THE MARKET FOR SHIPREPAIR FACILITIES IN THE PORT OF CAPE TOWN

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Abstract

The market for shiprepair worldwide is segmented according to the purpose for which ships are used, the types and sizes of ships and geographic areas or the routes plied. Shiprepairers tend to focus on the segments in which they have advantages of comparative cost and/or infrastructure and equipment. Generally, Cape size bulk carriers and Post-Panamax container ships are serviced in docks in Asia and tankers above the Afromax size in the Middle East, while the European shiprepairers provide specialised repair services for smaller ships in niche markets. Shiprepairers elsewhere compete in segments of the remainder of the market. The current demand for shiprepair requiring the use of the drydocks and syncrolift at the Port of Cape Town is largely for the repair of ships used for fishing, mining, supply and services, coastal patrol, salvage, rescue and pleasure (passenger vessels) as well as harbour craft and cable ships. Most of the trading ships repaired, apart from those requiring emergency repairs, are small coasters. Few ships involved in international trade have been drydocked for routine survey and repairs in recent years and such business seems to have been lost to Cape Town mainly because it is not a terminal port for regular voyages. The development of the shiprepair industry is an important target in the maritime sector of the National Development Plan of South Africa. In this article conclusions are reached about the complexity of the business economic difficulties of doing so and the prospects for promoting the plan at Cape Town. In view of the lack of academic literature in South Africa on shipping topics notwithstanding the dependence of a country's economy on its maritime trade, the article is also intended to induce further research on the topic.

Keywords: Shiprepair, Maritime Trade, Drydocks

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1 Introduction

The Operation Phakisa to promote the maritime sector of the National Development Plan launched by the South African Government in July 2014 includes the development of the shiprepair industry. As shiprepair is potentially an export industry and labour intensive, providing scope for numerous small businesses, its expansion on a more substantial scale than at present is an attractive developmental proposition. However, shiprepair functions in both local and international markets under unique constraints imposed by geography, availability of specialised infrastructure, established supply chain routes and an indeterminate demand that can create intractable problems for its growth.

In this paper, the results of research on the prospects for the growth of the industry in the Port of Cape Town are explained. As maritime topics are singularly lacking in South African academic literature notwithstanding the dependence of the country's economic growth on its seaborne trade, while the results of research overseas do not contribute much to the solution of local problems, because of they are essentially port-related, it is not feasible to build on previous published research. The conclusions reached are thus presented not only to outline the complexity of the business economic difficulties that underlie the development of the industry at Cape Town, but to induce further contributions to the knowledge needed to promote the maritime sector of the National Development Plan.

At outset it must be emphasized that the shiprepair dealt with in this paper concerns the market for shiprepair facilities (being the two drydocks and the shiplift or syncrolift) in the port and does not include the repair of the drilling platforms used in the oil and gas exploration industry. While the demand for the use of the shiprepair facilities described usually accompanies a demand for shiprepair, only a proportion of the demand for shiprepair requires the use of a drydock or the shiplift. Furthermore, the supply of those specific facilities is finite and there is a single supplier, namely the Port Authority, while the supply of shiprepair services is open to new entrants and is competitive (eThkweni Maritime Cluster, 2011).

Although the demand for the use of the drydocks and shiplift is associated almost entirely with the demand for shiprepair, the latter demand stems largely from the pre-planned or scheduled maintenance required to ensure the seaworthiness of ships in accordance with IMO regulations and to maintain their operating efficiency and earning capacity, because the five-yearly class inspections requiring drydocking will seldom be arranged without repairs being required.

'Repairs' in this context include descaling, painting and other maintenance necessitating dry work (Organisation for Economic Co-operation and Development, 2008).

According to Deane (2011) the market for shiprepair facilities (being the drydocks, shiplift and adjunct facilities) can be regarded as synonymous with the market for shiprepair requiring dry work at the port (i.e. excluding repair work at berths). It falls within a segment or segments of the worldwide market for shiprepair, which is complex and cyclical as well as seasonal within trends, depending on the segmental demand for goods and services from which the demand for the use of ships and shiprepair is ultimately derived. In order to forecast the utilisation and earnings capacity of shiprepair facilities, it is consequently necessary to consider the main factors that are likely to dominate the global market for shiprepair in the next few years are (Drewry, 2011):

- Increasingly strict enforcement of vessel standards by charterers and regulators and through Port State Control;
- Intensified competition from low cost shiprepairers in the Far East, especially China and East Mediterranean, including the Black Sea
- Overcapacity of shiprepair facilities and highly competitive pricing;
- Mergers and amalgamations by established shiprepairers intent on capturing niche markets;
- The phasing out of single-hull tankers by 2015.

South Africa is seen by many as not only a gateway to Africa, but also to countries worldwide (Business Advisor, 2013) and the Port of Cape Town has numerous possibilities. The shiprepair facilities at the Port of Cape Town include two drydocks (Sturrock drydock and Robinson drydock) and the shiplift (or syncrolift[2]) and are the focus of this article.

2 The port of Cape Town

The south coast of South Africa is known to have treacherous weather and sea conditions. These natural elements often cause damage to ships and enable opportunistic contracts for lucrative shiprepair to be concluded. The drydocks and shiplift at the Port of Cape Town were not originally provided for their income-earning propensities or as ventures by Transnet's predecessors to exploit the profitability of shiprepair, but as port amenities that would yield socio-economic benefits for the local community through the labour-intensity of the work that the facilities enable. If the drydocks and shiplift were to be implemented to instigate shiprepair services at Port of Cape Town, cost factors should naturally be scrutinised. For instance, while the economic lifetime of drydocks is conventionally taken to be 30 years (Floor, 2014), the physical lifetime of the infrastructure is much longer or indeterminate and only the costs of replacing the dock mechanism and equipment need be taken into account when calculating their financial viability. The Robinson Drydock was opened in 1882 (Cape Town Heritage, n.d.) and the Sturrock Drydock in 1945 (Sturrock Grindrod, 2014), which illustrates their durability. It would seem that no additional investment costs would be needed.

