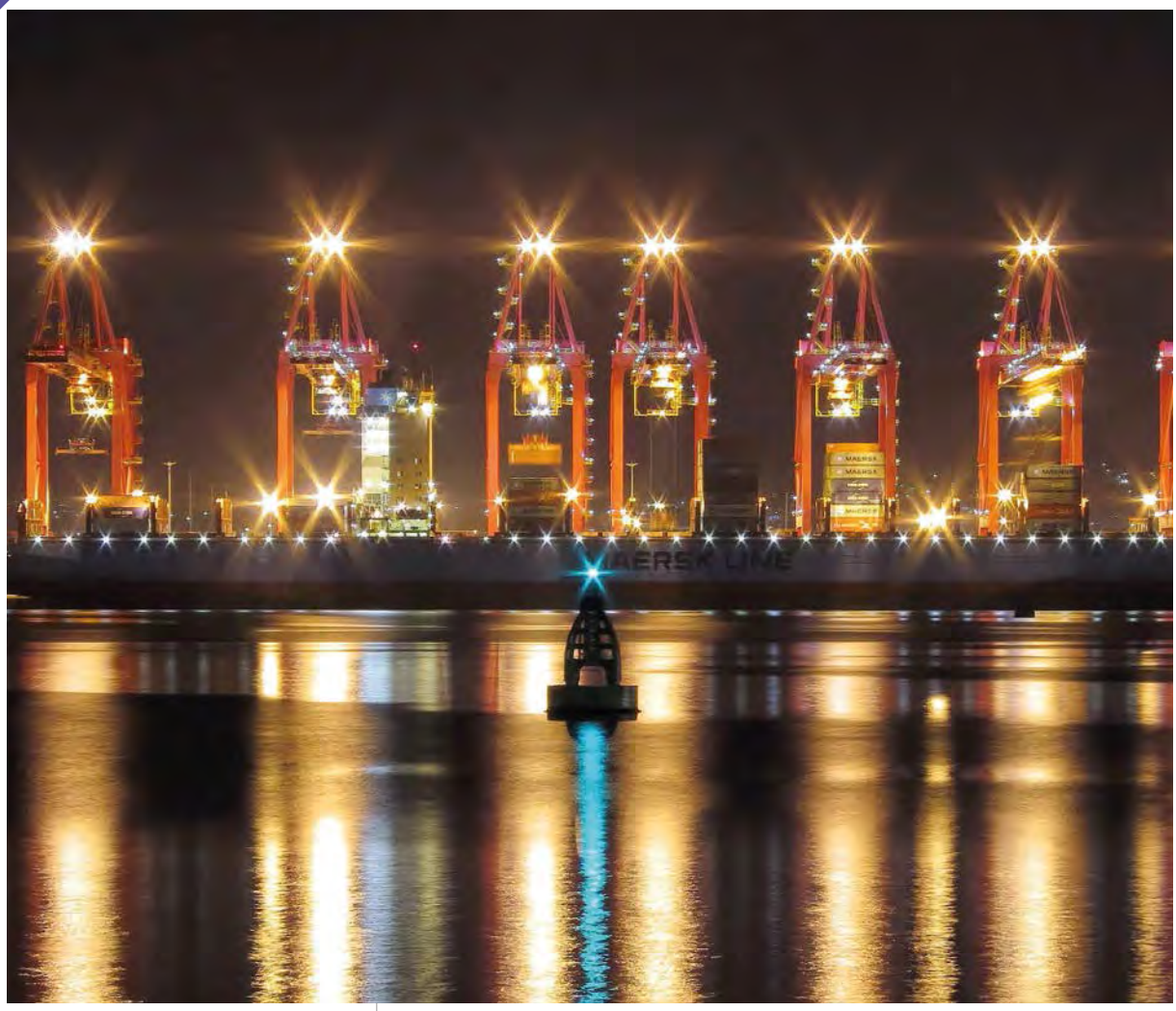
PORTS REGULATOR OF SOUTH AFRICA

Ports Regulator Selected Research Reports

Published 2015/16 to 2018/19



Night view of the Port of Durban from the harbour.

COVER PHOTO: The SA Agulhas Training Vessel berthed at the Port of Cape Town.

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Foreword

In order to regulate the development of South Africa's port infrastructure, services and facilities falling under the jurisdiction of the National Ports Authority as port landlord, an independent Ports Regulator was established by section 29 of the National Ports Act, 12 of 2005.

The statutory function of the Ports Regulator includes the exercise of economic regulation over South Africa's commercial ports in a manner that balances the needs for infrastructure provision and maintenance by the National Ports Authority, and the best interests of port users, who require affordable tariffs and efficient services.

The Ports Regulator strives to attain this balance, through our regulatory framework which sets out how tariffs are determined, as well as how tariff reform will take place, progressively realising port tariffs ultimately reflective of the cost of infrastructure used, and reflective of the shared benefits derived by port users in using the various port infrastructure, services, and facilities. It is however not a static balance, and needs to take into account the continuous development of port infrastructure to meet current and future demand, as well as the sustainability of a growing National Ports Authority, together with fair and affordable pricing for port users, as key considerations in achieving such balanced tariff decisions. The key pillars of the regulatory framework, are the Ports Regulator's Multi-Year Tariff Methodology and Tariff Strategy, amongst others, which have been published in a separate document entitled "Ports Regulator Framework Documents: 2015/16 to 2018/19.

