

# DESKTOP ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED FOUNDERS GARDEN DEVELOPMENT ON ERF 186 ROGGEBAAI, CAPE TOWN FORESHORE

Prepared for

**Urban Design Services cc**

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## EXECUTIVE SUMMARY

The proposed Founders Garden development on Erf 186 Roggebaai has been examined to assess the risk of impacting heritage in the course of construction and for planning/design purposes.

We have concluded that prior to the land reclamation of the late 1930's, the land would have been located offshore in approximately 2.25 - 2.5 Fathoms of water (4.1 - 4.5 meters), in the region of the old anchorage area in Table Bay.

Information on shipwreck locations in the Bay indicate that the greatest number of recorded cases were as the result of fierce north westerly gales driving ships onto the old shorelines between Milnerton Lagoon and the Castle. Few vessels are recorded as having sunk at anchor.

The changes over time to the bay's shoreline due to reclamation was driven largely by the need for additional land in order to facilitate the expansion of the town, and to provide better harbour facilities. Neither of the two main old shorelines that were created over the years are impacted by the current development proposals.

Only one "in situ" vessel has been recorded below landfill on the foreshore. Found in 1971 during the construction of the Civic Centre, it is believed to be the remains of a Dutch vessel, the *Nieuwe Rhoon*.

Minor anchorage debris dating primarily to the 19<sup>th</sup> Century have been located at other foreshore construction sites, but we have noted speculation that dredging may have taken place at some point in time when that part of the bay still functioned as the anchorage, and that may have diminished the likelihood of much material being found.

The old Municipal Pier erected in 1913 has been plotted on current planning documents and any remains of that structure will not be impacted by this development.

No harbour works are known to have existed below or in the vicinity of any of the proposed development areas.

Based on the available information and experience gained from a number of risk assessment reports (Halkett 2006, 2009, 2012, Hart 1998, 2002, 2003) and monitoring of bulk earthworks at the CTICC 1 site (Halkett 2002), and more recently monitoring of bulk excavations on Erf 247 (The new Chris Barnard Hospital site) (Seeman 2013a,b,c) we believe that the likelihood of finding significant heritage sites below the proposed development sites is low. We cannot entirely dismiss the possibility of unknown wrecks occurring below the development site, but the available evidence suggests this will not be the case. It is however possible that decontextualised anchorage debris will be found but should not provide serious mitigation issues. We must stress however, that should a shipwreck be found that is *in situ*, it will be of considerable interest to the scientific community and would require mitigation. Certain vessels are however likely to be of more interest than others.

A plan of action must be drawn up by the appointed archaeological consultant in the event of finding significant heritage in the landfill or on the old seabed.

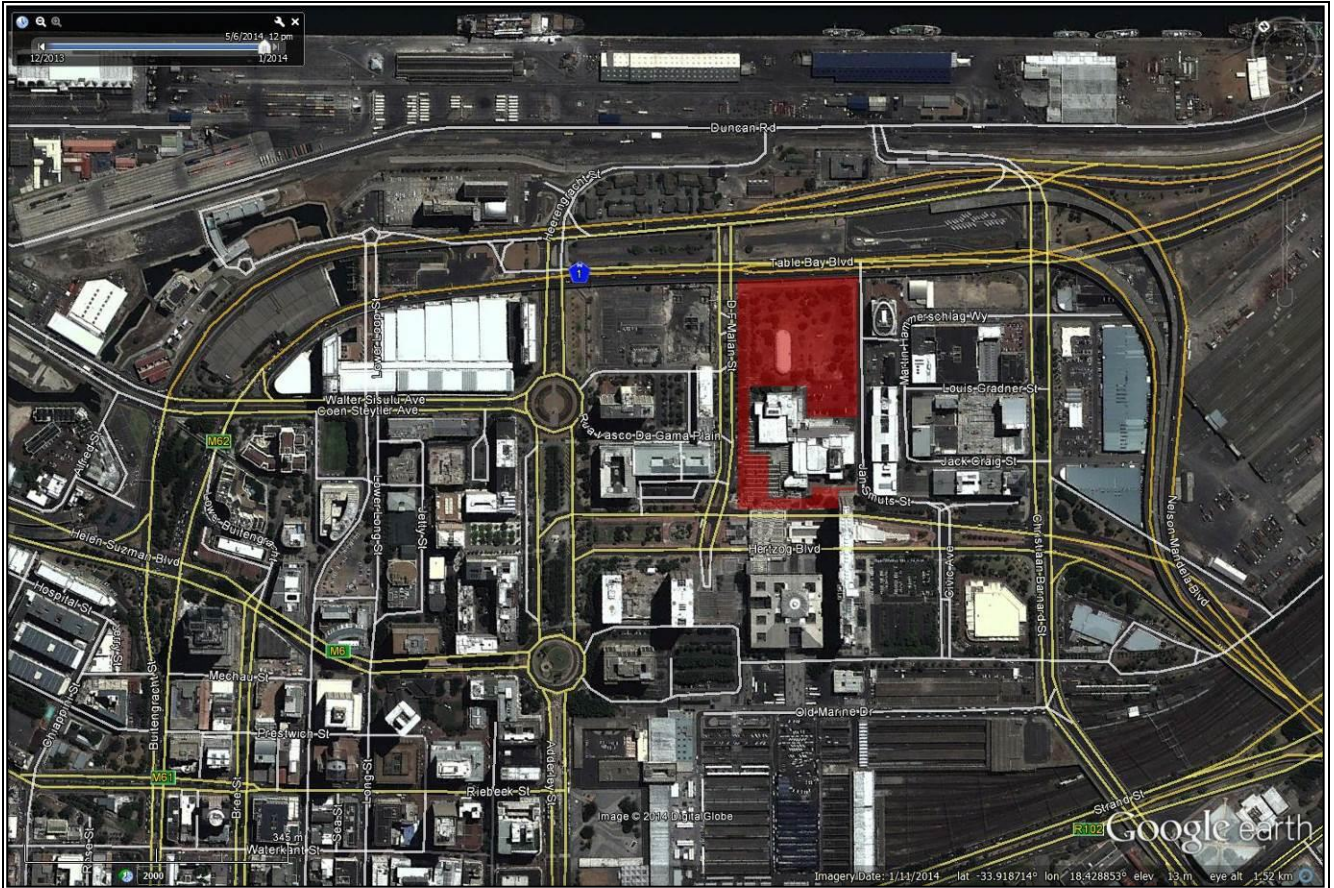
Permits will be required from both HWC and SAHRA in order to mitigate *ad hoc* ship material during the course of monitoring the bulk earthworks at the respective sites. Guidance is required from the authorities with regard to the issuing of, and number of permits required.

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# 1. INTRODUCTION

This study is a Desktop Archaeological Impact Assessment of the proposed Founders Garden development on Erf 186 Roggebaai on the Cape Town Foreshore and it will be included as a component of the HIA being prepared by Urban Design Services cc. The position of the property is shown on Figure 1. This is a modified version of the report submitted for development of the CTICC2 site (Halkett 2012) due to the fact that the background historical data remains largely the same.



**Figure 1:** The location of the proposed Founders Garden development on Erf 186 Roggebaai.

## 1.1 Proposed development details

The proposal consists of Erf 186 Cape Town and also affects Erf 187 (Artscape). Erf 186 was zoned for Government Use in terms of the 2012 Zoning Scheme and a combination of Public Open Space and Community Facility in terms of the 2013 Zoning Scheme. The proposal is informed by an intention to extend the Artscape Cultural Precinct into the Founder's Garden area by the use of 25% of the site for outdoor recreation purposes, achieve long term income generation through commercial development opportunities and to link the extend Cultural Precinct to the City.

In April 2013, the Provincial Parliament granted permission for the rezoning of the site (Erf 186) for mixed use including residential use provided that 25 % of the site is retained for Public Open Space Purposes.

The current proposal is intended to kick-start the vision of the site. It consists of a 1500 vehicle underground car park and the expansion of the Artscape Complex to Erf 186. The Artscape precinct will therefore straddle both erven. This proposal will be fully realised in a precinct plan for Erven 186 and 187 and will encompass both sites. The proposed plans in addition to the current Artscape theatre complex will include space for the Zip Zap Circus, a ground floor retail component, office accommodation and a 110-room hotel.

This implication in terms of this Precinct Plan is that the Founder's Garden as a spatially defined component of the 1947 Foreshore plan will be substantially altered and reduced - particularly at the peripheries. Twenty-five percent however will remain as open space as required in terms of the Provincial decision (Attwell 2013).

## **1.2 The relevance of an archaeological impact assessment**

As the entire project is located on land reclaimed from the sea, there is clearly a risk of encountering maritime remains resting on the old seabed in the course of the project,.

Since completion of the land reclamation, and despite the grand plans proposed in the 1940's, the foreshore in general and Erf 186 in particular, has remained mostly undeveloped. Narrow portions of Erf 186 almost encircle the Artscape Theatre (Erf 187) in the south west.

In recent years, several projects have been proposed on, and in the vicinity of the foreshore. Some have remained as proposals but others have been carried through to completion, of which some examples include the existing CTICC1 and adjacent hotel (Halkett 2002), the Roggebaai Canal project (Hart 2003, Cox 2003, Sharfman & Mavrodinov 2003), and though not directly in the proposed area, the remodelling of the Clock Tower Precinct at the V&A Waterfront (Schietecatte, in prep). At present, bulk earthworks are being undertaken on Erf 247 for the erection of the new Chris Barnard Hospital Seeman 2013a,b,c). While some of these developments hardly penetrate the substrate, except where foundations are required, the more substantial projects have penetrated deep into the reclaimed land, through the old seabed and into the underlying bedrock in order to provide solid foundations and often basement parking facilities.

As the greater part of the foreshore only came into existence sometime between 1938 and 1943<sup>1</sup>, when the work on the new harbour and adjacent land reclamation was undertaken, one would expect the task of assessing potential archaeological risks/impacts to be relatively straightforward compared to sites of the inner city. While this is true to some extent, development sites on the foreshore present a set of problems that is unique to that area. It is particularly the case with the deep excavations where the possibility exists of encountering the physical traces of the towns' maritime past, trapped on the old seabed, or within the landfill material itself, some of which was derived from dredging from what used to be the middle of the bay, or within random landfill which certainly found its way onto the site.

The involvement of heritage specialists in all of the more recent larger projects where the potential to impact the maritime heritage has been identified, has meant that a substantial amount of data dealing with the heritage resources of the foreshore has been assembled. A number of earlier projects, where no formal heritage process was followed in some cases alert us to the potential for buried heritage material e.g. the shipwreck found during the building of the Civic Centre (Lightley 1976).

In compiling this desktop study, we have relied heavily on the secondary sources of archival data that have been presented in some of the abovementioned specialist reports, as well as using some of the accessible primary sources. The range of buried heritage resources varies depending on the location on the foreshore. As will be seen, the old shorelines are particularly sensitive as it was in these zones where the majority of shipwrecks came to rest. A major omission from the historical record as far as wrecks are concerned, is the complete lack of precise geographical co-ordinates for the locations. This fact bedevils any study that tries to precisely analyse the probabilities of encountering wreck material below the landfill.

Although the idea of land reclamation was first mooted as far back as the 18<sup>th</sup> century, the logistics required for large scale reclamation was only really available for the first time at the end of 19<sup>th</sup> century. As a result, two old shorelines (c1870 and c1920) now lie buried below sections of the town. The 1870 shoreline was very likely not quite the same as the one encountered by the initial European

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<sup>1</sup>Cape Town Foreshore Plan: Final report, June 1947. Cape Town Foreshore Joint Technical Committee. Presented to the Minister of Transport :10

settlers. The changes were probably small scale and localised associated primarily with the building of jetties, but also with localised waste disposal onto the beach. In addition to the artificial reclamation processes, attempts to provide safe anchorage in Table Bay through the construction of jetties, harbour facilities and wave barriers over many years, meant that the normal cycle of marine erosion and deposition of sand within the bay and along the shore was disrupted and led to both natural progression and regression of the shoreline over the years, a process which is still in progress today.

As the development proposal for Erf 186 includes the likely provision of multiple levels of basement parking, assessment will examine the likelihood of encountering structures, shipwrecks, or associated material on the sites during bulk excavations.

ACO Associates cc, in having been appointed for this task, and mindful of the general foreshore history, agreed on the following:

- Undertake a desktop review of available historical data pertaining to the site;
- Analyse the available data where possible, for the purposes of assessing potentially significant issues that may have impact on design and or construction.

## **2. HISTORICAL BACKGROUND**

As alluded to in the introduction, the Cape Town foreshore presents a unique situation as far as heritage is concerned. Two of the major influences on the city, namely town expansion and maritime history come together at this point. When the Dutch East India Company (VOC) established the small ship refreshment station at the foot of Table Mountain in the 17<sup>th</sup> century, the officials could never have imagined the way in which the small settlement would develop into the city today. The founding of Cape Town is therefore inextricably linked to maritime trade, and the need to ensure safe moorings in a bay that by all accounts, was frequently not a safe place for a sailing vessel, or even more modern vessels for that matter.