Cape Town is not the home port for any trading ships and the costs of accommodating or repatriating and recalling crew should also be taken into account by shipowners seeking repairwork and preference will be given to home ports for repairs. When the price of repairs and all the concomitant costs as well as the loss of earnings and the costs of foreign exchange are taken into account, the demand for the use of drydocks at the ports at either end of a trading route is relatively price inelastic, but the demand for the repairwork confronting repairers at either of the ports is price elastic (US Environmental Protection Agency, 1994). The implication in these circumstances is that the demand for the use of the Sturrock Drydock for repairing ocean-going commercial ships could not be increased significantly by lowering the user charge or through strategic pricing. Nevertheless, business otherwise forthcoming from owners of commercial ships might be lost because of the unavailability of the dock while it is occupied by non-commercial ships, which could be repaired at other facilities in the port. That could be precluded through the application of scheduling techniques designed to optimise occupancy, given adequate notice of the repair work to be undertaken. Two months' notice seems to be regarded as sufficient by dockmasters in most ports (Floor, 2013).

Of the many commercial ships that pass around the South African coast without calling at any of its ports or that call at other ports in southern Africa, few are routinely repaired at Cape Town, and the prospects for increasing such business depend upon the competitive abilities of the shiprepairers rather than the pricing or management of the drydocks. The same argument applies to the repair of foreign fishing vessels operating in the seas off southern Africa, but not based at any of its ports. While trading ships operated by owners in the regions where repair costs

[2] Sturrock drydock has an overall docking capability of 369.6m in terms of length and is 45.1m wide at the entrance top, with a depth of 14m. It is possible to divide the dock into two sections of varying lengths. The Robinson drydock, situated in the Victoria Basin, measures 161.2m in length, with an entrance top of 20.7m and a depth of 7.9m. The synchrolift is capable of handling ships up to 61m in length, 15m beam and 1,806 tonnes (Ports and Ships, 2014).

are higher than in South Africa comprise the main target market, most of those ships that could be accommodated in the Sturrock Drydock pass through the Suez Canal rather than around South Africa, while Cape size ships are generally too large, although the Sturrock Drydock is a large dock, but unfortunately too narrow for many ships that it could otherwise accommodate.

An important consideration for shiprepairers at Cape Town is that the market for the repair of trading ships tends to be disaggregated into partial markets defined by the geography of trading routes. In principle, shipowners operating on those routes will seek repair work at their usual ports of call depending on the facilities available and be motivated in their choice by the price of the repairs, including the use of docks, subject to positioning costs and the net loss of income while the ship is out of service (i.e. the opportunity cost of the repairs). Those considerations largely confine the market for repair work on commercial ships at Cape Town to regular callers, although research has shown that there is no correlation between the number of ships calling at a port and the demand for shiprepair at that port (Floor, 2014). This is obvious where the dimensions of the regular calling ships might exceed the dimensional capacities of the available drydocks, but the lack of correlation also applies when only ships capable of being drydocked at the port are taken into account. Nevertheless, the market for dry work on commercial ships at a port must be found among the ships calling at the port, unless the local shiprepairers have a sufficiently low cost to compete worldwide, which does not apply to the South African shiprepair industry. Generally, pricing by South African shiprepairers is below pricing in northern Europe and Scandinavia, the USA, the Mediterranean and Japan, above pricing in China, South Korea, Indonesia, Singapore and the Middle East, but on a par with pricing in the Baltic, Russia, Turkey and the Balkans depending on the fluctuations in the value of the Rand.

Ships that could be included in the target market for shiprepair in the Sturrock Drydock are calling containerships of Panamax size (approximate capacity: 3000 TEU), Handy size (2000 TEU) and feeder ships (500 – 1000 TEU), bulk carriers of Panamax size (60 000 to 80 000 dwt) and Handy size (40 000 to 60 000 dwt) and Panamax and small tankers (60 000 dwt). Unfortunately, Cape Town is not normally a terminal port for containerships, while the bulk carriers regularly loading and tankers offloading at the Port of Saldanha are mostly ULBC and VLCC and thus too big for repairs in the Sturrock Drydock.

The number and value of the assured contracts for commercial shiprepairs lost to Cape Town on account of the unavailability of capacity in the Sturrock Drydock (or the loss of potential income from the dock) is unknown. However, comparison between the number of commercial ships repaired annually in the Sturrock Dock and the number of ships calling regularly at the port of dimensions that could be accommodated in the dock for the requisite five-yearly surveys indicates that there is scope for raising its utilisation and thus the main research objective of this article.

3 Method

In the endeavour to assess whether the Port of Cape Town is an alternative shiprepair facility, secondary research was conducted. A two-step approach was used. In the first instance a method to calculate the capacity of the drydocks was introduced. In the second instance data revealing the utilisation of the drydocks and shiplift during the period 1996 to 2001 and 1996 to 2013 respectively were applied to assess the visibility of the Port of Cape Town as a shiprepair facility.

3.1 Capacity of drydocks

There is no accepted method of calculating either the physical capacity or the utilisation of a drydock, nor is there a standard unit in which capacity or utilisation should be expressed (Floor, 2013). Fees at Cape Town are charged according to the gross tonnage of a ship, which as a measure of volume can be related to the wetted volume of the dock that it occupies, but an allowance needs to be made for the working area around a ship in the dock and the gross tonnage of the ship above the waterline to enable a proper comparison. Ship length in comparison with the length of ship or ships that the dock can accommodate enables a more crude comparison, but ignores the critical factor of breadth that largely determines gross tonnage, the lack of which is the shortcoming of the Sturrock Drydock and, in fact, that of most of the older drydocks worldwide. For purposes of this article, the best estimate of the maximum capacity of the Sturrock Drydock (in order to gauge its income earning capacity) was to use the gross tonnage of the largest bulk carrier that could be accommodated in the dock multiplied by the quotient of 365 and the average repair time of such ship. The total gross tonnage of the ships accommodated in the dock in a year as a percentage of that maximum capacity then reflects the optimal capacity utilisation. As there is a minimum charge at present, the product of those gross tonnages and the average charge per tonne would not reflect the corresponding earnings efficiency without further adjustment.