Key to making informed tariff decisions as well as the development of economic regulatory initiatives and interventions, within our evolving regulatory framework, has been the Ports Regulator's own research conducted on comparative global port pricing, appraisal of our country's port capacity, comparative port performance and efficiency as well as the structure and equity of access in our port industry. This compendium thus brings together some of the key Ports Regulator Research Reports published from 2015/16 to 2018/19. They comprise:

The Port Benchmarking Report SA Terminals 2015/16 which compares our port efficiencies to a sample of global ports in handling times and a number of other port performance measures.

The South African Port Capacity and Utilisation Report 2015/16 which analyses utilisation of our port infrastructure and spare capacity remaining in the port system.

The Port Sector Review 2015/16 which provides an overview of our port system giving a description of our various ports, their facilities, finances, capacities and utilisation as well as challenges.

The Global Port Pricing Comparator Study (GPCS) 2018/19 which compares South African ports' prices to similar prices from a sample of ports around the world taken on 1 April every year for six years.

The Equity of Access in South African Ports 2019 which analyses B-BBEE implementation by companies in our port system and analyses the extent of transformation in the various categories that make up the structure of the ports industry in South Africa.

These studies, whilst themselves not a part of the pricing methodology and therefore not intrinsic to the price setting mechanism, have been invaluable in addressing the challenge of information asymmetry which affects our work and regulators generally. They have assisted us in making informed higher–level decisions such as identifying the need for a long term Tariff Strategy as well as, for example, the need to introduce a performance incentive (called WEGO) within the Tariff Methodology, amongst others.

The Ports Regulator continues to aim to reduce the cost of living as well as the cost of doing business in South Africa and the research and resulting decisions of the Regulator have culminated in significantly lower approved tariffs over the period of regulation, whilst maintaining the continued sustainability of the National Ports Authority. The many studies have thus been valuable in the effort to reduce port administered prices in South Africa, which is in turn vital to the future achievement of the ideals of the National Development Plan and the shared economic success of our nation.

Mahesh Fakir
Chief Executive Officer
Ports Regulator of South Africa

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"...in the absence of an economic regulator over the ports sector (i.e. prior to 2009 when the Regulator was established) as well as lack of competition within/between South Africa's ports there was little incentive to improve the productivity levels in the ports, maintain the infrastructure to the required standards, invest in sufficient additional infrastructure or update the technology used in the ports." (TIPS, 2014:5).

Benchmarking Efficiency of Ports in South Africa

Introduction

With over 90% of trade facilitated through ports (imports/exports), South African ports play a critical role in fulfilling the country's social and economic development objectives. This was recognised in the National Commercial Ports Policy (2002:07) which articulated a vision for South African ports based on the role they play, espousing that

> *"The basis for pursuing a national commercial ports policy is the recognition that trade, distribution, transport and logistics are among the vital facets of the South African economy and should play a crucial role in the realisation of sustainable economic development... ...ports are integrated and crucial nodal points in a transport system and play a strategic role in the country's economic growth and social development."*

It is an accepted fact that the exclusive ownership and management of South African commercial ports by the National Ports Authority (the Authority) in line with provisions of the National Ports Act of 2005 as envisioned in the National Commercial Ports Policy of 2002 created a monopoly. By definition, when monopolies are unregulated it may result in inefficient outcomes and recognising the need to address such, many of government's economic policy and strategies that have ports as an integral part of the development process or outcome, have at some time or the other decried the inefficiencies of South African ports.

One of the constant and recurring themes coming out of the Regulator's stakeholder engagement and consultations is the cry about inefficiencies in South African ports which are said to affect the country's trade and thus its competitiveness. Except for a preoccupation with Gross Crane Moves(GCM) per hour and complaints about vessels spending too long at anchorage and even at berth, the quantification of the problem reveals a serious dearth in documentation of the magnitude of the problem. From the perspective of shipping lines, GCM has limited value in assessing port efficiency as they are far more interested in Ship Working Hours (SWH) and total port turnaround time.

Accordingly attempts to address the problem through the setting up of Key Performance Indicator (KPI) sub-committees within the Port Consultative Committee (PCC) structures within each port as well as the recently introduced Terminal Operator Performance Standards (TOPS) and related processes for marine, road and rail, have experienced challenges in setting performance standards based on clear efficiency targets. In part this reflects a policy approach which was premised on the introduction of competition in the terminal operator environment, and that competition would address efficiencies in the system. However, with container and automotive terminals being almost exclusively operated by one terminal operator (TPT), together with licences for other terminals which are viewed as precluding competition, thus making the quantification, measurement and pursuit of efficiency even more important.

Port efficiency can be measured in three key areas, i.e. pricing, operational and infrastructure use. On pricing efficiency, the Regulator has conducted research over the past four years that tracks trends in

pricing efficiencies in South African terminals against global peers. (See Global Port Pricing Comparator Study http://www.portsregulator.org/images/documents/Port-Tariffs-Benchmarking-Report-2014-15.pdf).