The increasing size of the settlement was paralleled by the increase in trade and numbers of ships visiting the bay. The importance of the trade meant that harbour facilities and attempts to reduce wave action at the anchorage points have always assumed an important part in the city's civil works program. The increasing population and expansion of the town inevitably meant that more and more land was required for housing as well as commercial and industrial development. The geographical constraints of the city bowl meant that expansion possibilities were limited and notwithstanding the extension towards the southern and northern suburbs, it was inevitable that the long mooted land reclamation would become a reality.

Land reclamation was nevertheless primarily motivated by the need for larger and deeper harbour facilities. These had to be upgraded from time to time to keep pace with the increasing size and types of ships that were plying trade to our shores. It must also be noted that the early harbour works, while they certainly provided safer moorings, led to changes in the way sand movement took place in the bay. Increasing erosion took place on the eastern coastline in the second half of the 19<sup>th</sup> century and some attempts to curtail loss of land in that area led to the construction of sea walls behind which some of the earliest land reclamation took place.

The themes developed in the above paragraphs form the core of any discussion of the foreshore, and we will look at these in more detail in following sections.

### **2.1 Shipping in Table Bay**

It is perhaps fitting that in 1647 during an assessment of the African coastline for a suitable location for a refreshment station, the VOC ship Haerlem was driven ashore by a strong wind while entering what would later be known as Table Bay. The 62 survivors established a camp in the dunes near Bloubergstrand and they remained there for a year while arrangements were made for their return to Holland. The enforced stay gave these men plenty of opportunity for exploration and on their return to

the Netherlands, they were able to give favourable reports to the VOC who chose Cape Town as the location for the replenishment station (Mavradinov 1999, Werz 2003)

While this was amongst the first reported ship wrecks in the bay, it was certainly not the last, and over the ensuing years some 360 ships (excluding for the most part the numerous small vessels that did not warrant any mention) are recorded as having been wrecked in and around Table Bay and Robben Island (Werz 2003).

A combination of geographical factors and weather have to a large degree influenced how the bay was used by visiting ships. It has also influenced the development of wharfage and harbour facilities in tandem with the need to service the ever increasing number and size of ships over the years. Harbour facilities have also had to keep pace with changes propulsion systems and increasing cargo size and type. All these factors together have determined where shipwrecks are located.

### 2.1.1 The SAHRA shipwreck database

A database of all shipwrecks around the South African coast is maintained by The South African Heritage Resources Agency (SAHRA). The information in the database is basic, and summarises information from archival and other sources about the locations of shipwrecks. We will discuss the both the limitations and benefits of the information in terms of the applicability to risk analyses of building projects on the foreshore.

### 2.1.2 Wreck locations

One of the major influences of wreck positions was the position of the popular (safe) anchorage area in Table Bay as it was used up to the end of the 19<sup>th</sup> century. A number of paintings, drawings and photographs show the anchorage tucked into the bay along its south western shoreline between the Castle and Chavonnes Battery, a position that meant that the beaches between the Castle and Milnerton Lagoon would be in direct line of prevailing wind (Plates 1 and 2).

Prior to the advent of self powered ships, it was the wind that took a heavy toll on the vessels, causing them to drag, or to loose anchor altogether and be blown with the prevailing wind and waves onto shore (the north-westerly's of winter were most serious as shallow water of the eastern shores of the bay was soon reached) (Burman 1976).

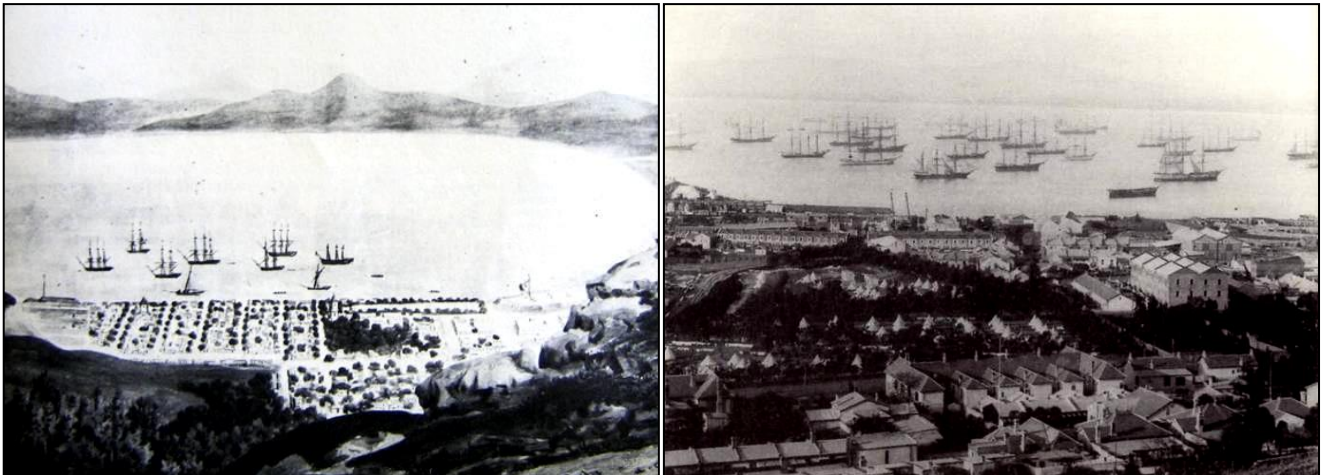
It is of interest to note that no ship is reported as having been lost while at anchor. This fact has obvious significance when looking at current planning and impact assessment as it means that the greatest likelihood of encountering shipwrecks is on the old shorelines, or in what was shallow waters very close to them (see Plates 3 and 4).

Locations of wrecks are of primary interest to us in establishing risk. As geo-referenced locations were seldom (if ever) recorded, the effectiveness of the database for impact assessment is somewhat reduced. If one takes the overall statistical pattern (based on 300 ships – Appendix 1) of the broad shipwrecks locations, we can see however that there are certain areas of the bay where stricken vessels were more likely to end up, if they did not immediately sink in the bay. This data is summarised in Table 1.

**Table 1:** Analysis of wreck locations in the SAHRA database (known locations) 1610 - 2006.

Zone	No
Blaauwbergstrand	1
Anchorage Table Bay	1
Wharf near Table Bay	1
Breakwater Table Bay	1
Pier	1
Rogge Bay	1
Bok Point	2
Green Point	2

Milnerton Beach	2
Oude Schip	2
Amsterdam Battery	3
Mouille Point	4
Castle & Salt River (between)	7
Harbour	8
Castle	10
Salt River/Salt River Beach	51
Woodstock Beach	88
Table Bay	96
Possibly Table Bay??	19
<b>TOTAL</b>	<b>300</b>



**Plate 1:** Sailing vessels at anchor in Table Bay, their direction presumably a prevailing north westerly wind (in Burman 1976). **Plate 2:** The popular anchorage as late as the end of the 19<sup>th</sup> century was tucked into the bay along the south western shoreline. The Anglo Boer War saw a dramatic increase of ships visiting Table Bay (CA J6085).



**Plate 3:** Ships stranded during the “great gale”. Watercolour by Otto Landsberg (in Veitch 1994). **Plate 4:** The remains of ships on Woodstock Beach. Probably a common sight at certain times of the year.

For various reasons, the positions of a few ships (particularly VOC vessels) are known. They may however be jealously guarded for salvage purposes, or protection by the authorities, and the locations remain unavailable to the broader public. The positions of three Dutch vessels namely the Oosterland and Waddinxveen lie off Milnerton Lagoon (Werz 2003), while a ship presumed to be the Nieuwe Rhoon was found during the bulk excavations for the Civic Centre in 1971 (Lightley 1976). All of these vessels appear to have foundered in the shallower water closer to shore. More recently, the partial remains of a sailing vessel was found during bulk excavations at the Silo 1 site at the V&A Waterfront



(Schietecatte et al, in prep). At this point in time it is not possible to offer more information about the identity, other than it was a wind powered vessel and it too lay on the old shoreline.

Almost one third of described locations in the database are very general (e.g. “Table Bay” and “Possibly Table Bay”). Mavradinov (pers com) has suggested that the unprovenanced wrecks could probably be assigned proportionately to the areas of the coast where most of the others occurred. While that may be the case, it prevents heritage practitioners making fully informed predictions with respect to risks of finding such resources during the course of building projects on reclaimed land.

In preparing the Strategic Environmental Assessment for the port of Cape Town and expansion of the container terminal stacking area, Werz (2003), using a slightly broader definition of Table Bay (to include Robben Island and vicinity) produced an analysis of wreck statistics based on nationality. While it does not assist with wreck locations *per se*, it may nevertheless be of interest from the point of view of international trade over the centuries. Some of this information is presented in Table 2.

**Table 2:** Recorded shipwrecks in Table Bay for the period 1610-1998 classified according to nationality

<u>Nationalities</u>	<u>Wrecks</u>	<u>Nationalities</u>	<u>Wrecks</u>
British	146	Taiwanese	2
Dutch	50	Austrian	1
American	25	Canadian	1
French	16	Greek	1
German	8	Irish	1
Portuguese	8	Korean	1
Danish	5	Russian	1
Italian	4	Sardinian	1
Swedish	3	South African	1
Norwegian	2	Uruguayan	1
Spanish	2	Nationality not specified	80
<b>TOTAL VESSELS – 360</b>			

### 2.1.3 Ship types

Out of the 27 different vessel types listed in Table 3, the ratio between wrecked sailing vessels and engine-driven vessels is approximately eight to one. Werz (2003:19) suggests that the data indicates to a certain extent that many shipping disasters in Table Bay are likely to be due to natural conditions and the level of available technology rather than human error. This is to some extent borne out by the wreck statistics in Table 4, which indicate ship losses broken down into 50 year periods.

**Table 3:** Recorded shipwrecks in Table Bay for the period 1610-1998 classified according to vessel types

<u>Vessel types</u>	<u>Wrecks</u>	<u>Vessel types</u>	<u>Wrecks</u>
Wooden sailing ship	110	Iron sail-steam ship	2
Barque (sailing ship)	72	Whaler (steam ship)	1
Brig (sailing ship)	42	Trawler (steam ship)	1
Schooner (sailing ship)	28	Mail steamer	2
Packet (sailing ship)	1	Motor coaster (engine driven)	1
Pinnace (sailing ship)	1	Salvage vessel (engine driven)	1
Brigantine (sailing ship)	8	Tuna catcher (engine driven)	1
Snow (sailing ship)	5	Trawler (engine driven)	2
Cutter (sailing ship)	5	Cargo boat (engine driven)	1
Whaler (sailing ship)	3	Carrier (engine driven)	1
Flute (sailing ship)	2	Fishing vessel (engine driven)	1
Corvette (sailing ship)	1	Motor vessel	10
Steamship	9	Troopship	1
Tug (steam ship)	1	Type not specified	47
<b>TOTAL VESSELS – 360</b>			

**Table 4:** Ship losses in the broader Table Bay area broken down into 50 year periods

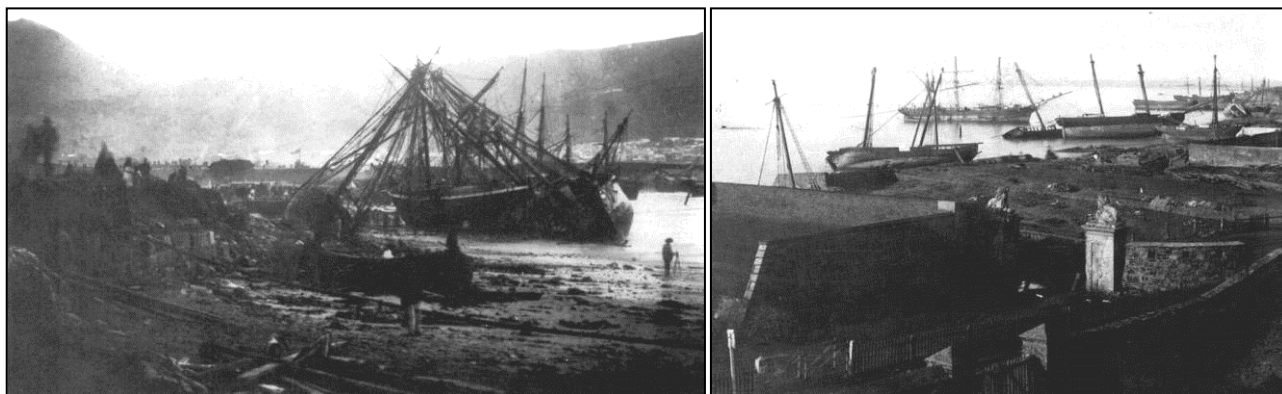
<b>Period</b>	<b>Total</b>
1900 - 1941	19
1850 - 1899	92
1800 - 1849	120
1750 - 1799	25
1700 - 1749	26
1650 - 1699	8
1600 - 1650	2
unknown	2
<b>TOTAL</b>	<b>294</b>

Of the sailing ships category, which includes Dutch East Indiamen, merchant ships and men-of-war of other nations which are not further specified, most foundered in the period 1610 - 1850. Specific vessel types, such as the barque, brig and schooner only started appearing during the beginning of the nineteenth century. These types, although they were the most extensively used during the nineteenth century, had lost their significance before the start of the new century. From 1850 - 1860 onwards, sailing vessels were slowly replaced by steam ships as the most widely used means of water transport. The first maritime incidents involving steam ships was recorded in the period 1860 - 1869 but from then onwards, more of these vessels seem to have foundered in Table Bay than sailing ships.