However calculated, the average optimal utilisation of drydocks worldwide according to percentages quoted in annual reports is about 70%. A few quoted percentages are higher, but none exceed 75%. The average of 70% seems to be reasonable if the water time in a dock, time required for docking and undocking manoeuvres and waiting at the cill and the time for response to the notification of the

availability of the dock are taken into account. If the utilisation of the Sturrock Drydock for the repair of commercial ships can be increased substantially, some or all the repair of fishing vessels in the dock will be displaced. That need not cause problems, as the fleet of fishing vessels requiring repair at Cape Town is unlikely to grow and is more likely to decrease as a result of the depletion of fisheries and the more stringent enforcement of South Africa's rights to ensure the sustainability of the living resources in its Exclusive Economic Zone. The number of foreign trawlers using Cape Town as a base and its drydock facilities has thus decreased and is likely to continue to do so. It is also feasible to improve the utilisation of the Robinson Drydock and shiplift in order to accommodate the repair of the fishing vessels displaced from the Sturrock Drydock.

To summarise, the capacity of the drydocks were calculated by means of the following proposed formula:

$$\text{Dock utilisation} = \frac{\text{Actual dock utilisation}}{\text{Practical dock availability}} \quad (1)$$

Drydocks in many ports worldwide are regarded as durable public infrastructure and their use is priced at marginal cost in order to promote their utilisation and gain the socio-economic benefits stemming from the labour intensive nature of shiprepair (and shipbuilding). The scope for strategic pricing above marginal cost, including price discrimination, is thus removed and higher utilisation on the assumption of a price elastic demand is achievable only through subsidization of the marginal costs, which is economically untenable. The scope for increasing the utilisation of the shiprepair facilities at Cape Town by exploiting the price elasticity of the demand seems thus to be confined only to some of the capacity of the Sturrock Drydock. Most of the ships repaired at the Robinson Dock and virtually all the vessels repaired at the shiplift are fishing vessels. Some owners of fishing vessels undertake their own repair work and the prospects to increase outsourcing and expand the competitive market for such work are limited. That also applies to the market for the repair of fishing vessels in the Sturrock Dock, which comprised 104 (28%) of the 376 vessels repaired during the analysis period. Obviously, the dimensions of the dock would enable more lucrative shiprepair of commercial ships to be undertaken if the repair of fishing vessels could be displaced, despite the availability of the dock for common use.

3.2 Calculating the viability of the Port of Cape Town as a shiprepair facility

For purposes of this article the viability of the Port of Cape Town as a shiprepair facility was calculated by applying formula 1 to the data obtained from the Port of Cape Town's Dockmaster. The data that reveals the utilisation of the drydocks and shiplift during the period 1996 to 2001 and 1996 to 2013 respectively were scrutinised to ensure that results were valid; and outliers were accounted for. Data were also analysed to differentiate between types of vessels.

4 Results

The analysis of the utilisation of the drydocks shows the trend in percentages of occupation according to ship length in Figures 1-3. Unfortunately, no other measurement of ship size has consistently been recorded for the purpose of the calculations. These calculations are based on a formula in which the average maximum utilisation is 75% of the theoretical capacity utilisation over an annual period of 365 days. The percentage thus shows the occupation achieved of the practical maximum of 75%.