The first five year port review due for publication begins to analyse financial performance of the various ports, further enhancing understanding of how efficient SA terminals are from a pricing perspective. The port pricing reform processes of the Regulator which has focused on changes in the tariff methodology, tariff strategy and the valuation of the Regulatory Asset Base (RAB) represents a systematic process of addressing pricing efficiency concerns in SA commercial ports. These processes are ongoing and entail significant consultations with all stakeholders to ensure that their inputs are considered in effecting lasting and sustainable changes towards efficient port pricing for South Africa. The two other areas is what this report focuses on i.e. operational efficiency and efficient use of infrastructure.

Objective(s)

In terms of Section 30 (2) (f) of the National Ports Acts, 12 of 2005 (the Act), the Ports Regulator of South Africa (the Regulator) has been mandated to "regulate the provision of adequate, affordable and efficient port services and facilities". In line with this provision, the Regulator places great importance on port performance. An objective of this study is to monitor the performance improvement strategies adopted by the Authority and whether the desired outcomes are starting to be produced.

Methodology

For the purposes of this benchmarking exercise, the Regulator selected seventeen ports from amongst fifty of the global, best performing 2014 twenty-foot equivalent unit (TEU) container ports (as published in the Top 100 Container Terminals by Lloyds List, London). The container terminals in the Ports of Durban, Ngqura, Cape Town and Port Elizabeth will be benchmarked against the chosen ports. Information on the chosen ports were publicly available and additional information was obtainable from the relevant port authorities.

We have selected four input variables namely; length of berths (running metres of quay), terminal area, number of cranes, and average working hours, and one output variable, throughput in calculating productivity, which is in turn used as criteria for evaluating the efficiency of ports.

Limitations

Although the study was carefully prepared, there are both limitations and shortcomings of the study. Firstly, the study solely relies on publicly available information and it is not confirmed whether the presented information deviates from what is happening at these ports. Significant port developments might have possibly occurred in some of the ports used in the study e.g. additional cranes may have been bought or terminals may have been widened; the Regulator may not yet be aware of these developments or public information may not be updated timeously. Secondly because the information is aggregated, the nuances that may apply to a terminal may be lost.

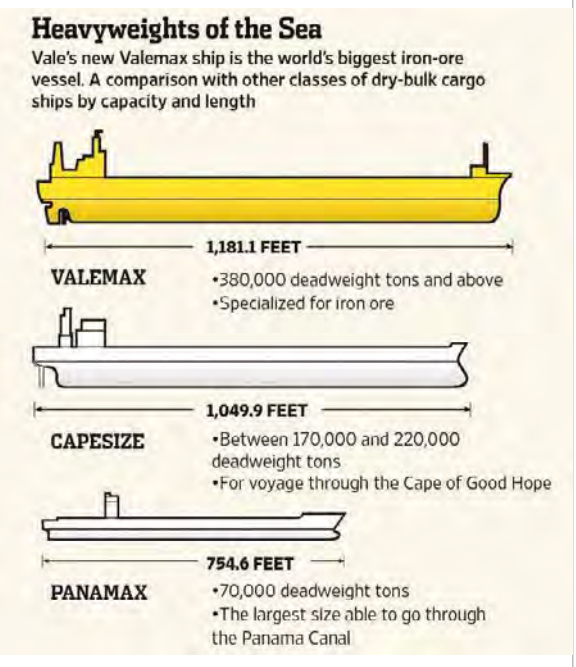
Cranes working over a ship.

Thirdly, since the study relied greatly on publicly available information and these terminals tend to be privately owned or operated, some of the port infrastructure information required was not available further defining a narrow sample. An earlier version of the study (2014/15) covered the big terminals i.e. terminals handling significantly high numbers of TEUs per annum. With the exception of Shanghai included as a benchmark on throughput, the sample only includes terminals with throughput of below 10 million TEUs per annum; in order that SA ports are compared to similar sized global ports.

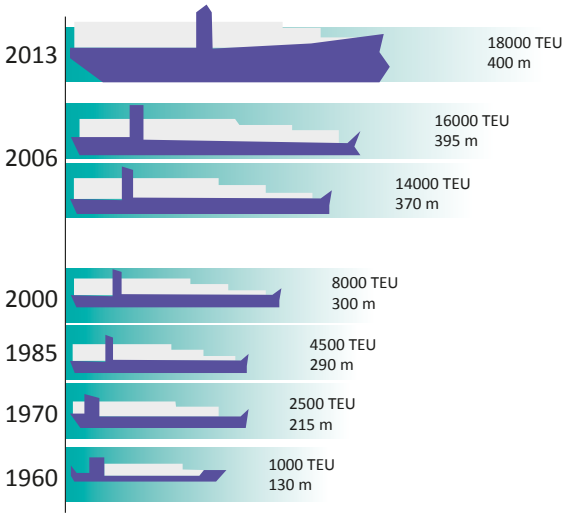
Brief Overview

Operational efficiencies of terminals have been studied and measured from different vantage points since the early '70s in response to the need for improved productivity in developing country ports as they integrated into the global logistics and supply chains, on the one hand. On the other, the focus on productivity and efficiency has been driven by the fact that ports are key nodal points in the global supply chain that in turn has pursued cost cutting measures in pursuit of lower transportation costs as part of tradable GDP and profit margins.