#### 2.1.4 The need for better harbour facilities

From 1840 to 1870, the number of maritime incidents in the bay reached its peak, resulting in 134 shipwrecks. This can partly be explained by increasing shipping traffic, the inadequate harbour facilities before 1870, and largely to the great gales of 1842 and 1865 (Durden 1992:31, 63-66 and also see Plates 5 and 6). Burman (1976) describes additional severe storms on 4<sup>th</sup> – 6<sup>th</sup> May 1692, 24<sup>th</sup> May 1697, 16<sup>th</sup> – 17<sup>th</sup> June 1722 (with more than 600 lives lost), 1<sup>st</sup> – 4<sup>th</sup> July 1728 and 21<sup>st</sup> May 1737 (with 205 lives lost).

Ship losses were so bad that in 1741 that the Council of Seventeen of the VOC made a rule that in the winter months between 15<sup>th</sup> May and 15<sup>th</sup> August, company ships would have to shelter in Simons Bay. In 1743 it was decided to build a mole extending out into the sea from the foot of 'the Lion's tail' (Signal Hill). Work progressed sporadically due to labour issues and the poor winter weather until 1746 when the project was abandoned (Halkett 1993, Murray 1964:5). Ship losses continued to mount into the 19<sup>th</sup> century until finally, as a result of the carnage, harbour construction eventually began on the 17<sup>th</sup> September 1860 with Prince Alfred tipping the first load of stones for the new breakwater into the sea (Burman 1976).



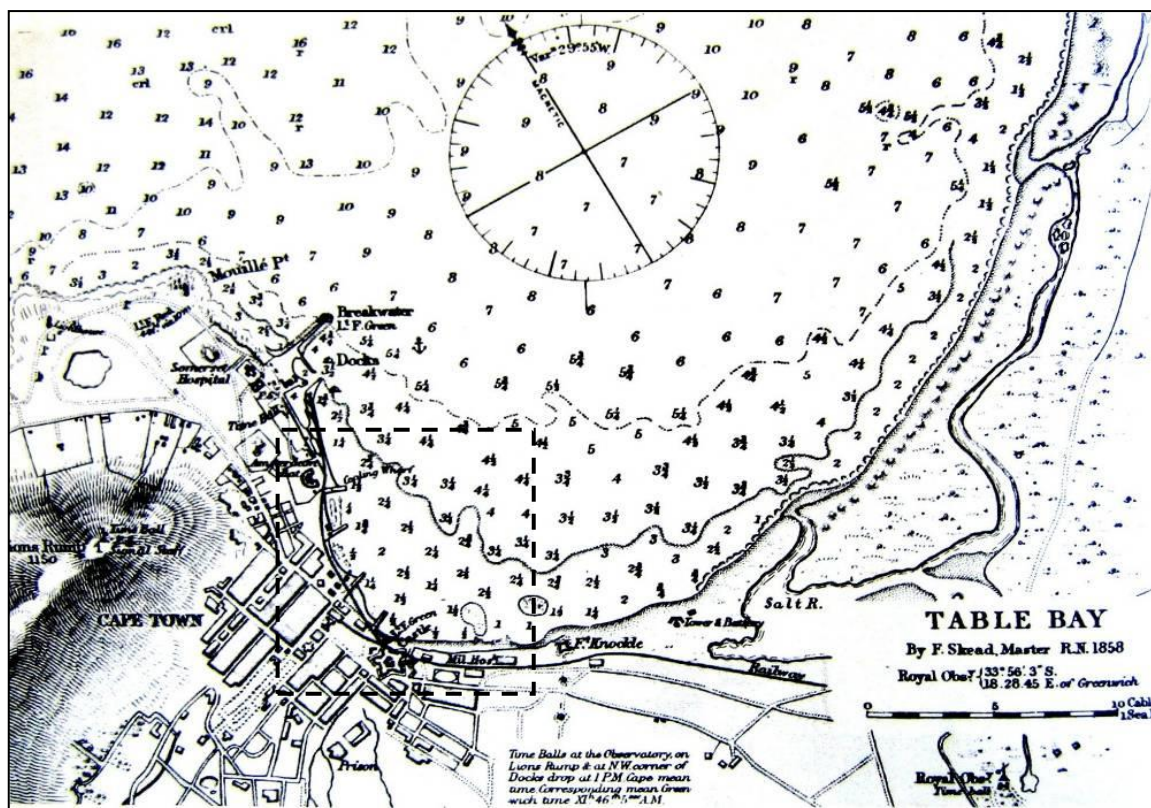
**Plate 5:** The aftermath of the "great gale" of 1865 (CA E3411 in Veitch 1994). **Plate 6:** Vessels stranded on the beach alongside the Imhoff Battery viewed from the Castle (CA E8007 in Newall 1993)

It is worth noting that the first lighthouse in the area (that continues to be used today) was constructed at Green Point in 1824. Despite the erection of that facility, ships continued to be wrecked at the entrance to Table Bay. The Port Captain, a Mr Bance, recommended that an additional light be placed at Mouille Point to provide additional guidance to ships. The lighthouse was completed on the 1st July 1842. This failed to help as it appears its position was wrong. A new light was built in 1865 only a few meters away from the old (Halkett 2004:6)

### 2.1.5 Land reclamation, harbour facilities and associated structures

The tipping of gravel for the breakwater marked the beginning of the large civil works programs to improve mooring and harbour facilities in an attempt to cut the loss of ships during the winter storms. Over the years a number of jetties had been constructed at strategic places along the shoreline to provide loading and offloading facilities for visiting ships. A number of those are shown and identified on Figure 2.

It was noticed that up to about 800 feet offshore of the southern and eastern beaches of the bay, the water was only some 5 to 6 feet deep (Figure 3).



**Figure 3:** The bathymetry of Table Bay in 1858, as surveyed by F. Skead R.N. The area defined by the hatched polygon is shown in Figure 8 with relevance to the proposed development site

Since this was mostly too shallow to allow for the passage of larger shipping, it was considered sensible to reclaim the area and use it for the expansion of the growing city<sup>2</sup> as well as placing harbour facilities closer to deeper water. Ever since the earliest harbour construction, rocks from local quarries, and sand dredged from the harbour works were used in the land fill<sup>3</sup>. During the 1870's, an embankment was built on the south-eastern shore of Table Bay to prevent wave erosion of the beach and by 1875, 16,500 cubic yards of excavated material had been brought from the new graving dock site and dumped between the Central Wharf and the Castle (Figures 4,5 & 6). In the process, the

<sup>2</sup> Cape Archives, CCP 1/2/2/1/7, A4, 1860. In Durden, 1992

<sup>3</sup> Cape Archives, CCP 1/2/1/2:347, 1855. In Durden, 1992



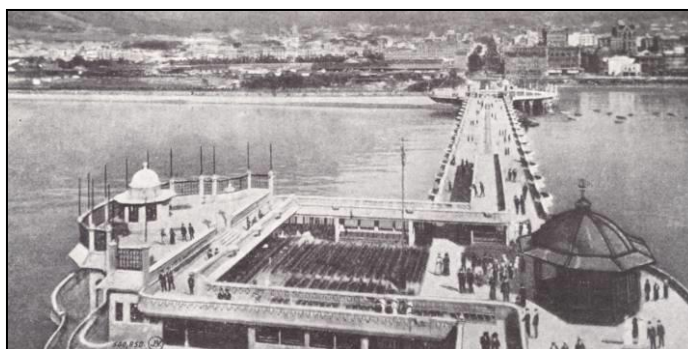
**Figure 2:** Table Bay harbour - historical development 1870-1985 (based on: South African Transport Services Drawing TBH 106 (1985): A-374). Proposed development site shown in red. The area between the 1920 shoreline and the existing harbour was reclaimed between 1938 and 1943. Comparison with the 1926 aerial photo in Figure 7 shows that the information with regards to the 1920 shoreline omits certain features such as the Rogge Bay fishing “harbour”.

embankment was extended seawards and five acres of reclaimed land was created.<sup>4</sup>

By 1884 land reclamation was a well established process and vegetation was planted to help stabilise the newly reclaimed areas. It was anticipated that this would speed up the period of stabilization and allow development to occur earlier<sup>5</sup>. In the 1890's, a sea wall was constructed at the edge of the newly reclaimed land which ran from the North Wharf to Rogge Bay (Figure 4). This area became known as 'Combrink's Concession' and eventually became the site of the Imperial Cold Storage building at the foot of Bree Street (Sharfman 2003:20).

In 1913, the Cape Town Municipality built a public pier (Plates 7 - 10) at the foot of Adderley Street at the western end of the promenade. This may in part have been motivated by the desire to replace the old Central Wharf<sup>6</sup> (Plate 11) which was by now almost completely buried by reclamation. Part of this old wharf and the associated earthworks is likely to have been what was excavated by archaeologists during the recent upgrade of facilities adjacent to Adderley Street at the Cape Town Station (Halkett 2010).

The Pier extended some 300 meters out into the bay and incorporated a tower, concert pavilion, restaurant, and swimming and boating facilities. It brought the townspeople to the sea and was a very popular outing for many Capetonians. It was however never a financial success despite its popularity and the demands of harbour expansion saw the last concert held on the Pier on 27 March 1938, after which it was demolished to just above the high-water mark and the remains were buried in the fill (de Kock 1999, Sharfman 2003:21).



**Plates 7 & 8:** The 1913 Municipal Pier at the foot of Adderley Street. The random block mole can be seen at left (both in Newal 1993, SA Library and Newal's collection)

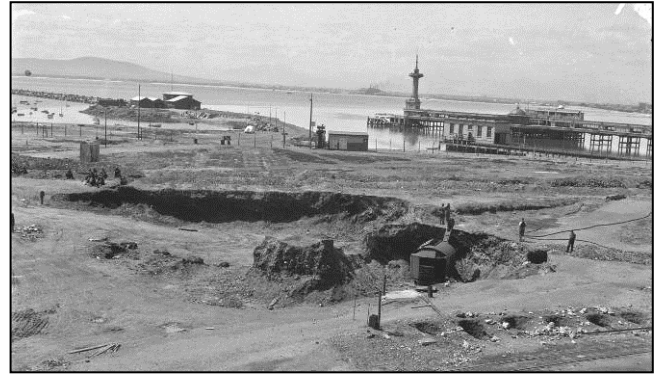
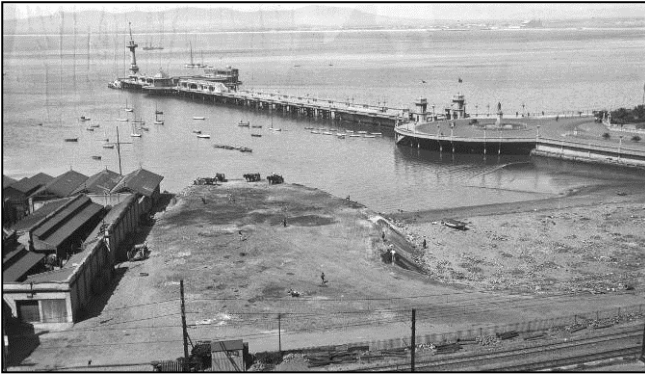


**Plates 8a & b:** The Pier was a popular social gathering place and concert venue. The panorama at right captures the changing coastline and cityscape.