Figure 1. Trend in percentages of occupation of the Robinson Drydock

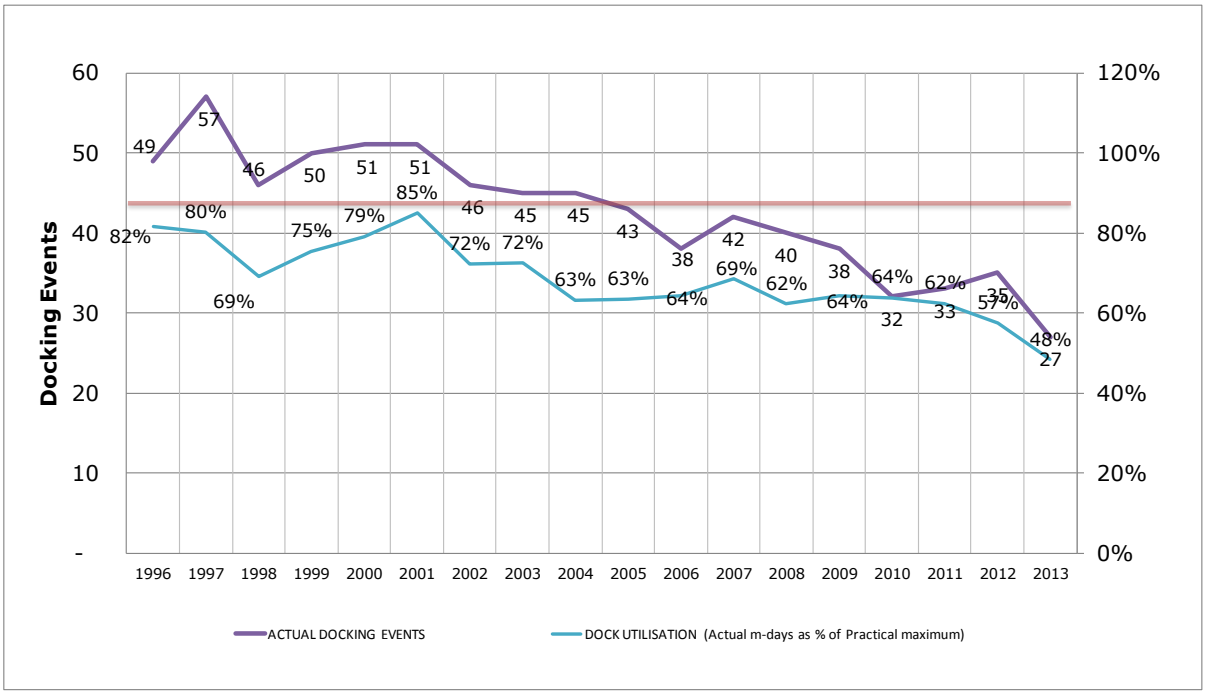


Figure 2. Trend in percentages of occupation of the Sturrock Drydock

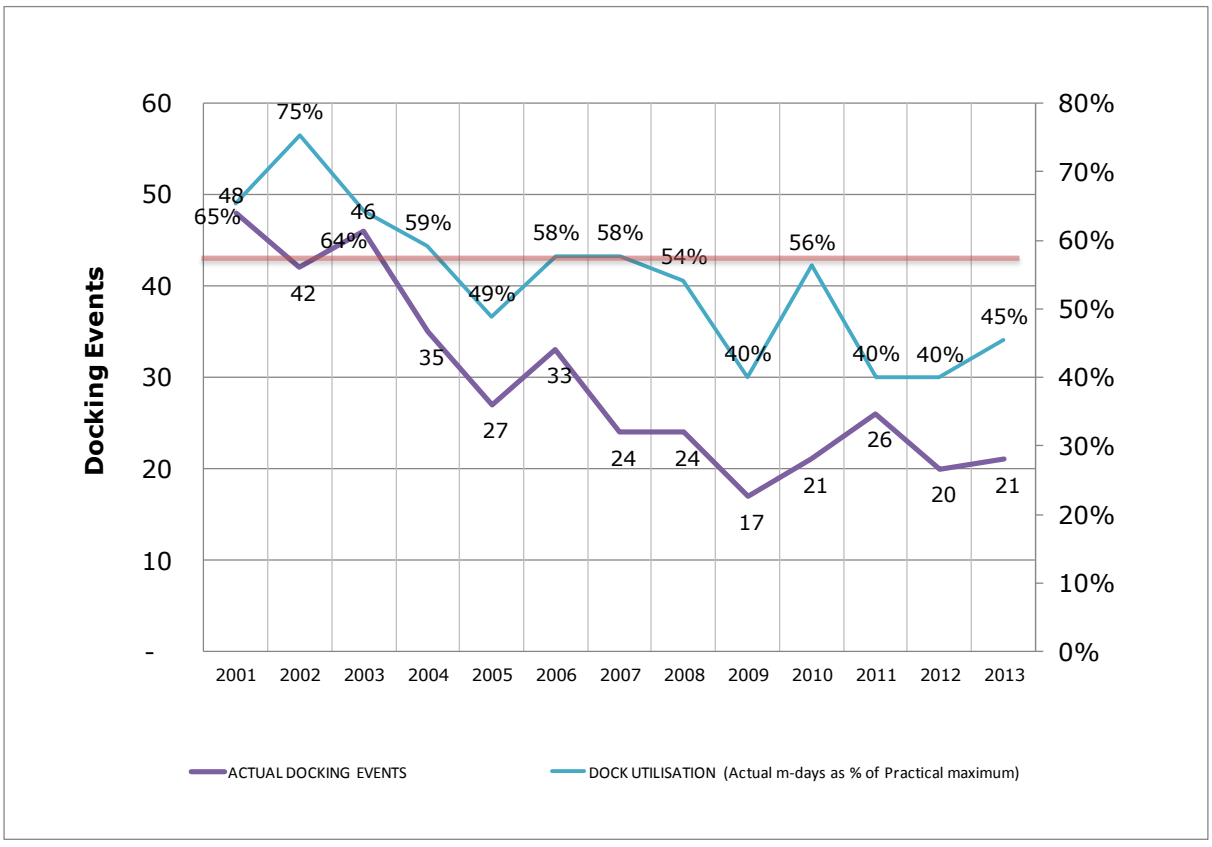
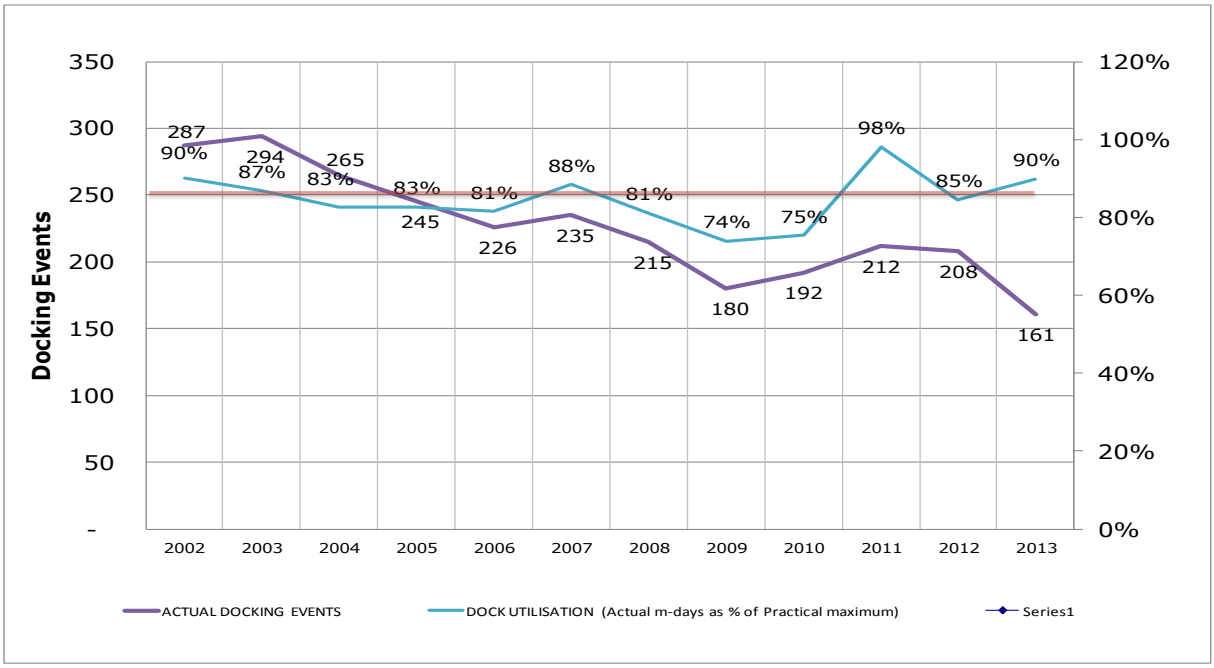


Figure 3. Trend in percentages of occupation of the synchrolift



The aforegoing figures show that spare capacity for more shiprepair work at the shiprepair facilities exists.