This is evidenced by the growth in the size of vessels in the global container merchant fleet with the largest container vessels now carrying 18 000 TEUs from 1 000 TEU in the 1960's. The largest RORO vessel now carry 8 500 cars. In the bulk sector, the largest vessels are generally in the range of 180 000 deadweight tons (DWT). Although there are very large ore carriers of more than 300 000 DWT specialising in transportation of iron ore, these call at specific ports. An example of this is the Brazilian Vale Bulker which was commissioned in 2011. With a draught of 23m when fully loaded with iron ore , the Valemax is limited to call only several ports in Brazil, China and Europe (Sohar in Oman, Dalian in China, Ōita in Japan, Rotterdam and the trans-shipment hub Vale at the Subic Bay, Philippines)



Source: http://www.vesseltracking.net/wp-content/uploads/2013/10/MS-Vale-Brasil-Comparison.jpg



The drive for larger vessels has been the need for increased economies of scale and cost reduction, and/or the various consortium or vessel sharing arrangements that now dominate in the container liner service. The bigger vessels have an impact on the infrastructure and operational systems in a port that translate, overall, in levels of port

efficiency. For ports which are outside of the major trading routes, as are South African ports, such impacts are often cascaded later on in the global trade cycle, so that there may currently be less concerns about 18 000 TEU vessel. With the immediate concern being that ports like Durban and some South American ports may see vessels that are too large for the sea trade densities in their related trades and they are therefore required to improve the efficient handling of current and larger vessel sizes in the near future. Moves per ship working hour or across the ship rate as a measure of berth productivity; ship turnaround times for vessels, as well as cargo dwell times are the three main performance areas that are looked at in benchmarking SA terminal's performance. Efficient use of infrastructure is discussed through investigating scale efficiencies in terminals.

With most literature on efficiency focusing on different aspects of the transport logistics and port component in global trade and competition, Merk and Dang's (2012) recent work for the Organisation for Economic and Co-operation and Development (OECD) very usefully, assesses not only efficiency in container terminals which the bulk of studies do, but also oil, coal, ores and grain. Secondly, the study also investigates and extensively reports on scale inefficiencies which in essence links overall efficiency of a terminal with "scale of production" i.e. whether the use of design infrastructure is optimal or not. Alongside other methodologies, the Data Envelopment Analysis makes it possible to define efficiency frontiers for terminals based on defined parameters (e.g. infrastructure and volumes) that terminals are expected to perform at or strive towards which can be very useful when its limitations are addressed, which is the case in the OECD work.

With a regulatory framework that is focused directly on infrastructure regulation and to a lesser and indirect extent on terminal operations, coupled with a tariff methodology that incentivises investment in infrastructure, the determination of scale efficiency becomes a useful tool in determining the productive use of infrastructure based on improved efficiencies and the levels at which further capacity would be required.

The benchmarking of SA terminals by the Regulator is not intended to provide details, on a case by case basis, of best-case in port operations in container, automotive, liquid bulk, break bulk and dry bulk, which the Authority would then emulate. It is rather pitched at a strategic level where comparisons are made, qualitatively and quantitatively, between South African port performance and those considered to be doing well in the various key performance measures and indicators. Given the collective deficiency in determining and setting of composite measures and targets for South African terminals beyond the 35 Gross Crane Moves per hour in the Presidency 2014 – 2019 Medium Term Strategic Framework, this report alongside other processes of the Regulator (possible review of the tariff methodology to include productivity/efficiency promotion) and the Port Consultative Committees (KPIs subcommittees), the Department of Public Enterprises Shareholder Compact measures, and measures to be enforced through operator licences (terminal, marine, road and rail) intends to start a process to address this, with inputs from industry players.

The bulk of the work was done through analysis of secondary data from the Journal of Commerce (JOC), the OECD, and Lloyd's list. South

Night view of the Port of Durban.

African terminal performance measures were determined through the Regulator's own calculations and/or use of information from both the Authority and Transnet Port Terminals (TPT) components in Transnet's Annual Reports (2008/09 through to 2014/15). These together with other sources of information are referenced accordingly in the paper. Port performance matters the most on a regional basis where there is a real possibility that cargo can move to a competing, more efficient port.

Table 1: **Ports Called by the Majority of Vessels Calling at South African Terminals, 2013/14**

Containers	Dry Bulk	Break bulk	Automotive	Liquid Bulk
Singapore	Singapore	Singapore	Maputo	Singapore
Port Kelang	Indian Ports	Maputo	Singapore	Beira
Port Louis/Mauri-tius	Chinese Ports	Walvis Bay	Luanda	Walvis Bay
Santos	Maputo	Luanda	Fremantle - WA	Maputo
Pointe Noire	Mundra	Dar-Es-Salaam	Southampton	Fujairah
Walvis Bay	Rotterdam	Beira	Indian Ports	Port Louis/Mauri-tius
Las Palmas	Mombasa	Abbot Point	Walvis Bay	Sikka
Maputo	Qingdao	Mombasa	Dar-Es-Salaam	Indian Ports
Lomé	Karachi	Indian Ports	Mombasa	Indonesian ports
Luanda	Port Louis/Mau-ritius	Lagos	Vigo	Mombasa

Table 1 captures regional and international ports visited by vessels that have also called in SA terminals for handling of respective commodities; containers, dry bulk, break bulk, ROROs and liquid bulks. It represents a collection of the most common 'last' and 'next' ports of call of vessels calling at SA ports. This shows an emerging pattern based on reported port call by vessel, and not necessarily competing ports for SA terminals. The container handling ports such as Maputo and Port Louis may become competition for SA ports in the future, whilst as 'hub' ports Salalah, Singapore and Kelang are currently competing ports. The rest, although visited by vessels calling in SA, are not considered as competition at this stage.