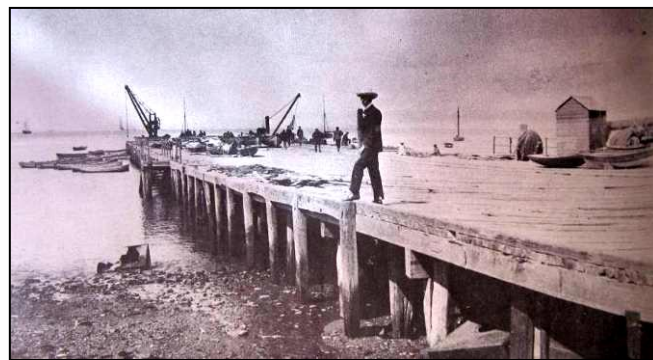
<sup>4</sup> Cape Archives, CCP 1/2/1/30, G50, 1876. In Durden, 1992

<sup>5</sup> Cape Archives, CCP, 1/2/1/66, G40, 1885. In Durden, 1992

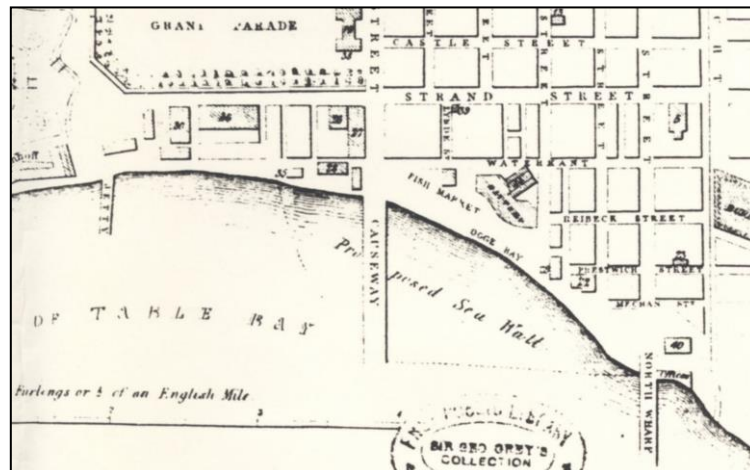
<sup>6</sup> Cape Archives, CCP, 1/2/1/98, G56, 1896. In Durden, 1992



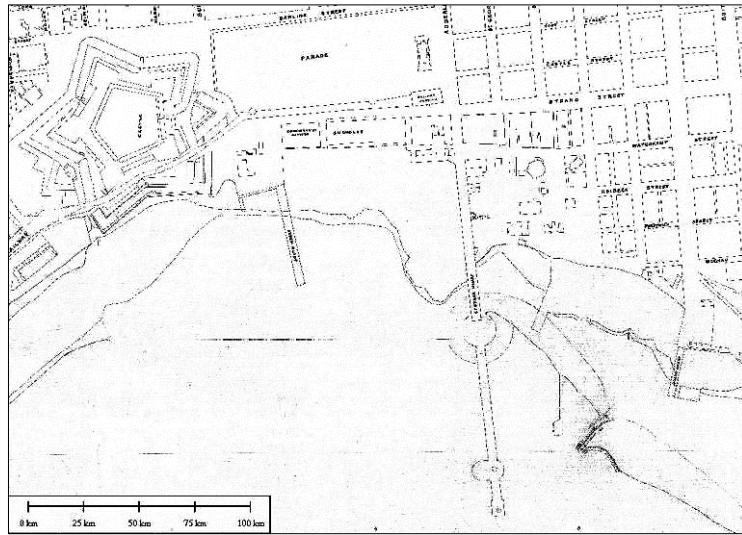
**Plates 9 and 10:** The 1913 Municipal Pier seen alongside the Roggebaai fishing harbour which was still in use at this time. Of interest is the horse drawn carts in the photograph at left apparently dumping material at the end of the berm (City of Cape Town: Heritage Branch CCb120\_f17\_i01, CCb119\_f17\_i01).



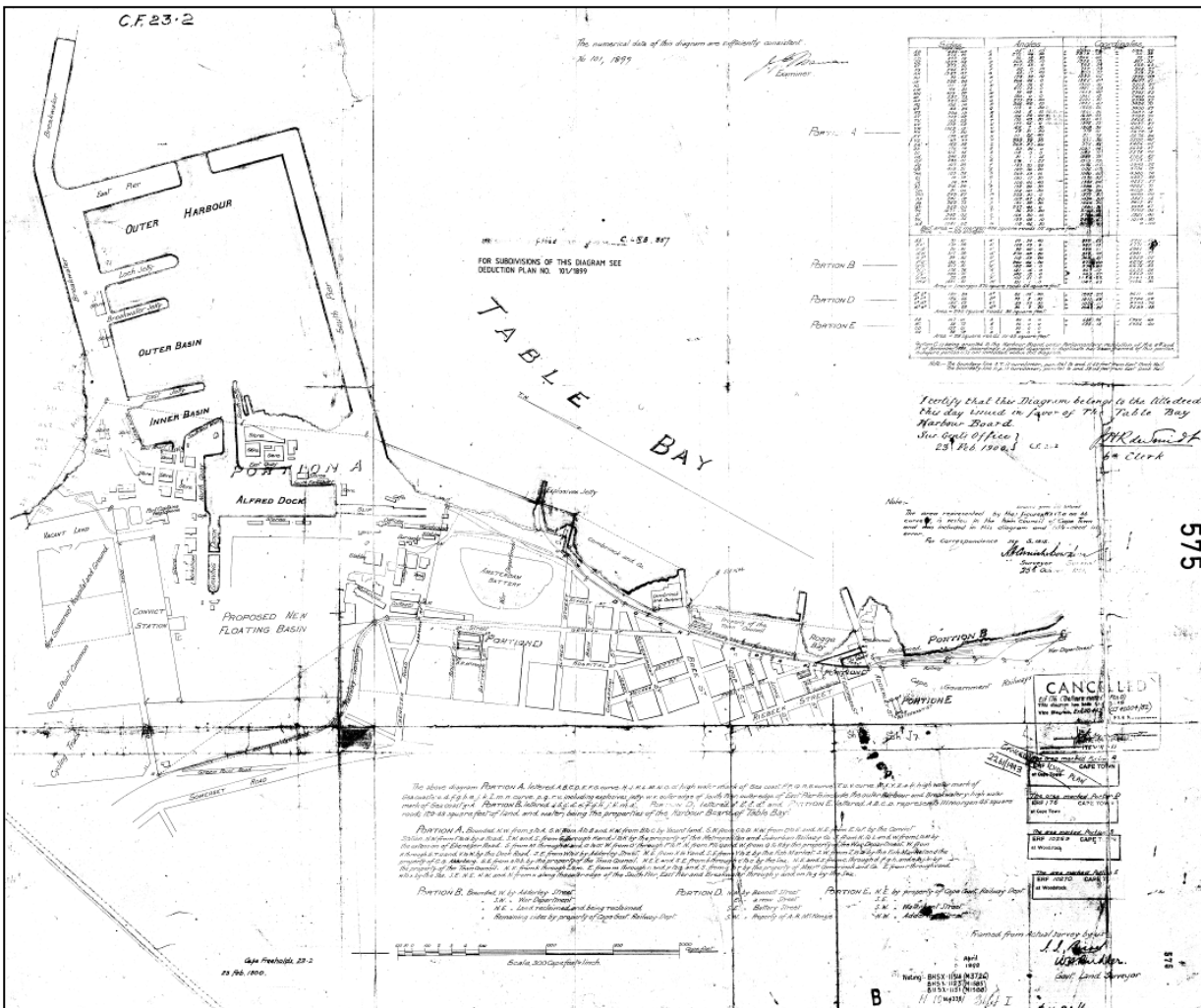
**Plate 11:** Photograph of the wooden jetty (Central jetty) at the end of Adderley Street c1902 (Picard 1969:118). The central jetty was constructed in the 1850's and became the central hub of harbour activities. In 1907 the jetty was extended to create a central pier and promenade. The pier was demolished in 1938 to make way for the Foreshore Reclamation Scheme (Patrick et al 2010).



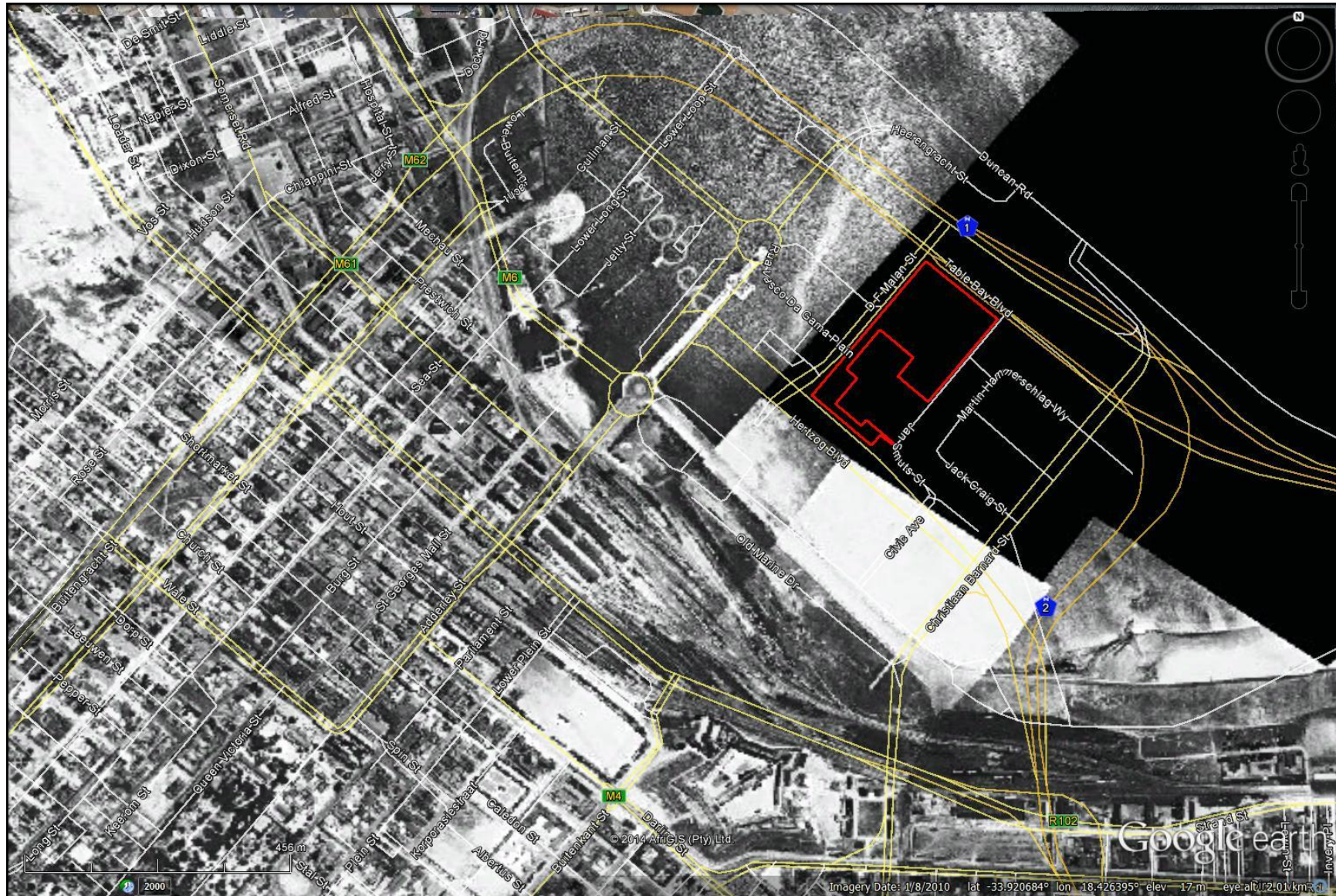
**Figure 4:** Map of Cape Town c1859 (provenance unknown), showing the proposed causeway and north wharf. The proposed sea wall extends from a (central) causeway to the base of the north wharf. In actual fact it appears from later maps to have been less formal than depicted here, and a small boat harbour was created in front of the fish market at Roggebaai (see Figure 7 this document).



**Figure 5:** Detailed overlay showing c1862 and 1938 shorelines showing the proposed location of the new pier at the end of Adderley street, and the location of the old Central jetty. The earlier landfill between the Castle and Central Wharf is prominent and the later fill and sea wall (promenade) show as a faint line. (ACO map collection).



**Figure 6:** Survey diagram 101/1899 showing late 19<sup>th</sup> century expansion and development of the Table Bay harbour. Infilled areas between the North Wharf and Rogge Bay can be seen. Many of the maps showing the old shoreline differ in minor details with respect to the extent of landfills suggesting it was an ever changing landscape.



**Figure 7:** An extract from the 1926 aerial photo of Cape Town showing the 1913 pier (source: Jordan 2003) with current street map superimposed via Google Earth. The old Roggebaai fishing boat harbour and beach clearly visible at center The old promenade running south east from the base of the new pier at the foot of Adderley Street. The position of Erf 186 offshore at that time is indicated by the red polygon.