4.1 Fishing vessels

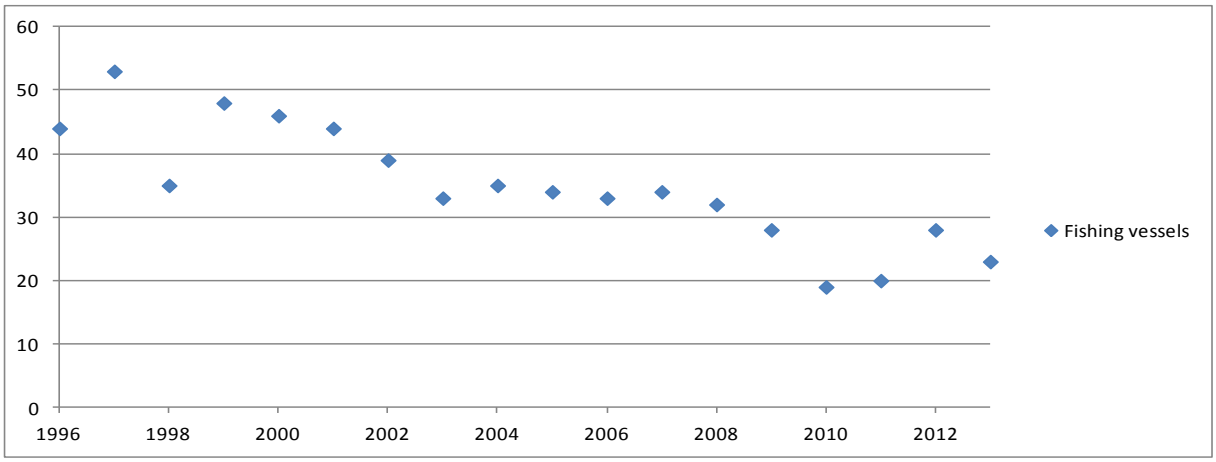
Table 1 shows, the number of South African fishing vessels entering the port during the past few years. Although the local vessels increased as foreign fishing activity decreased with the enforcement of South Africa's right to the living resources in its EEC in accordance with the UN Convention on the Law of the Sea (UNCLOS), depletion of the fishing stocks and conservation measures by the Government have brought a decline also in local fishing. While there is a cycle in the fisheries, it is unlikely that the number of fishing vessels operating from Cape Town and requiring the use of the shiprepair facilities will increase, while the more likely trend is downwards. There is also pressure on the owners of foreign fishing vessels by their governments to use home shiprepair facilities. No growth in that market is anticipated, but as ships might not be replaced and their use of the facilities will increase with aging, the demand is likely to remain steady for some time and then gradually decline. As fishing vessels repaired in the drydocks and on the shiplift during the analysis period constituted some 66.8 % of the total number, it is evident that more capacity for the docking of other vessels will eventually become available.

Table 1. Fishing vessels admitted to the Port of Cape Town: 2003 – 2013

Year	Foreign Fishing vessels	Local Fishing Vessels
	Number	Number
2003	1061	43
2004	855	97
2005	984	175
2006	757	124
2007	636	278
2008	568	255
2009	461	199
2010	77	126
2011	95	116
2012	95	128
2013	69	96

The effect of the reduction in fishing vessels operating from the port on the use of the repair facilities is evident in Figure 4.

Figure 4. Fishing vessels repaired in the Robinson Drydock, 1996-2013



The downward trend occurs also in the repair of other ships, which is evident in Figures 5 and 6 showing the total number of ships repaired in the Sturrock Drydock and shiplift respectively. Most of the downward trend in these graphs is caused by the trend in the repair of fishing vessels, but the repair of all vessels has declined.