The ports reflected in green are international ports that are called at by vessels visiting SA terminals, while the ones in orange are regional ports. The international ports on the list are mainly from the Far East and South Asia regions; of particular interest in this group of ports is the Port of Singapore. It is well known that the main trading partner of South Africa in Asia or in fact the entire world is China, but the last and next ports of call results do not clearly reflect this. The reason for this is that Singapore is geographically well placed for transhipment by ships sailing between South Africa and China. Notably, the port of Singapore is the main transhipment port for cargo going to Malaysia, Japan, Korea and even Australia and New Zealand. Liner (container) services vessels call at dominant intermediate hub ports like Singapore, Kelang, and Tangjung Pelepas.

Port developments in the following ports in Sub-Saharan Africa are worth following as these represent ports that share direct vessel

routes with SA terminals. Through the high level of proximity to South African ports, Walvis Bay, Maputo and Beira are ports that are direct competitors (geographically positioned for hinterland traffic). The level of substitutability (specifically investment in infrastructure and superstructure, operational efficiency, and the cost of deviating) between ports at or around these locations will decide the amount of competition between ports. Over and above hinterland traffic, ports may also compete for transhipment traffic; in such a situation larger vessels use the port to transfer cargo to smaller feeder vessels. Where ports compete for transhipment traffic; the relevant geographic market is expected to be wider than in the case where ports contend for hinterland traffic only. This then expands the range of competitor ports for consideration. This study does not capture the performance data of all the ports in the table on the Southern African region at this stage. It is envisaged that future studies will include them as part of benchmarking SA ports.

Operational Efficiency

With maritime trade characterized by an unrelenting pursuit of lower costs - from containerisation to vessel-sharing-arrangements of shipping lines and the building of ever bigger vessels - to compete effectively in the global supply chains, port/terminals must reduce transport times because the competition is such that delays and uncertainty in the handling of inventory can prevent particular player's integration into or participation in the global supply networks. Cargo dwell times at terminal (time and cost implications on inventory), vessel time at anchorage (an indicator of congestion at port), ship turnaround times, crane moves per hour (for container terminals) or loading and unloading rates (automotive) and cargo handling rates (bulk cargo) are important indicators of port efficiencies. Addressing a port or terminal's performance on these indicators has influence on both port cost and capacity making these an area of concern and focus for the Regulator. Other measures which include hinterland operations and connectivity with rail and road are yet to be investigated and documented to enable comparisons. The Authority's rail operator's and road operator's performance standards process will provide the first indication of how ports are perceived to be performing on these, notwithstanding anecdotal evidence from industry and local governments on some of these.

The aspects of maritime operations that are generally considered in measuring port performance and efficiency are:

- Berth productivity measured in moves or volumes per ship working hour also known as across the ship rate
- Cargo dwell times
- Crane moves per hour
- Ship turnaround times
- Time spent at anchorage

This brief benchmark report compares the performance of SA terminals on these indicators against global best performers as well as some of those visited by vessels also calling at SA terminals.

The SA Agulhas in Princess Elizabeth Dry dock at the Port of East London.

This benchmarking exercise faced data challenges i.e. the inability of the Regulator to acquire full data-sets with information about relevant ports against which SA terminals can be benchmarked which information is not always readily and publicly available, due to the relatively high cost of such data sets. The Journal of Commerce's (JOC) data for one region would cost more than R300 000. Drewry's Maritime Research and publication on container terminal capacity and performance benchmarks was also similarly unaffordable, yet collectively, they could provide primary data that would significantly enhance the research conducted by the Regulator. These data sets are a practical option where the Regulator, though it may acquire information from shipping lines and other key players operating in South African ports and terminals, would be challenged in extending its reach beyond most local players which is a considerable limitation in this global industry. An additional challenge would be in ensuring credibility of acquired data which may carry some self-reporting bias and thus impose a burden for independent verification.

The acquisition of data from these and similar sources, remains a practical option if the Regulator is to effectively drive an agenda for improving efficiencies in SA ports. It is anticipated that in the near future these challenges will be overcome. The second challenge has to do with conducting benchmarking of SA port performance mainly on a desktop basis. It is anticipated that observation and engagements with phenomena discussed in the various ports, at home and abroad, would be beneficial in bringing realism to the benchmarking exercise. This challenge will be addressed through engagements and consultations locally with port stakeholders who experience the service levels discussed, with terminals operators in the SA system as well as other regional and or international ports.

Comparing Volumes and Utilisation of Container Terminals

Figure 1 shows the total throughput in (TEUs) moved by each port in the sample in the 2014 year. SA ports are all below the average; which means our ports are small compared to some of the other ports in the sample, from a throughput perspective.