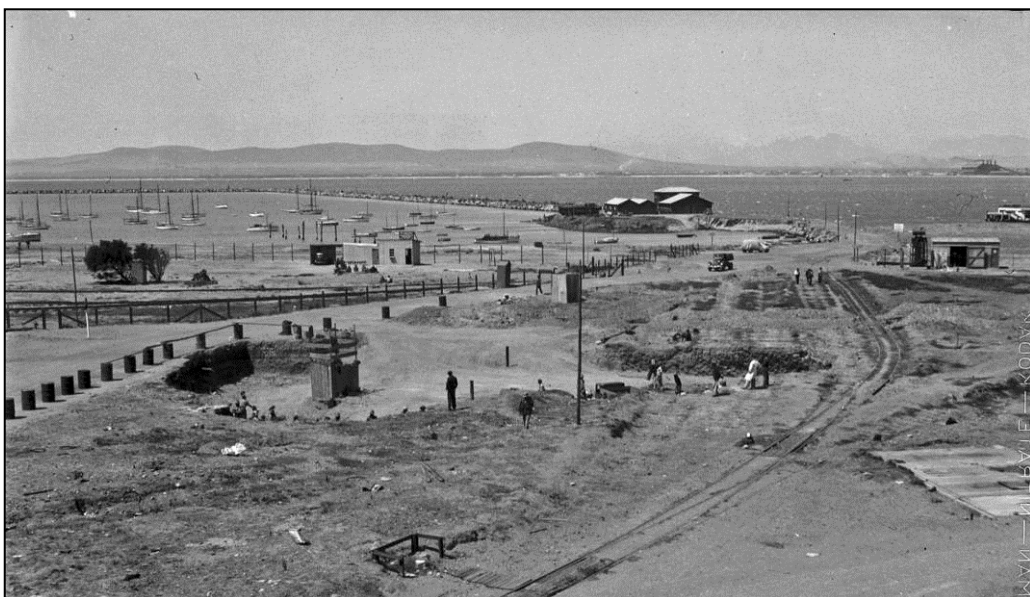


From 1926 to 1932, as a result of the need for docking space for more and larger ships, a mole ( the so-called “random block mole”) was constructed just northwest of the municipal pier to form a large sheltered basin. It extended in a north-easterly direction before angling to the north-west towards the end of the Victoria Basin (Spies & Du Plessis 1976, quoted in Durden 1992. See Plate 12 & 13 and Figure 2 ).

The mole was originally built by first dumping rubble on the seabed and then placing large six-ton concrete “wave-breakers” on top. When dismantled, the wave-breakers were removed by a crane equipped with a grab-claw and were subsequently stacked ashore (although some were found during the construction of the CTICC 1). The Municipal Pier was demolished to just above the high-water mark and the remains were buried in the fill (de Kock 1999).



**Plate 12:** The new southern basin in 1934 with the random block mole at right (in Newall 1993)



**Plate 13:** The Random Block Mole shown beyond an area of landfill (City of Cape Town: Heritage Branch CCb119\_f45\_i01)

It was soon realised that the design was flawed and liners were not properly sheltered from the strong south-easterly winds. This led in part to the announcement in 1935 by the Railways and Harbours Administration that the old mole and pier would be removed and a new dock (the Duncan Dock) would be built. Reclamation was due to add in the order of 480 acres and the dock area and 196 acres to the city (Cape Town Foreshore Plan, 1948). The new basin was to be sited some distance out in the bay and approximately 2 million m<sup>2</sup> of land needed to be reclaimed to make it accessible.

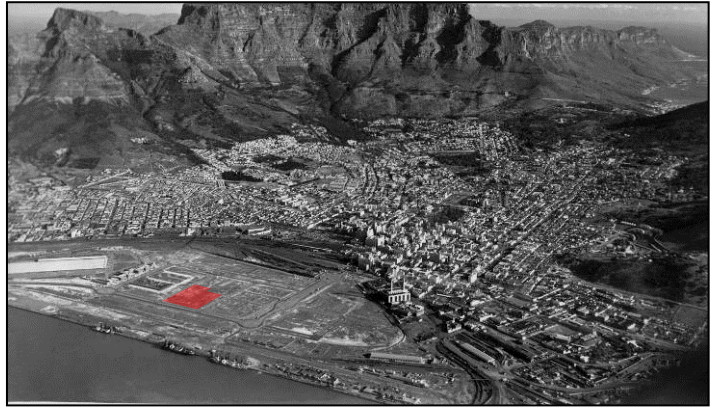
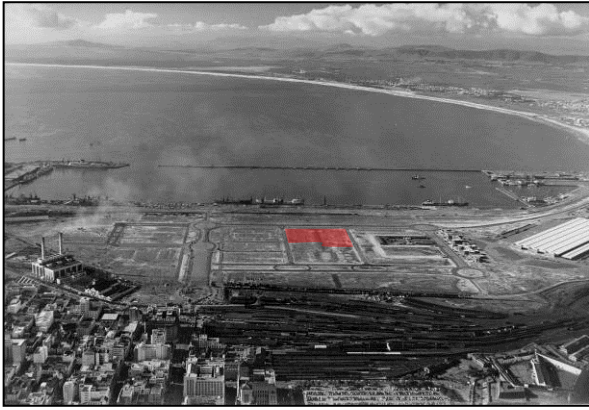
Dredging began on 10 May 1935 and, although scheduled to be completed by 1941, intervention of the war meant that final completion was delayed until 1945. Despite this the harbour was in use as early as 1943 (Plate 14).

The contract for the dredging and land reclamation was awarded to the Dutch firm Hollandse Aanneming Maatskappy. The material for this massive landfill operation was made up primarily of sand, mud and rock broken up and dredged from the bottom of the new basin. The material was loaded on barges and transported to the offloading site where a mixture of 80% water and 20% spoil was pumped through big pipes onto the area to be reclaimed. This hydraulic method was meant to assist quick consolidation of the fill. A total of 11.5 million m<sup>3</sup> of dredged material was used in the fill, and some dune sand was also transported in trucks from around the present day airport and deposited on the site. In addition, the scheme allowed “clean and selected” building rubble from around Cape Town to be deposited on the site. Municipal waste was also used in the fill (de Kock 1999).

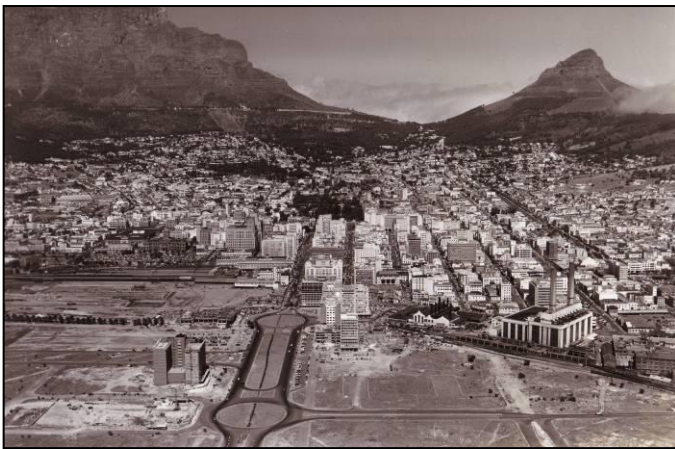


**Plate 14:** Troops parading in Adderley Street shortly after completion of the reclamation. Two aircraft carriers can be seen berthed in the newly constructed Duncan Dock. The reason for the deviation of the road to the right is unknown (South African Library).

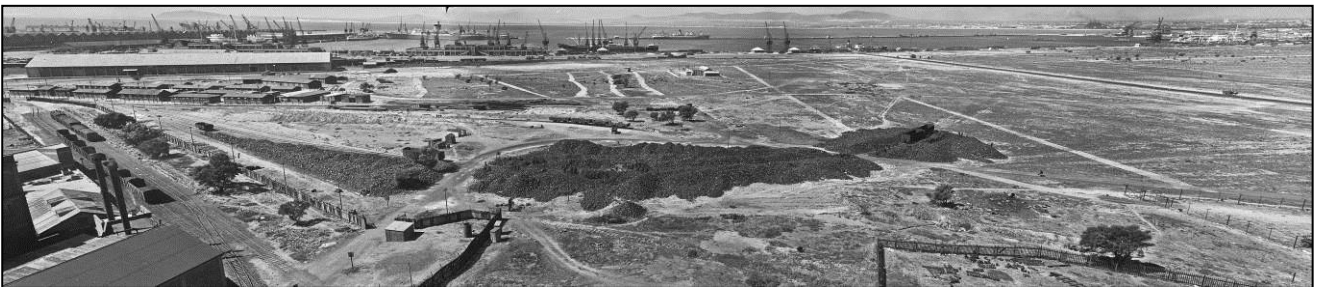
A number of views of the newly reclaimed land are shown in Plates 15 -18 with the proposed development sites marked in red on some. A panoramic view of the area from the old Power Station is shown in Plate 19.



**Plates 15 and 16:** Two aerial views of the reclaimed land on the foreshore with proposed development sites shown in red. Probably late 1940's. (Photographs supplied by S. Lukey & Assoc but original source unknown)



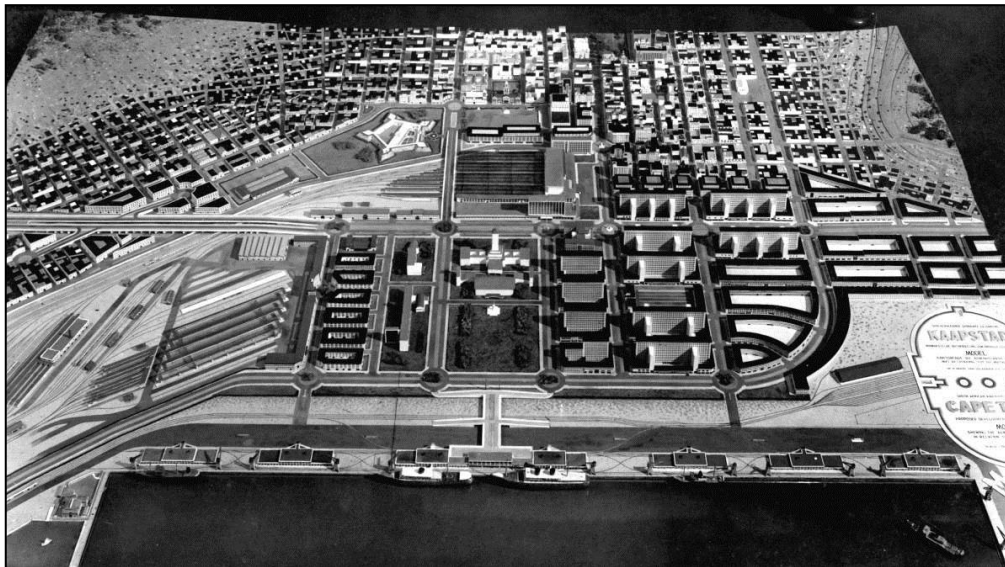
**Plate 17:** Aerial photographs of the lower city with new construction taking place on the reclaimed land. Photo at left predates the new station and probably dates to the late 1950's. The old promenade is marked by the line of trees on the mid left of the photo. **Plate 18:** The Sanlam building and new station can be seen in the right hand photo which would date it to the 1960's. The old promenade has almost been obliterated by this time though some trees can still be seen (Photographs supplied by S. Lukey & Assoc but original source unknown).



**Plate 19:** Broad panorama over the landfill area (City of Cape Town: Heritage Branch)

Following the completion of the reclamation, the South African Railways and Harbour Administration appointed the British planner, F Longstreth Thompson and Professor L.W. Thornton White of UCT as advisers while the municipality used the services of the French planner, E.E. Beaudouin (Longstreth Thompson & White 1940, Bickford Smith et al 1999:152). The "Gateway to Africa" concept envisaged by Beaudouin hoped to link a new civic centre with the iconic sites of Parliament and the Public Gardens (see Plate 20). By 1943 it seemed that Government and the city had differences of opinion mainly to do with the location of the new station, probably because the roof would block vistas from the harbour. After the war, the implementation of the foreshore plan was the task of the city engineer, Mr Solly Morris. One of his major concerns was traffic circulation in and around the city which were at

odds with Beaudouin's concepts. The implementation dragged on into the 1960's with submission and rejection of numerous planning reports and proposals until eventually we ended up with the somewhat unsatisfactory planning that is evident today (Bickford Smith et al 1999:152).

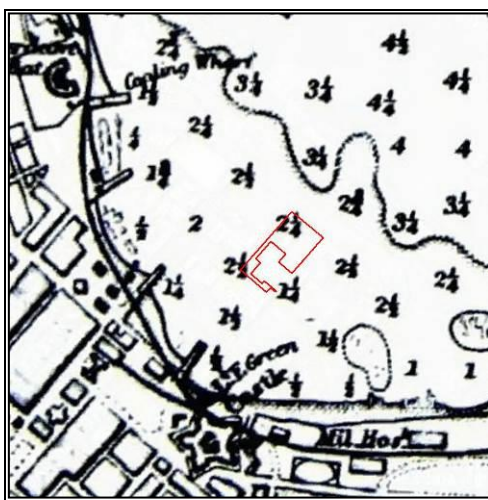


**Plate 20:** A photograph of the model of the proposed layout of the foreshore (source unknown - included with a number of loose photographs in a second hand copy of the 1940 Foreshore Scheme report in ACO possession)

### 3. ASSESSMENT OF POTENTIAL RISK FACTORS FOR DEVELOPMENT

#### 3.1 Shipwrecks

The analysis of available historical information has indicated that the proposed development lies on reclaimed land above a part of the bay that would have been between approximately 600 meters from the old shoreline (in about 1870). The approximate position of the development site is indicated in red on the depth chart below and suggests that sea depth in the area of Erf 186 would have been in the order of 4.1 – 4.5 meters (2.25 - 2.5 Fathoms). It is worth bearing in mind when the parking basement/foundation depth is discussed as it will be in that range where material may be found on the old seabed during bulk excavations.