Figure 5. Total vessels repaired in the Sturrock Drydock, 2001-2013

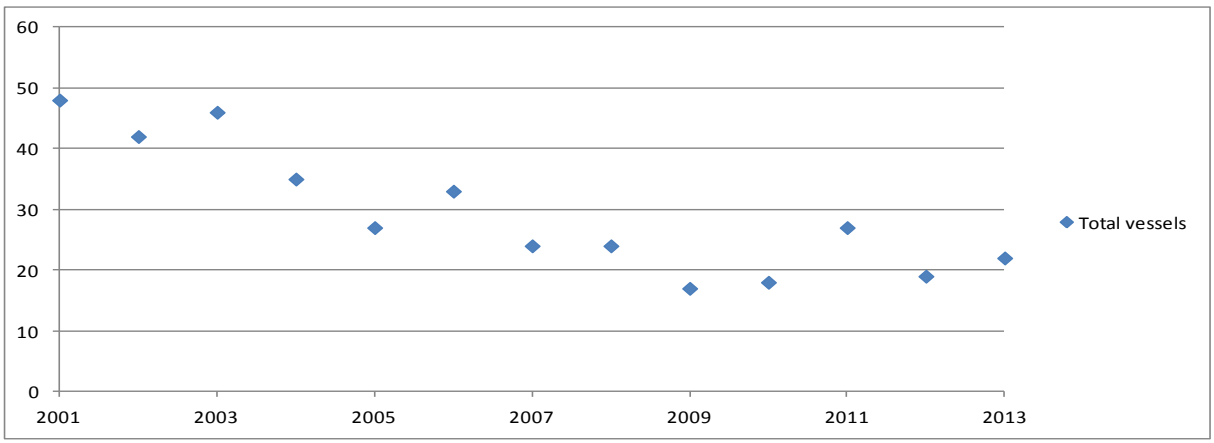
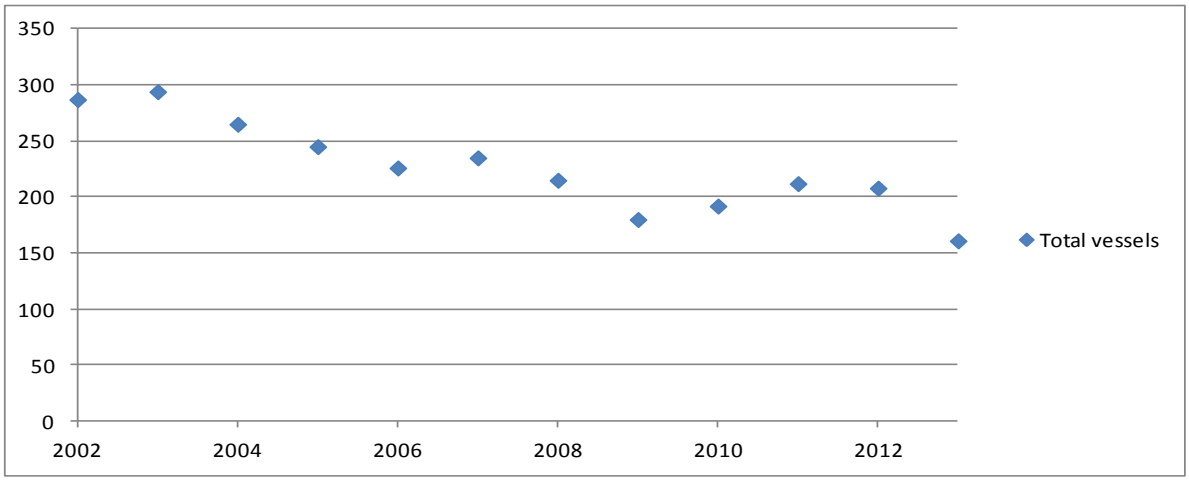


Figure 6. Total vessels repaired in the synchrolift, 2002-2013



4.2 Research ships and harbour craft

Maintenance of ships employed for research purposes constituted 3.33 % of the total number of ships repaired during the analysis period and that percentage is likely to increase slightly with the interest in South Africa's offshore resources, but the size of that segment of the market is not significant in the forecast of the demand for the use of the shiprepair facilities. That also applies to the repair of harbour craft, which comprised 11% of the ships repaired over the same period. As the need for the drydocking of research ships and harbour craft is usually pre-planned in accordance with maintenance programmes, their inclusion in the utilisation schedule of the drydocks can be arranged efficiently.

4.3 Oil and gas industry

The number of ships employed in the service of the oil and gas extraction industry that occupied the shiprepair facilities during the years comprised 2% of the total number. No doubt the repair of most of these ships was undertaken simultaneously with repair work on the rigs they service. As the prospects for the latter shiprepair work is not a topic that can be considered within the scope of this report, the demand in the future for the use of the drydocks for the repair of such service ships cannot readily be projected, but it is also unlikely to be significant on its own.

4.4 Types of ships

In Tables 2-4, the total numbers of ships that were accommodated in the drydocks and on the shiplift annually during the period 1996/2001 to 2013 according to the purpose of use of the ships are shown. Figures 7-9 show a graphic representation of the docking events by vessel type for the Robinson Dock, Sturrock Dock and the shiplift respectively.

Table 2. Analysis of the utilisation of the Robinson Dock in the Port of Cape Town: 1996 to 2013

Year	Fishing Vessel	Tug	Offshore Mining Vessel	Research Ship	General / Other	Tanker	Passenger / Cargo	TOTAL
1996	44	0	2	1	2	0	0	49
1997	53	1	2	1	0	0	0	57
1998	35	6	1	3	0	1	0	46
1999	48	1	0	1	0	0	0	50
2000	46	5	0	0	0	0	0	51
2001	44	6	0	1	0	0	0	51
2002	39	4	0	1	1	0	1	46
2003	33	10	1	1	0	0	0	45
2004	35	9	1	0	0	0	0	45
2005	34	7	1	0	0	0	1	43
2006	33	3	1	1	0	0	0	38
2007	34	4	0	3	0	0	1	42
2008	32	6	0	1	0	0	1	40
2009	28	7	0	1	0	0	2	38
2010	20	9	0	3	0	0	0	32
2011	23	8	0	1	1	0	0	33
2012	28	5	0	0	2	0	0	35
2013	19	5	0	2	1	0	0	27
	628	**96**	**9**	**21**	**7**	**1**	**6**	**768**
	81.8%	**12.5%**	**1.2%**	**2.7%**	**0.9%**	**0.1%**	**0.8%**	