Figure 1: **Port Container Throughput in 2014**

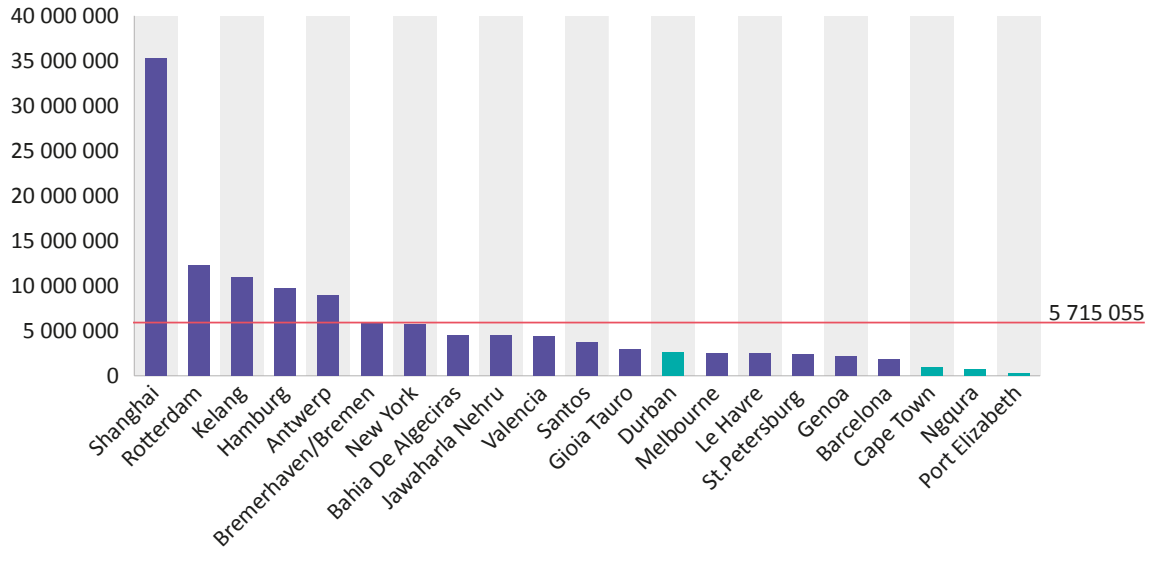


Figure 2: **TEU/Container Terminal Square Metre**

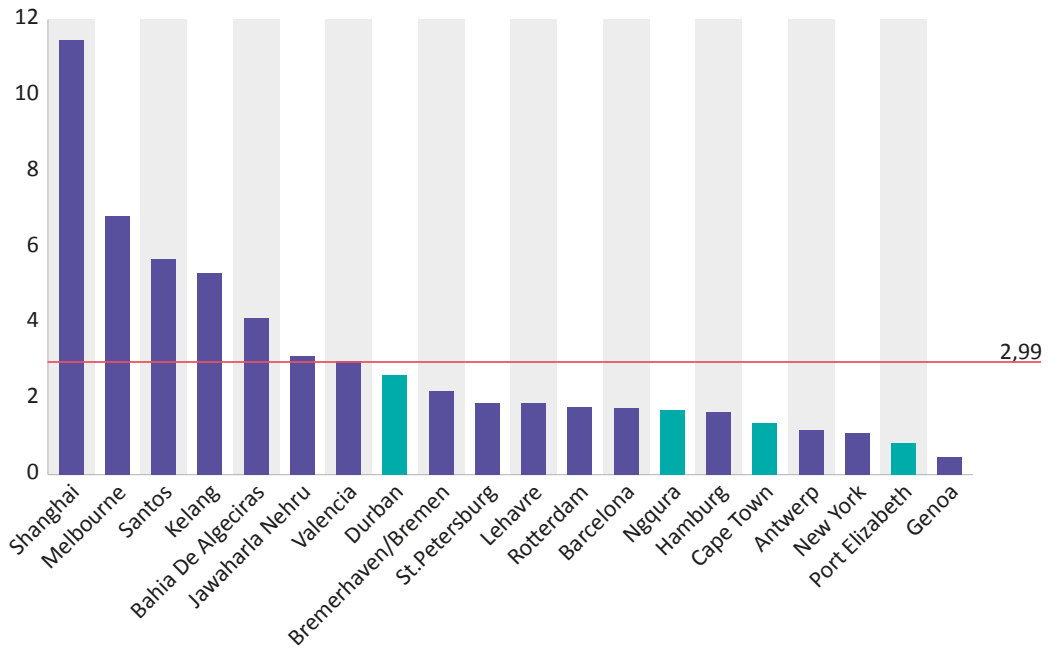


Figure 2 indicates an average TEU per square metre of the terminal. On average three TEUs are moved per square metre in 2013/14. Again, SA ports are below the average although the Port of Ngqura is utilising its terminal fairly well even though it has lower throughput. As per figure 2 the Port of Durban is close to the average which is good considering the fact that the port is small from a throughput perspective compared to the other ports in the sample. It can therefore be concluded that SA ports are performing reasonably efficiently as they are working more TEUs per each square metre of the container terminal compared to many in the sample. The Port of Antwerp and Rotterdam may be below average but that does not mean the port is inefficient, it simply means the port is possibly not utilising its terminal as effectively or productively as the ports that are above average.