**Figure 8:** An extract from a plan showing the bathymetry of Table Bay in 1858, as surveyed by F. Skead R.N (see also Figure 2). Although the date on the chart suggests that it was prepared in 1858, some of the landmarks that have been included indicate that the map is probably from sometime after 1860. Depths in fathoms (1 fathom = 1.8288 meters). Sceptre Reef appears in front of the old Military Hospital at Woodstock.

As we have indicated, few ships in Table Bay are recorded as having sunk at anchor, but rather most appear to have dragged or lost anchors in the heavy winter gales, and gone aground or were wrecked on the old shorelines between the Castle and Milnerton lagoon. None of these old shorelines lie below the proposed development site although the traditional anchorage point would have been at and around this point.

In order to illustrate the statistics more graphically, Durden (1992) presented shipwreck positions plotted in relation to the old shorelines (Figure 9, 10). One could look at his data and assume from it that he has used co-ordinates to achieve the distribution. Rather he has made an attempt to convert rough landmark data into positions to facilitate the use of GIS technology. Turner (1988) has presented Latitude and Longitude co-ordinates for a number of wrecks but similarly, these can also be no more than rough guesses.



**Figure 9:** Map overlay of Table Bay showing approximate locations of 19<sup>th</sup> century shipwrecks (Durden 1992).  
**Figure 10:** Overlay of Durden's shipwreck data on a current aerial photograph of a portion of Cape Town. The proposed development site shown in red. The "x" within the development site is believed to be incorrectly placed. It should be over the Civic Centre as it most likely represents the Dutch vessel "Nieuwe Rhoon" described by Lightley (1976).

Despite the fact that Durden's plots are to be viewed with a degree of circumspection, his map of the shoreline nevertheless gives some idea of the distribution of wrecks as described. The map also shows the changes in shoreline that occurred over time. By overlaying a portion of the Durden wreck distribution over a current aerial photograph of Cape Town (using the Google Earth software) (Figure 10, we achieve a very graphic demonstration of the most likely areas where wrecks will be found.

The almost complete lack of major reefs or rocky shoreline along the eastern and southern shores of the bay (except for the so-called Sceptre Reef see Figure 8 (and also Hart 1998:21), meant that vessels grounded on the beach could sometimes be successfully refloated. Many however could not and were instead salvaged. Both the ships timbers and fittings and the cargoes were valuable and were removed for resale. Frequent auctions of the grounded vessels and salvaged items were advertised in the local press (Figure 11). The significance of these auctions for the likelihood of finding wrecks below landfill lies in the fact that shoreline wrecks were mostly salvaged! If fragments were left behind for whatever reason, they are only likely to represent fragments of the original vessel and its cargo. Material that remained would probably have been inaccessible due to having been quickly buried by beach deposits (see Lightley 1976). Even to this day, fragments of vessels are exposed from time to time on Milnerton Beach.

We disagree with the findings of Sharfman and Mavradinov (2003:22) with reference to the CTICC 1 project, that there would be a "strong likelihood that the remains of wrecks will be found". Although we now have the benefit of hindsight, it would seem unreasonable to have reached this conclusion with the available shipwreck data evidence, which is much the same as we still rely on today.



### 3.1.1 Categories of significance

It is not believed that every single wreck has equal significance. Those that are well preserved with intact cargoes are believed to be of greatest historical and scientific value, but in general terms, significance must usually be established on a case by case basis. Older vessels (where little or no other documentary evidence is available) would be of considerable interest in terms of the information that can be gained about construction methods. For example, if an unknown 15<sup>th</sup> Century Portuguese ship was uncovered, even if fragmentary, would be of considerable historical interest.

The worst case scenario from a planning and construction point of view would be to find a vessel that was carrying slaves at the time of its wrecking, particularly if bodies were never removed and buried on land. Such vessels did anchor at the Cape and were lost from time to time, for example, the *Pacquet Real*, a slave ship that was wrecked in 1818 on Woodstock beach (Cox 1995). In this case the bodies were recovered and buried near Fort Knokke.

In such a scenario, there would undoubtedly be lengthy delays, not only due to requirements of the legislation, but the sensitivities around slave issues would likely elicit vociferous public debate. SAHRA does have the power to declare such a site as a National Heritage site. Although we cannot exclude the possibility of such a discovery, we consider it unlikely.

An in situ vessel with cargo would also result in delays, but would be more straightforward in management terms.

### 3.2 Anchorage debris

This is material that is jettisoned from moored vessels, or that is lost as a result of damage and/or sinking. It can include items of cargo, but could also consist of pieces of the ships themselves, or anchors. While heavy items such as anchors and cannon barrels are unlikely to drift far, other items can move about as a result of shifting sand due to tides and currents.

#### 3.2.1 Categories of significance

It is difficult to determine what may be found on the old seabed. Anchors, cargo and fragments of vessels are probably most likely (anchors were found previously on the *Arabella Hotel* (now the *Westin*) site during bulk excavations (Halkett 2002, and at the *Silo 1* site at the *Waterfront Schietecatte* in prep). Significance would be determined on a case by case basis. The recovery of such items is unlikely to result in significant delays. We believe it to be highly unlikely (although they cannot be ruled out) that individual human remains will be found on the old seabed.



**Plates 21 & 22:** Two anchors were recovered from the lower rubble fill during bulk earthworks at the CTICC 1 site. The admiralty pattern anchor shown at left is made from wrought iron and has curved arms tipped with flukes. These were used throughout the 19<sup>th</sup> century. The anchor at right had lost its arms although the mechanism at the top of the shank was well preserved. Neither anchor had a stock (an “L” shaped iron bar that passed through the shank just below the chain ring at right angles to the arms. This device prevented the anchor from lying flat on the seabed and ensured it dug into the sandy bottom).

### 3.3 Heritage material in the landfill

Two categories of landfill were described for the reclamation. The lowest consisted of old seabed material that was dredged from the site of Duncan Dock and pumped as slurry into the reclamation area, while the second category included material which was placed on top of the dredged material. The origin is not precisely known but includes *inter alia*, clean builders rubble, and large amounts of local Malmsbury Shale rock. According to Werz (2003:16), shipwreck materials were uncovered during the dredging process although the original location is unknown. Larger items are likely to have been removed or moved out of the way of the operation and it is more likely that smaller items would have found their way into the fill. A wide range of items from various ages could be found. From having monitored the bulk excavations at both the CTICC 1 site, we know that refuse and some industrial waste was included in the landfill process. Monitoring of the recent bulk earthworks on Erf 247 (Chris Barnard Hospital), immediately to the north west of the Founders Garden site (Seeman 2013a,b,c), has provided a well-placed window with regards to the sub-surface deposits and heritage content and will also be discussed below.

#### 3.3.1 Stratigraphy at the CTICC 1 site

Despite the size of the earthmoving area, the sequence of deposits remained more or less the same across the whole site (Halkett 2002:2). In contrast to official records of the landfill, we recognised five stratigraphic land fill units that can be described as follows (see also Plates 23 & 24):

- Upper rubble: this is a landfill made up largely of building debris and from the smell in places, also industrial waste;
- Dredged sand: landfill consisting of dredged seabed material, white in colour and rich in water rounded marine shell. Clearly of marine origin, this cannot be the dune sand reported to have been brought from near the airport and it must have been used elsewhere (see Cox 2000 and Sharfman & Mavradinov 2000);
- Lower rubble: earlier landfill containing much rocky material and other debris. This appears to have been submerged or waterlogged and had a strong sulfurous aroma;
- Old seabed: this was marked by a relatively thin deposit (on average 80cm thick) of black/grey clay also having a strong sulfurous aroma;
- Bedrock: Malmsbury Shale.



**Plates 23 & 24:** At left two types of fill consisting of the lower rock rich deposits (from the base of Duncan Dock?) and sea/dune sand above. A thick dark layer in the photograph at right, was interpreted as the old seabed, upon which was a build up of organic debris and coal residue (Photographs: ACO Associates archive).

#### 3.3.2 Artefactual material observed at the CTICC 1 site

Very small quantities of 19<sup>th</sup> century refined earthenwares were found in both the upper and lower rubble deposits, while by contrast, not a single fragment of any 18<sup>th</sup> century material was observed.



Dark green bottle glass was found occasionally in the seabed material but the impression was that these were chance finds from occasional discard. Lumps of coal were also found in the seabed material.

The lack of any 18<sup>th</sup> century artefacts in the seabed unit and other factors, particularly the absence of an *in situ* marine stratigraphy (we would have expected the white sand to lie on top of the basal seabed clays), suggests that dredging has occurred in the past. This may have occurred during the 19<sup>th</sup> century prior to the establishment of the harbour when ships were still loaded and unloaded via the numerous jetties jutting out into the bay in the vicinity, or may relate to the more recent landfilling event. Whatever the case, the lack of any shipwreck material may be the result of this earlier intervention.

Our observations at the CTICC 1 site suggest the opposite filling sequence to be true. Rock and rubble laid down first (from many sources no doubt, but primarily Malmesbury Shale). Subsequently dredged sand was pumped on top.

### 3.3.3 Stratigraphy at Erf 247 (Hospital site)

According to Seeman (2013a,b,c) the reclamation material consisted predominantly of marine sediments throughout, with a single brown organic and rubbish layer encountered at approximately 1.5 meters below surface separating two episodes of marine sand filling. The white marine sediment covered the entire site to a depth of approximately 3.5 meters below surface (Plates 25 and 26). This material is consistent with the material that was interpreted as dredged marine sediment at the CTICC1 site (Halkett 2002). Grey gravelly sand with numerous white mussel shell fragments was found in the deeper lift shaft excavation that progressed to a depth of approximately 6 meters below surface.



**Plates 25 and 26:** Bulk earthworks at Erf 247 in progress. A number of key buildings provide reference points. The uniform nature of the sub-surface deposits is clearly visible

### 3.3.4 Artefactual material observed at Erf 247 (Hospital site)

According to Seeman (2013a,b,c), no artefactual was observed or recovered during her 4 monitoring visits conducted between July and September 2013.

### 3.3.5 Categories of significance

Like with anchorage debris, significance of the material will be assessed on a case by case basis. The recovery of these types of items is unlikely to result in significant project delays but may require conservation in some cases or to be placed in storage (eg anchors). Any items recovered could be used for display purposes.

### 3.4 Harbour facilities and other structures

Werz (2003) listed two other categories of material that he considered as potential risks in the container expansion assessment. One category consisted of historical harbour works, while the other, stone age artefacts, is discussed below under "Other Material". We do not believe that any harbour works will be encountered below Erf 186, as we are confident that we know the position of all such structures. The end of the old Municipal Pier that was built in 1913 will similarly not be impacted.

#### 3.4.1 Other Material

Werz (2003) also noted the possibility of finding pre-historical material. While prehistoric remains have been located in the bay before, these were in the form of isolated Early Stone Age stone artefacts and we do not believe that they represent any risk to the project. They are easily recorded and mitigated.

## 4. LEGISLATION

Shipwrecks and associated material of any type is protected by the National Heritage Resources Act of 1999 (NHRA). Although the act devolves responsibility for most provincial heritage matters to the Provincial Heritage Resources Authority (PHRA), shipwrecks remain a national issue and fall under the jurisdiction of the South African Heritage Resources Agency (SAHRA). Permission is required from that organisation to disturb or remove shipwrecks or associated material (if found). Some relevant sections of the NHRA are:

### Definitions

2. In this Act, unless the context requires otherwise—

(i) "alter" means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or other decoration or any other means; (xiii)

(ii) "archaeological" means—

(a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;

(b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;

(c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; and.....

### Protected areas

28. (1) SAHRA may, with the consent of the owner of an area, by notice in the *Gazette* designate as a protected area—

(a) such area of land surrounding a national heritage site as is reasonably necessary to ensure the protection and reasonable enjoyment of such site, or to protect the view of and from such site; or

(b) such area of land surrounding any wreck as is reasonably necessary to ensure its protection; or.....