Figure 7. Robinson Dry Dock: Docking events by Vessel Type, 1996-2013

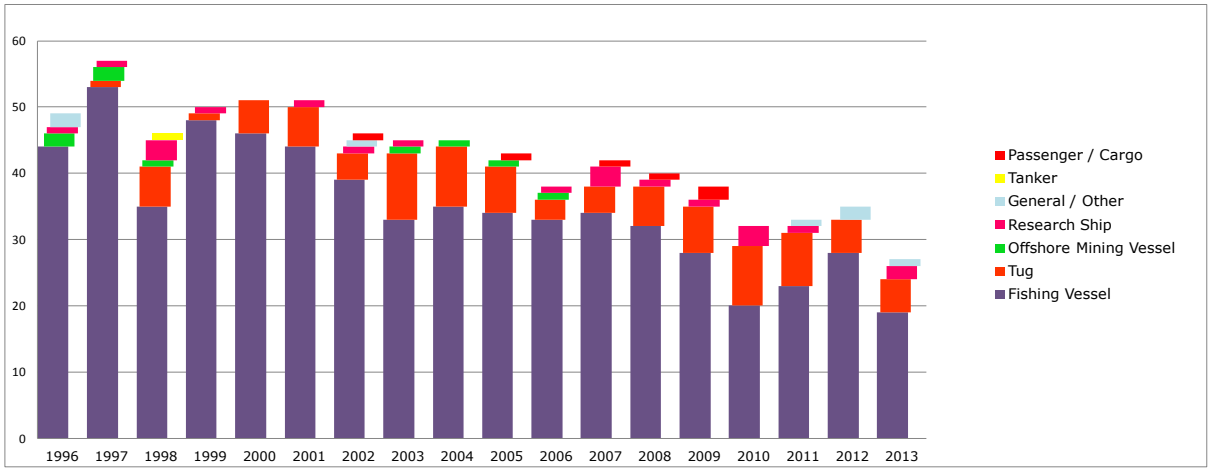


Table 3. Analysis of the utilisation of the Sturrock Dock in the Port of Cape Town: 2001 to 2013

Year	Fishing Vessel	Tug	Cargo Ship	Offshore Mining Vessel	Research Ship	Offshore Oil Support Vessel	Crane Barge	Passenger Ship	Tanker	Other	Total Vessels
2001	15	11	7	5	3	0	1	1	2	3	48
2002	16	12	6	4	1	1	1	0	0	1	42
2003	10	13	11	8	1	2	1	0	0	0	46
2004	8	7	6	5	3	1	0	2	1	2	35
2005	7	5	4	3	2	1	2	0	1	2	27
2006	6	1	6	8	3	1	1	1	2	4	33
2007	6	3	5	6	0	1	0	0	0	3	24
2008	9	1	2	2	1	1	1	2	0	5	24
2009	4	0	0	5	2	3	1	1	0	1	17
2010	6	0	0	4	1	3	0	1	0	0	15
2011	5	2	4	4	8	2	0	0	0	0	25
2012	7	2	1	1	1	6	0	1	0	0	19
2013	5	7	1	3	2	2	0	1	0	0	21
	104	**64**	**53**	**58**	**28**	**24**	**8**	**10**	**6**	**21**	**376**
	28%	**17%**	**14%**	**15%**	**7%**	**6%**	**2%**	**3%**	**2%**	**6%**	

Figure 8. Sturrock Dry Dock: Docking events by Vessel Type, 2001-2013

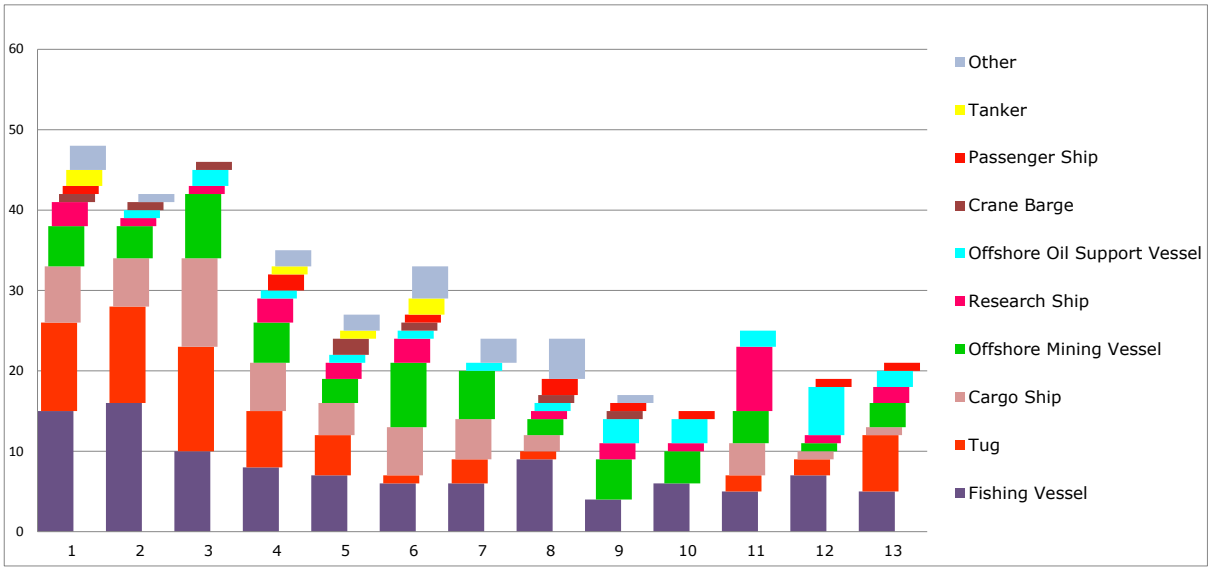
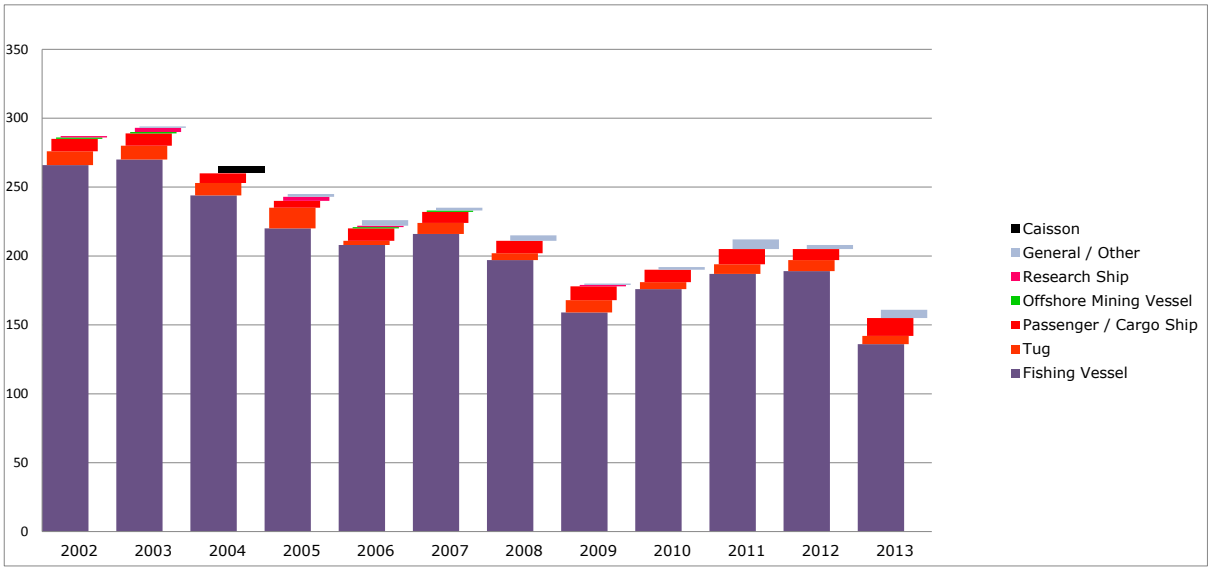