Figure 3: **Teu/Running Meter of Quay (2014)**

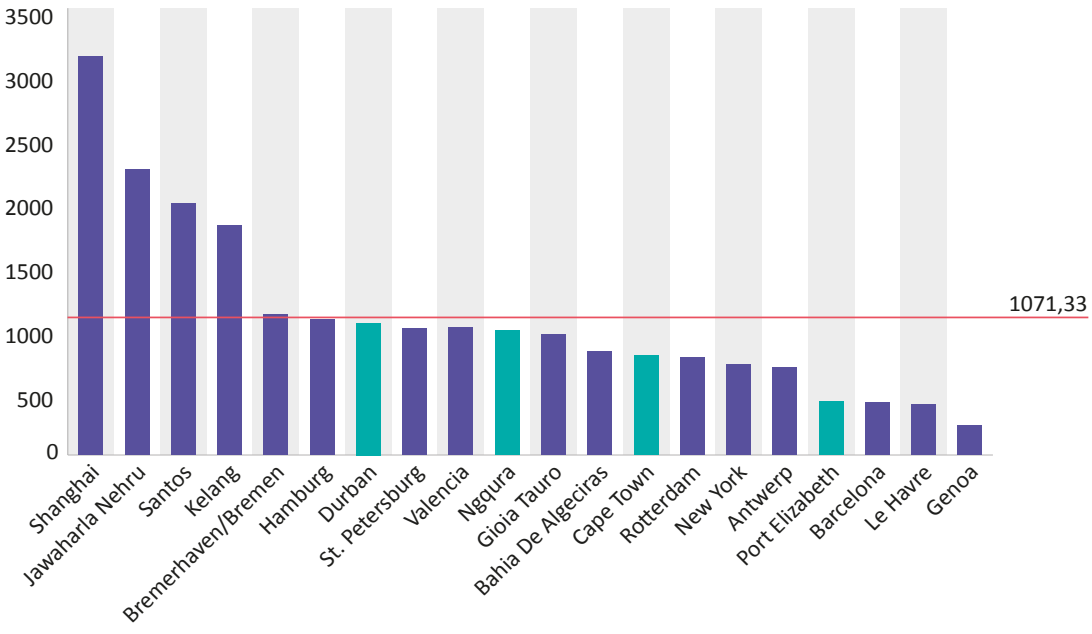


Figure 3 shows how many TEUs are moved per running metre of quay. On average there are 1 071 TEUs per running metre of quay, coincidentally although this is an average of the sampled terminals, it is also the same average determined in the Drewry global port productivity study. The Port of Durban has on average moved 1 034 TEU per running metre of quay, which is lower than its 2013 levels of 1 071 which was in line with global average. However ports such as Shanghai and Jawaharlal Nehru are doing exceptionally well in their quay productivity as they are respectively moving 3 120 and 2 233 TEU per running metre of quay. The ports of Cape Town and Port Elizabeth are functioning below the average.

Figure 4: **TEU per Crane/Annum (Container ports)**

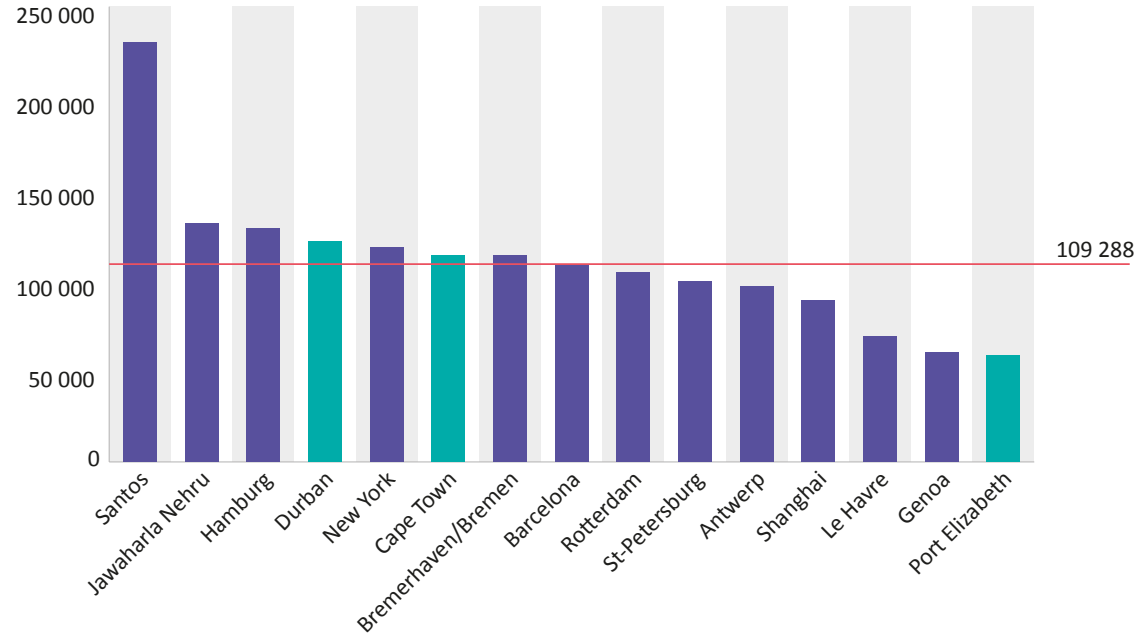
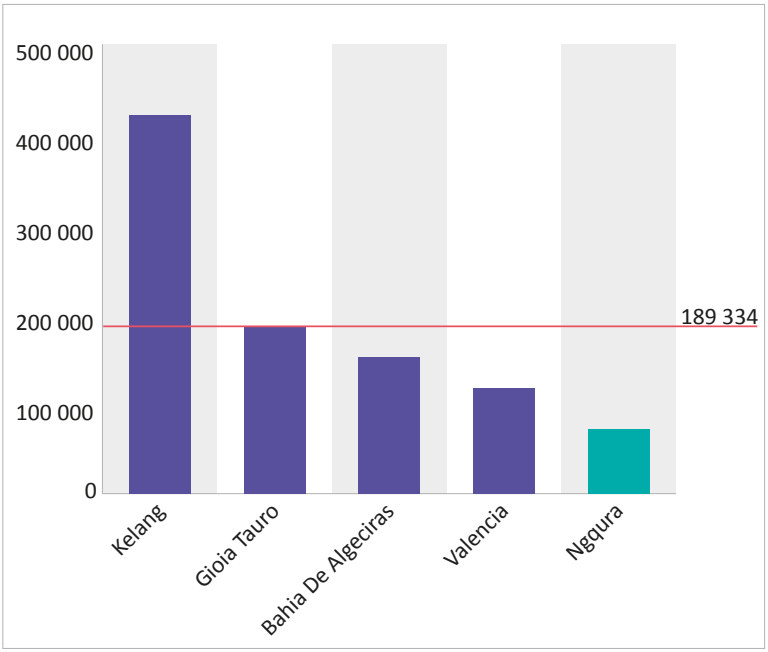