### Archaeology, palaeontology and meteorites

35. (1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

If the project requires an Environmental Impact Assessment (EIA) to be undertaken, this report could be submitted as fulfillment of the heritage component. If no EIA is required, it must be determined if

the development falls within the requirements for a stand alone Heritage Impact Assessment (HIA) or not. A portion of Section 38 of the NHRA is reproduced below:

- 38.** (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—
- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
  - (b) the construction of a bridge or similar structure exceeding 50 m in length;
  - (c) any development or other activity which will change the character of a site—
    - (i) exceeding 5 000 m<sup>2</sup> in extent; or
    - (ii) involving three or more existing erven or subdivisions thereof; or
    - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
    - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
  - (d) the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
  - (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.
- (2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1)—
- (a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or
  - (b) notify the person concerned that this section does not apply.
- (3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:
- (a) The identification and mapping of all heritage resources in the area affected;
  - (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
  - (c) an assessment of the impact of the development on such heritage resources;
  - (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
  - (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
  - (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
  - (g) plans for mitigation of any adverse effects during and after the completion of the proposed development.

To determine if a Heritage Impact Assessment is required, and what if any specialist topics need to be assessed in the course of preparing such an assessment is determined by preparation and submission of a “Notice of Intent to Develop” form to Heritage Western Cape.

## **5. CONCLUSION**

Having considered the available information, we feel that we can make some statements regarding the potential to encounter heritage material during bulk earthworks on Erf 186 at Roggebaai.

While the lack of precision with respect to wreck locations means that we can never rule out the possibility of encountering significant remains on the site, evidence at our disposal suggests that the area of the bay over which the proposed developments are proposed, was not an area where ships are recorded as having sunk (notwithstanding numerous unaccounted wreck locations). We believe it can be demonstrated that most ships were wrecked as a result of losing anchors and being driven onto shore by the fierce north-westerly winds that blow in the bay in the winter months. Few descriptions of shipwrecks list them as having sunk at the anchorage.

In the event of remains being found, the worst case scenarios from a development perspective would involve the discovery of *in situ* wrecks containing the physical remains of slaves and or other human remains, and/or well preserved structural details and cargoes. One cannot definitively say what vessels or cargo's may be significant, though in broadest terms, we may assume that older vessels would be of greater interest to the scientific community.

In our opinion, the likelihood of finding decontextualised anchorage/shipwreck debris on the old seabed, and/or shipwreck debris within the landfill is higher than finding a substantial shipwreck. The potential risk to development of such decontextualised finds is considerably less than for an *in situ* shipwreck. Some thought may be given to display of such material if it is in such quantity and of a suitable nature, within any development on the site. Anchors have been found at similar development sites.

In the course of archaeological monitoring of bulk earthworks at Erf 247 immediately to the north west of the Founders Garden site, no heritage material was observed or recovered.

No structures relating to harbours and harbour works are known to occur below the proposed development site.

## 6. RECOMMENDATIONS

- A specialist archaeological team must be appointed to the project to monitor the bulk earthworks at the proposed project site. A monitoring schedule must be drawn up by the appointed archaeological company in consultation with the construction and bulk earthworks contractors and project manager;
- The task of recovering, recording and conserving the smaller day to day finds will fall to this team. They will monitor the earthworks and alert the project managers and construction crew if significant finds are recognised that will require mitigation;
- A plan of action should be prepared in advance of the commencement of bulk earthworks that addresses the procedures to be followed in the event of the discovery of significant heritage material (shipwrecks). This plan must take into account the lack of adequate local facilities to deal with conservation and storage necessitated by large scale wreck recovery projects. The Maritime archaeological unit from SAHRA should be involved in the drafting of such a plan;
- While the appointed archaeological team may assist with mitigation, in the case of the discovery of a shipwreck, specialist maritime archaeologists may have to be appointed. Permit/s will have to be issued by SAHRA for such work;
- Any human remains located can only be removed with the permission of SAHRA;
- The HIA/archaeological component should be submitted to SAHRA (Maritime Unit) for comment. They should specifically indicate if a separate permit will be required to mitigate "day to day" maritime related finds identified during monitoring (i.e. decontextualised anchors and other anchorage debris, cargo);
- A permit/s must be issued by Heritage Western Cape for the ongoing "day to day" mitigation of non-maritime finds found during the monitoring process. HWC must indicate if more than one permit will be required (i.e. by individual development site - erf) or if one permit can be issued to cover the multiple erf's making up the development.

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## APPENDIX 1: Partial list of shipwrecks for Table Bay by area

(Source SAHRA shipwreck database - excludes vessels where no specific wreck site is described)

(Additional data for each vessel is available but was not required for this project – additional fields include cargo, crew, brief notes about the circumstances of loss etc)

Ship Name	Wreck Date	Area	Place
Conde de Souza	1842/01/01	Amsterdam Battery	(rocks below) Amsterdam Battery
Amazon	1810/11/15	Amsterdam Battery	Amsterdam Battery
Cerberus	1821/03/10	Blaauwbergstrand	Blaauwbergstrand
Curlew	1940/03/02	Bok Point	Bok Point
Newport	1857/06/07	Castle	(near) Imhoff Battery
Rory Brown	1857/06/07	Castle	(opposite) Imhoff Battery
Albatross	1842/09/09	Castle	(near) Imhoff Battery
Saldanha Bay Packet	1842/08/28	Castle	Imhoff Battery
Orange Grove	1828/06/15	Castle	n/a
Sterrenschans	1793/05/20	Castle	Castle
Nieuwe Rhoon	1776/01/31	Castle	Castle Jetty
Zoetigheid	1722/06/17	Castle	(near & beyond) Castle
Schotsche Lorrendraaier	1722/06/17	Castle	(near) Castle
Zwarte Leeuw	1696/12/01	Castle	(near) Castle Jetty
Rotterdam	1722/06/17	Castle & Salt River	Between
Standvastigheid	1722/06/17	Castle & Salt River	Between
Maria Johanna	1865/05/17	Castle & Salt River (between)	(between) Castle & Salt River
Frederick Bassil	1865/05/17	Castle & Salt River (between)	(between) Castle & Salt River
Star of the West	1865/05/17	Castle & Salt River (between)	(between) Castle and Salt River
Royal Arthur	1865/05/17	Castle & Salt River (between)	South Wharf
Jane	1865/05/17	Castle & Salt River Woodstock Beach?)	Between
Vis	1740/05/06	Green Point	(South of) Lighthouse
Disa	1967/09/27	Green Point	Green Point
Tiger	1899/11/30	Harbour	Harbour
Pembroke Castle	1888/09/10	Harbour	Alfred Dock
Svanen	1880/02/24	Harbour	Harbour
China	1874/07/29	Harbour	Patent Slip
Ham 107	1939/01/01	Harbour	Harbour
George Schwalbe	1902/01/01	Harbour	Fish Harbour
Penelope	1809/04/16	Milnerton Beach	Milnerton Beach
Winton	1934/07/28	Milnerton Beach	North of Lighthouse
Cambrian	1861/01/01	Mouille Point	Rocks outside harbour
Ellen Rawson	1857/06/14	Mouille Point	Mouille Point
Fenisowles	1819/10/21	Mouille Point	Mouille Point/Three Anchor Bay
Harvest Capella	1987/10/07	Oude Schip	Oude Schip
Argonaut	1796/01/01	Oude Schip	Oude Schip
Dunvegan Castle	1902/10/01	Pier	Pier
Neree	1878/07/21	Rogge Bay	(opposite) Sailor's Home
Dash	1833/01/23	Rogge Bay??	Amsterdam Battery
Panmure	1891/08/04	Salt River	Opposite East side of the mouth
Maria	1790/04/12	Salt River	(near) Salt River
Fijenoord	1736/07/01	Salt River	(near) Salt River Mouth
Addison	1722/06/17	Salt River	Salt River Mouth
Sierra Pedrosa	1889/10/30	Salt River Beach	(north of) Salt River Mouth
Jeanne	1878/07/19	Salt River Beach	Salt River Mouth
Jupiter	1872/10/06	Salt River Beach	Salt River Beach
Kate 3	1862/08/08	Salt River Beach	Salt River Mouth
Frigga	1862/01/19	Salt River Beach	Salt River Mouth (north of)/Milnerton
Sir Henry Pottinger	1860/06/01	Salt River Beach	Salt River Mouth
Defence	1857/03/05	Salt River Beach	Salt River Mouth Btwn Mouth & Rietvlei
Sandwich	1853/08/10	Salt River Beach	Salt River ("new"mouth)/Diep River
Cockburn	1850/09/16	Salt River Beach	(near) Salt River Mouth



Israel	1847/04/09	Salt River Beach	Salt River Beach
Waterloo	1842/08/28	Salt River Beach	Salt River Mouth
Abercrombie Robinson	1842/08/28	Salt River Beach	Salt River Mouth
Papineaux	1840/08/26	Salt River Beach	Salt River Mouth
Emerald	1833/09/03	Salt River Beach	Salt River Mouth
Sarah	1822/07/10	Salt River Beach	(near) Salt River Mouth
Emma	1821/01/04	Salt River Beach	Salt River Beach
India	1821/01/04	Salt River Beach	Salt River Mouth
Elizabeth	1819/10/07	Salt River Beach	Salt River Beach
Columbia	1796/06/04	Salt River Beach	(near) Salt River Beach
La Ceres	1776/10/15	Salt River Beach	Salt River Mouth
De Jonge Thomas	1773/06/10	Salt River Beach	Salt River Mouth
Voorzichtigheid	1757/06/08	Salt River Beach	Salt River Mouth
Westerwyk	1737/05/21	Salt River Beach	Salt River Mouth
Duinbeek	1737/05/21	Salt River Beach	Salt River Mouth
Flora	1737/05/21	Salt River Beach	Salt River Mouth
Goudriaan	1737/05/21	Salt River Beach	Salt River Mouth
Paddenburg	1737/05/21	Salt River Beach	Salt River Mouth
Rodenrijs	1737/05/21	Salt River Beach	Salt River Mouth
Iepenrode	1737/05/21	Salt River Beach	(near) Salt River Mouth
De Buys	1737/05/20	Salt River Beach	Salt River Mouth area
Haerlem	1728/12/04	Salt River Beach	Salt River Beach
Middenrak	1728/07/03	Salt River Beach	(near & north of) Salt River
Stabroek	1728/07/03	Salt River Beach	Salt River Mouth
Nightingale	1722/06/16	Salt River Beach	(south of) Salt River Mouth
Waddingsveen	1697/05/24	Salt River Beach	Salt River Mouth
Oosterland	1697/05/24	Salt River Beach	Salt River Mouth
Goede Hoop	1692/06/04	Salt River Beach	Salt River Mouth
Orange	1692/06/04	Salt River Beach	Salt River Mouth
La Marachele	1660/05/19	Salt River Beach	Fort Duijnhoop & Salt River Mouth (btwn)
Mauritius Eiland	1644/02/21	Salt River Beach	Salt River Mouth
Lys de Bretagne Cameret	1967/07/23	Salt River Beach	Salt River Beach
City of Lincoln	1902/08/14	Salt River Beach	Salt River Mouth
Brutus	1902/08/14	Salt River Beach	(north of) Salt River Mouth
Le Victor	1782/09/24	Salt River Beach/Milnerton Beach (?)	Salt River Mouth /Milnerton Beach (?)
Kate	1862/08/08	Salt River Mouth	Just east of
Ho ergeest	1692/06/10	Salt River Mouth	Near Salt River Mouth
Benjamin Miller	1865/05/17	Salt River/Woodstock Beach	Between Castle & Salt River Mouth
Pitcairn Island	1898/09/01	Table Bay	Table Bay
Broderick Castle	1896/09/05	Table Bay	Table Bay
Drotning Sofia	1892/01/01	Table Bay	Table Bay
Oni 2	1888/02/07	Table Bay	Table Bay
Arab	1880/06/10	Table Bay	Table Bay
Oni	1875/01/01	Table Bay	Table Bay
Foundling	1874/11/22	Table Bay	(Near) Table Bay
Susan Pardew	1871/01/01	Table Bay	Table Bay
Duke of Buccleugh	1870/08/10	Table Bay	Table Bay
Madagascar	1868/07/01	Table Bay	Table Bay
Jonquille	1868/07/01	Table Bay	Table Bay
Otago	1867/06/01	Table Bay	Table Bay
Wasp	1867/03/25	Table Bay	Breakwater
Stag	1865/05/17	Table Bay	Anchorage
Briton	1865/05/17	Table Bay	Table Bay
Royal Minstrel	1865/05/17	Table Bay	Table Bay
Water Kelpie	1865/05/17	Table Bay	Table Bay
Libra	1865/01/01	Table Bay	Table Bay
Deutan	1863/02/20	Table Bay	Table Bay
Wavery	1862/02/01	Table Bay	Table Bay
Merilla	1862/01/01	Table Bay	Table Bay
Fanny and Leoncine	1860/01/01	Table Bay	Table Bay