Table 4. Analysis of the utilisation of the Synchrolift in the Port of Cape Town: 2001 to 2013

	Fishing Vessel	Tug	Passenger / Cargo Ship	Offshore Mining Vessel	Research Ship	General / Other	Caisson	TOTAL
2002	266	10	9	1	1	0	0	287
2003	270	10	9	1	3	1	0	294
2004	244	9	7	0	0	0	5	265
2005	220	15	5	0	3	2	0	245
2006	208	3	9	1	1	4	0	226
2007	216	8	8	1	0	2	0	235
2008	197	5	9	0	0	4	0	215
2009	159	9	10	0	1	1	0	180
2010	176	5	9	0	0	2	0	192
2011	187	7	11	0	0	7	0	212
2012	189	8	8	0	0	3	0	208
2013	136	6	13	0	0	6	0	161
	2468	**95**	**107**	**4**	**9**	**32**	**5**	**2720**
	90.7%	**3.5%**	**3.9%**	**0.1%**	**0.3%**	**1.2%**	**0.2%**	

Figure 9. Synchrolift: Docking events by Vessel Type, 2002-2013



4.5 Socio-economic spin-offs per market segment

The shiprepair industry creates substantial employment and is labour-intensive once the infrastructure needed for drydocking is in place. As that infrastructure has an exceedingly long physical life at comparatively low maintenance costs, the marginal costs of operation are also low and the economic costs of shiprepair thus comprise largely the opportunity costs of the labour required and, to a lesser extent, the opportunity costs of the material and equipment inputs. As the shiprepair industry is also a net earner of foreign exchange, it is especially an industry with substantial economic advantages for the local (and national) economy.

The operation of the drydock facilities also results in direct economic benefits in terms of salaries and wages as well as in induced benefits through the multiplier effects as a consequence of the spending of the salaries and wages. In addition, the shiprepair facilities enable the direct economic benefits from the salaries and wages generated by shiprepair and the induced benefits as a consequence of further spending.

Furthermore, the employment in the industry involves a variety of vocations spread throughout firms concerned with marine, mechanical and electrical engineering, ship design and architecture, electronics, hydraulics, refrigeration, air-conditioning, welding, cleaning, painting, firefighting and many other tasks. Supplies required by the industry include steel, fastenings, paint, equipment of many kinds and various types of materials. The type of employment and variety of supplies needed results in the diffusion of the economic benefits throughout the local economy and creates opportunities for participation in the benefits among small and medium as well as large enterprises. Shiprepair is consequently an industry which lends itself to black economic empowerment at the levels most needed in South Africa

The shiprepair industry is also an export industry that earns net foreign exchange notwithstanding the import of some equipment and materials. The effect on the balance of payments of shiprepair is invariably favourable in contrast to shipbuilding.

5 Conclusions

The conclusions derived from the aforegoing brief survey of the market for the use of the drydocks and the shiplift in the Port at Cape Town are the following:

- That the demand for the use of the facilities comes predominantly from the fishing industry and that such demand is unlikely to increase in the near future and will eventually decline;
- That the demand for the dry docking of harbour craft and research ships, which is a small proportion of the overall demand, will continue as before and might increase slightly;
- That it is unlikely that much or any income otherwise forthcoming for the shiprepair facilities is lost because of the lack of capacity to accommodate fishing vessels, harbour craft and research ships, comprising more 90% of the ships or vessels currently using the facilities, and that better methods of allocating space to increase the income will succeed only if the shiprepairers can gain more business in the merchant shipping and offshore mining sectors;
- That the use of the facilities for repairing craft employed in the offshore mining industry is also a small proportion of the overall use and will depend in the future on the ability of the shiprepairers in the port to attract more business from that industry, although competition from better-located shiprepairers is likely to increase;
- That the main prospects for raising the income from the shiprepair facilities must be sought in the

market for the repair of merchant ships, but although Cape Town is well-equipped to undertake the routine servicing of Panamax and smaller ships, it is neither the home nor terminal port for such shipping, which is the main determinant of the choice of port by shipowners for routine maintenance and class inspections;

- That Cape Town is well-located for the opportunistic repair of ships damaged in rough seas off the south and west coasts, but that effective marketing of the drydocks and their efficient use often precludes their availability for that purpose;
- That the overall prospects for raising the income from the shiprepair facilities depend upon the marketing of repair services for the routine or regular maintenance of merchant ships, rather than specific marketing of the availability of the shiprepair facilities;
- That the current demand for the use of the shiprepair facilities is likely to continue for the foreseeable future, subject to cyclical fluctuations;
- That a larger drydock is required in order to compete for the shiprepair of the Cape size and larger ships calling at Saldanha, but that the low cost repairers in the Middle East (for tankers) and China and Vietnam (for ore carriers) are more likely to secure that market.

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