon found on the site exceeds the *Zeewijk*'s allotted number, this is not surprising. It was not unusual for ships to be carrying either old useless cannon as ballast, or operational cannon as supplies for the VOC's defences in the Indies. When the Zeeland ship *Borsele* arrived at Batavia in 1726, it carried twelve pieces of useless artillery as ballast, which were not registered in the invoices or the bills of cargo (CIE, 2013). There are numerous records of the Governor General and Council in Batavia requesting cannon for supplies, so a ship carrying a few more guns than specified would not be uncommon.

### Conclusions

The *Zeewijk* story and the associated aspects related to a possible second wreck in the vicinity clearly demonstrate the difficulty in dealing with historical records. The study of four extant journals in the 18th century and corroborating descriptions over one hundred years later has emphasized how unreliable the written record is when dealing with fine detail. There is no doubt that the survivors saw wreckage from another ship; however, they did not make further enquiries or comment on its significance. What they saw were items mentioned in passing, as being part of a shipwreck, rather than evidence of a wreck site. In addition, the people writing in the journals were keenly aware of the enormity of what had happened and that reporting evidence of another ship lost in the area might help mitigate their situation when eventually they were to explain their predicament. Steijns was obviously keen to falsify his information, and forged the journal of van de Graeff, to help excuse his mistake. Furthermore, the people transcribing the journals in Batavia might also have put their interpretation on the documents or mis-transcribed them, adding to the problems for today's researchers. There is evidence throughout the journals and elsewhere of transcription errors. There were initially two handwritten journals, one by Steijns and one by van de Graeff. Neither of these original texts survive today and what we have are copies.

This is confirmed in the last page of each of their journals where it states: ‘Collated and accredited Batavia the 24 August 1729 G Schuulenberg’. The records show that several copies were made of each journal for the purpose of sending the accounts of the ship’s loss to various VOC authorities. It is hard to believe, anyway, that Steijns or van der Graeff would have kept their journals, during their times on the wreck or on their perilous voyage to Batavia, in such good condition as we see them today.

Each journal has its own narrative which largely tells the same story except in the fine detail, particularly the detail we are presently interested in—the second wreck. The accounts undoubtedly all mention material that could have come from a second wreck, but there is no obvious mention of a shipwreck, rather wreckage of a ship. Similarly, the reports of Wickham and Stokes refer to parts of a ship, rather than a complete shipwreck. All the items referred to seem to be parts of a ship, rather than anything more substantial. This raises the issue that the wreckage seen by the *Zeewijk* survivors could have been flotsam from a wreck elsewhere, possibly the *Vergulde Draeck*, *Zuytdorp* or even the *Aagtekerke* or *Fortuyn*.

In addressing the issue of a second wreck on the *Zeewijk* site, the only written evidence is the recording of a filled hand grenade found on top of the reef, shortly after the vessel was wrecked. In three journals it is a grenade and in one journal, a dead seal. The place where the grenade/seal was found was in amongst the masts and rigging that had been washed onto the reef. The three journals are quite clear that this was thought to be from another wreck; however, one hand grenade does not substantiate another wreck. No further mention is made in the journals of evidence of another wreck at this site. The other material evidence is more conclusive. Firstly, if there was another wreck at the *Zeewijk* site, the type of ivory found on the site would rule out it being the *Aagtekerke*. Also, if it were another VOC ship, the *Aagtekerke* or another ship, we are missing over 40 cannon. The argument that there are four or five unaccounted extra cannon on the *Zeewijk* site cannot be compared, as a justification for a second wreck, to the 40 or so missing from a second wreck. A similar argument applies to the five anchors found on the site. In addition, given that the *Aagtekerke* was lost just over a year before the *Zeewijk*, one would have expected more remnants than just a hand grenade on top of the reef. The *Zeewijk* stayed reasonably intact for over nine months. The *Aagtekerke* may have broken up more quickly, but one would have expected more than just a hand grenade to be found. There would have been ship’s timbers scattered all over the islands and one would have expected more evidence of survivors, and the trade goods, including about 200,000 silver coins the ship would have been carrying.

When this project started, the author of this report and historian and writer Hugh Edwards both held the opinion that there was a second wreck somewhere in the Pelsaert Group, although the author disagreed with Edwards that the site was in the same place as the *Zeewijk*. Following the results of the aerial magnetometer survey, however, it is the conclusion of this author that if there is another site in the Pelsaert Group, it is not in the area covered by the survey. The author and Edwards would both dearly like to find another VOC shipwreck in the Abrolhos, but we still disagree, on amicable terms, on the question of a second wreck on the *Zeewijk* site.

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