W E Malcolm	1858/09/01	Table Bay	Table Bay
Fox	1857/06/20	Table Bay	Table Bay
Gentana	1857/06/06	Table Bay	Table Bay
Marie Sarah	1857/01/01	Table Bay	Table Bay
Dordrecht	1856/12/01	Table Bay	Table Bay
Canopus	1854/01/01	Table Bay	Table Bay
Bosphorus	1853/01/27	Table Bay	Table Bay
Morayshire	1851/10/12	Table Bay	Table Bay
Thomas Cart	1851/10/01	Table Bay	Table Bay
London	1850/07/18	Table Bay	n/a
Prince Charlie	1850/07/06	Table Bay	Table Bay
Royal Charlie	1850/07/01	Table Bay	Woodstock Beach
Zafiro	1849/01/01	Table Bay	Table Bay
Blackstone	1846/01/04	Table Bay	Table Bay
Bella Angela	1844/09/10	Table Bay	Table Bay
Henrequetta	1844/02/05	Table Bay	Table Bay
Josephine	1844/01/29	Table Bay	Table Bay
Soudade	1843/10/30	Table Bay	Table Bay
Unknown 42	1843/10/23	Table Bay	Table Bay
Commandant	1843/08/23	Table Bay	Table Bay
Gaika	1842/09/09	Table Bay	Table Bay
Hamilton Ross	1842/08/28	Table Bay	Table Bay
Clyde	1842/05/04	Table Bay	n/a
Port Boat	1842/02/26	Table Bay	Table Bay
Orion	1842/01/01	Table Bay	Table Bay
Frances	1840/08/18	Table Bay	Mouille Point
Roxburgh Castle	1838/07/01	Table Bay	Table Bay
Falcon	1836/12/31	Table Bay	Table Bay
Emperor Alexander	1835/05/25	Table Bay	Table Bay
Cendieu	1831/07/20	Table Bay	Table Bay
Ellen	1830/06/03	Table Bay	Table Bay
Bride	1828/08/20	Table Bay	Table Bay
Nautilus	1826/03/31	Table Bay	Table Bay
Narwal	1826/01/01	Table Bay	Table Bay
Lady East	1824/01/01	Table Bay	Table Bay
Ceres	1823/01/01	Table Bay	Table Bay
Triangle	1822/08/11	Table Bay	Table Bay
Good Intent	1822/07/21	Table Bay	Table Bay
Olive Branch	1822/07/21	Table Bay	Table Bay
Royal George	1822/07/21	Table Bay	Table Bay
Sun	1822/07/21	Table Bay	Table Bay
De African	1821/05/28	Table Bay	Table Bay
Penisowles	1819/01/01	Table Bay	Table Bay
Industrie	1818/01/01	Table Bay	Anchorage
William	1818/01/01	Table Bay	Table Bay
Winnifred & Maria	1817/08/21	Table Bay	(near) Table Bay Wharf
Valentine	1812/11/01	Table Bay	Table Bay
Resolution	1812/01/01	Table Bay	Table Bay
Reliance	1809/12/16	Table Bay	Table Bay
Creole	1809/01/31	Table Bay	Table Bay
Twee Gysberts	1808/11/21	Table Bay	Table Bay
Atlantic	1806/01/28	Table Bay	Table Bay
Charles	1805/11/04	Table Bay	Table Bay
Elizabeth	1805/11/04	Table Bay	Table Bay
Hunter	1805/11/03	Table Bay	Table Bay
O'Harmonie	1799/11/05	Table Bay	Table Bay
Prize	1799/11/05	Table Bay	Table Bay
Oldenburg	1799/11/05	Table Bay	Table Bay
Sierra Leone	1799/11/05	Table Bay	Table Bay
Jefferson	1798/05/09	Table Bay	Table Bay
Good Hope	1798/03/17	Table Bay	Table Bay

Zeeland	1793/05/22	Table Bay	Table Bay
Helena Louisa	1790/04/12	Table Bay	Table Bay
Erfrprins van Augustenburg	1790/04/12	Table Bay	Table Bay
Guardian	1789/12/24	Table Bay	Table Bay
Lucia Emerentia	1786/01/01	Table Bay	Table Bay
De Knokke	1786/01/01	Table Bay	Table Bay
Namen	1722/06/17	Table Bay	Table Bay
Greenrust	1717/01/01	Table Bay	Table Bay
Oliphant	1656/04/17	Table Bay	Table Bay
Sir John Mudie	?	Table Bay	Harbour
Pamela Ann	1977/11/01	Table Bay	Bok Point
Grootvlei	1970/01/01	Table Bay	Table Bay
Cape Matapan	1960/04/20	Table Bay	Table Bay
Rugeley	1941/08/01	Table Bay	Table Bay
Protea	1934/01/01	Table Bay	Table Bay
Clan Sutherland	1920/06/14	Table Bay	Table Bay
Canton	1909/01/01	Table Bay	Table Bay
Irene	1906/01/04	Table Bay	Table Bay
Kaiser	1902/08/14	Table Bay	Table Bay
Annenan	1902/06/09	Table Bay	Table Bay
Canada Cape	1912/06/05	Table Bay Harbour	South Arm (No 3 Berth)
Victoria	1737/05/21	Woodstock /Salt River Beach	Woodstock / Salt River Beach
La Scravick	1967/07/101	Woodstock Beach	Woodstock Beach
Ryvingen	1902/05/130	Woodstock Beach	(near) Woodstock Mole
Prince Badouin	1892/05/03	Woodstock Beach	Woodstock Beach
Etta Loring	1878/07/23	Woodstock Beach	Papendorp
Caledonian	1878/07/18	Woodstock Beach	Papendorp
Galatea	1865/06/17	Woodstock Beach	(beyond) Castle
Alacrity	1865/05/17	Woodstock Beach	(beyond)
Clipper	1865/05/17	Woodstock Beach	(near) Battery
Fernande	1865/05/17	Woodstock Beach	(between) Castle / Salt River
Figilante	1865/05/17	Woodstock Beach	(between) Castle / Salt River
Kehrweider	1865/05/17	Woodstock Beach	Castle (beyond)
Isabel	1865/05/17	Woodstock Beach	(between) Castle / Salt River
Gem	1865/05/17	Woodstock Beach	Woodstock Beach
Deane	1865/05/17	Woodstock Beach	Woodstock Beach
Esther	1865/05/17	Woodstock Beach	Woodstock Beach
Grahamstown	1864/05/26	Woodstock Beach	(behind) Military Hospital
Lucy Johnson	1862/09/22	Woodstock Beach	(near) Military Hospital
Susan	1862/09/21	Woodstock Beach	(near) Military Hospital (near)
Marietta	1862/08/09	Woodstock Beach	Papendorp (opposite Military Hospital)
Crystal Palace	1862/08/08	Woodstock Beach	Fort Knokke/Sceptre Reef
Sarah Charlotte	1860/07/03	Woodstock Beach	(near) Military Hospital
William James	1857/06/10	Woodstock Beach	Castle Battery (near)/Imhoff Battery
Christabel	1857/06/08	Woodstock Beach	(near) Castle/Military Hospital
Jessie MacFarlane	1857/06/07	Woodstock Beach	(near) Fort Knokke
Gitana	1857/06/07	Woodstock Beach	(below) Imhoff Battery
Anne Jane	1856/08/06	Woodstock Beach	n/a
Seagull	1854/07/15	Woodstock Beach	Woodstock Beach
Courier	1852/05/18	Woodstock Beach	(near) Imhoff Battery
Fanny	1851/07/30	Woodstock Beach	South Wharf (near)/near Imhoff Battery
Royal Albert	1850/06/25	Woodstock Beach	(near) Military Hospital
Arab	1850/06/01	Woodstock Beach	Military Hospital/Hospital Lines
Francis Speight	1846/01/07	Woodstock Beach	(near) Craig's Tower
Diana	1846/01/07	Woodstock Beach	Imhoff Battery
Fairfield	1842/09/09	Woodstock Beach	Hospital Lines
Hen Hoyle	1842/09/09	Woodstock Beach	(near) Hospital Lines
Reform	1842/09/09	Woodstock Beach	(below) Imhoff battery
John Bagshaw	1842/09/09	Woodstock Beach	(near) South Wharf
Speedy	1842/07/13	Woodstock Beach	Imhoff Battery

Arion	1842/07/13	Woodstock Beach	(near) Imhoff Battery
Howard	1840/07/16	Woodstock Beach	Castle (near)
Antelope	1837/08/18	Woodstock Beach	South Wharf
Candian	1831/07/17	Woodstock Beach	Off-shore Reef
Rambler	1831/07/17	Woodstock Beach	Woodstock Beach
Usk	1831/07/17	Woodstock Beach	Woodstock Beach
Cal p ie	1831/07/17	Woodstock Beach	Woodstock Beach
Sir James Saumarez	1831/07/16	Woodstock Beach	Military Hospital/Hospital Lines
Vine	1831/07/16	Woodstock Beach	Woodstock Beach
Alfred	1830/07/04	Woodstock Beach	(near) South Wharf
Silence	1830/06/04	Woodstock Beach	(near) South Wharf
Walsingham	1829/04/16	Woodstock Beach	(near) Military Hospital
Importer	1828/06/15	Woodstock Beach	Woodstock Beach
Woodburne	1826/08/08	Woodstock Beach	Woodstock Beach
San Antonio	1824/08/04	Woodstock Beach	(near) Military Hospital
Jane	1823/11/01	Woodstock Beach	Woodstock Beach
Lavinia	1822/07/21	Woodstock Beach	(near) Military Hospital
Leander	1822/07/21	Woodstock Beach	(near) Military Hospital
Adriatic	1822/07/21	Woodstock Beach	Sea Lines (off)
Anna	1821/01/04	Woodstock Beach	n/a
Prins Willem I	1819/07/26	Woodstock Beach	(near) Merchant's Wharf
Rambler	1818/05/18	Woodstock Beach	(near) Castle
Pacquet Real	1818/05/18	Woodstock Beach	Jetty (South Wharf?)
Jane	1818/05/18	Woodstock Beach	Opposite Castle (near wharf)
Tarlton	1818/05/17	Woodstock Beach	(near) Castle
John	1818/01/01	Woodstock Beach	Woodstock Beach
Woodbridge	1816/11/05	Woodstock Beach	(near) South Wharf
Concord	1816/11/05	Woodstock Beach	Woodstock Beach
Discovery	1816/07/29	Woodstock Beach	(near) Fort Knokke /Black River Mouth
Clipper	1811/12/28	Woodstock Beach	(near) Battery
La Espirance	1808/12/01	Woodstock Beach	Woodstock Beach
Hoop	1808/10/24	Woodstock Beach	n/a
L'Atalante	1805/11/03	Woodstock Beach	Charlotte Battery
Hannah	1799/11/05	Woodstock Beach	Castle (near)
Sceptre	1799/11/06	Woodstock Beach	Scepter Reef opposite Fort Knokke
Anubis	1799/11/05	Woodstock Beach	Woodstock Beach
Avenhoorn	1788/05/17	Woodstock Beach	n/a
Gouda	1722/06/17	Woodstock Beach	Castle (near)
Lakeman	1722/06/17	Woodstock Beach	Castle (near)
Am	1722/06/17	Woodstock Beach	Castle (under the)
Jaeger	1619/07/27	Woodstock Beach	Woodstock Beach
George Thomas	?	Woodstock Beach	n/a
City of London	1902/01/01	Woodstock Beach	Woodstock Beach
Alice	1901/07/15	Woodstock Beach	Beach
America	1900/05/29	Woodstock Beach	Woodstock Beach
Chandos	1722/04/17	Woodstock Beach?	Castle (near)
Nossa Senhora D'Guia	1819/05/02	Woodstock Beach/ Amsterdam Battery?	Woodstock Beach/Amsterdam Battery?
Redbreast	1878/07/20	Woodstock Beach/Papendorp	(near) Fort Knokke
Formosa Estrella	1861/02/19	n/a - possibly Table Bay??	n/a
Aberfoyle	1847/08/18	n/a - possibly Table Bay??	n/a
Ann & Mary	1843/08/23	n/a - possibly Table Bay??	n/a
Waterloo	1842/09/09	n/a - possibly Table Bay??	n/a
Anna	1841/11/01	n/a - possibly Table Bay??	n/a
Saudade	1841/03/14	n/a - possibly Table Bay??	n/a
Amelia	1840/11/20	n/a - possibly Table Bay??	n/a
Jehovah	1840/01/17	n/a - possibly Table Bay??	n/a
Ada	1828/06/14	n/a - possibly Table Bay??	n/a
Antonio	1824/08/04	n/a - possibly Table Bay??	n/a
Antelope	1822/07/10	n/a - possibly Table Bay??	n/a
Neptune	1821/11/12	n/a - possibly Table Bay??	n/a

Sophia Johanna	1821/10/18	n/a - possibly Table Bay??	n/a
Duke of Marlborough	1821/06/10	n/a - possibly Table Bay??	n/a
Elizabeth	1818/01/01	n/a - possibly Table Bay??	n/a
Young Phoenix	1816/07/29	n/a - possibly Table Bay??	n/a
Restaurador	1812/01/19	n/a - possibly Table Bay??	n/a
Sir T Gambier	1810/07/07	n/a - possibly Table Bay??	n/a
Abby and Sally	1807/12/06	n/a - possibly Table Bay??	n/a