Figure 4 shows the average TEUs moved per crane. The effectiveness of the crane depends on the type of cranes used, a variable that isn't reflected in the study. The above figure depicts that on average, 109 288 TEUs are moved per crane per year. Although SA ports are functioning close to and below the average, they are utilising their cranes more productively as they have the least number of cranes compared to other ports in the sample with the exception of the Port of Santos. The Port of Santos has fewer cranes than South African ports but their utilisation is higher and above the average. This could be due to the type of cranes used by the port. The Port of Shanghai which has the highest TEU throughput is below the average, meaning the port has lower crane productivity.

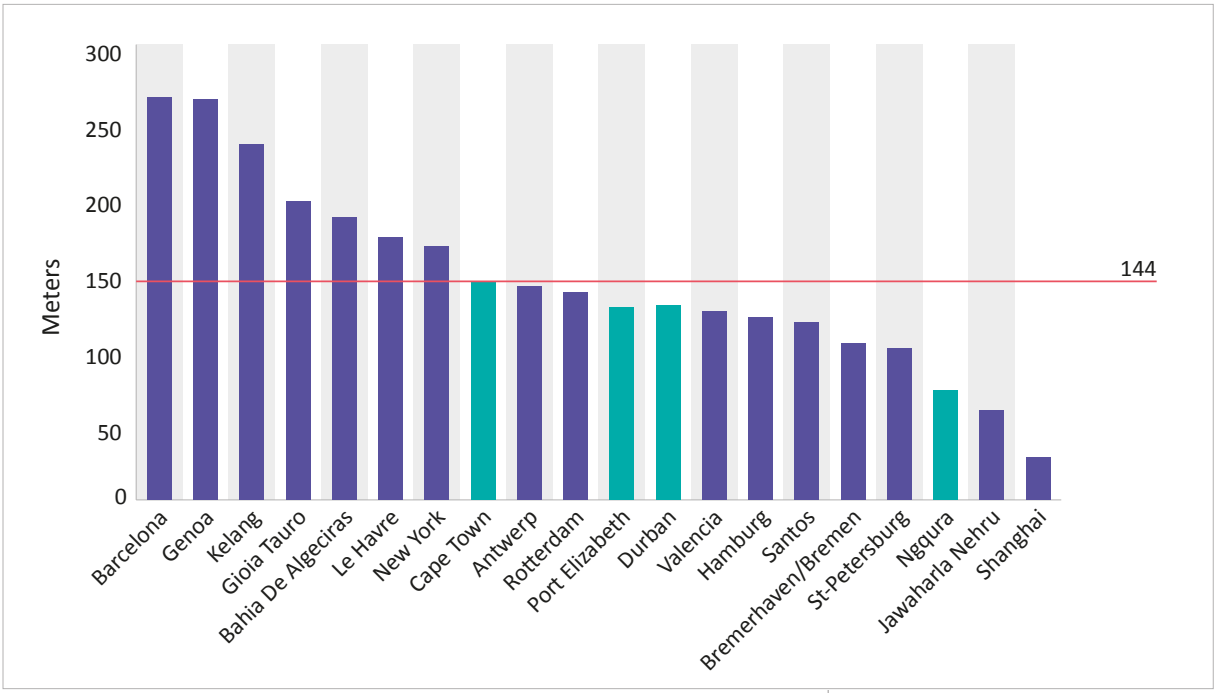
However if we are looking at transhipment hub ports comparative as depicted in Figure 5, The Port of Kelang ranked first on the sample, although the port has medium infrastructure and superstructure, it has higher superstructure utilisation. The port is moving 420 992 TEUs per crane which is extremely high when being compared to the other ports in the sample. Looking at the South African port Ngqura it is far below the average moving 71 331 TEU per crane.

Figure 5: **TEU per Crane/Annum (Transhipment Ports)**



Next we look at the utilisation level of container terminals as a function of throughput against installed capacity, a measure that also indicates whether additional capacity should be considered or there is sufficient capacity in the system. Capacity was determined as the maximum volume a port could reasonably handle a year based on the available yard area, quay length and cranes i.e. Installed capacity.

Figure 6: **Berth Length per Crane**

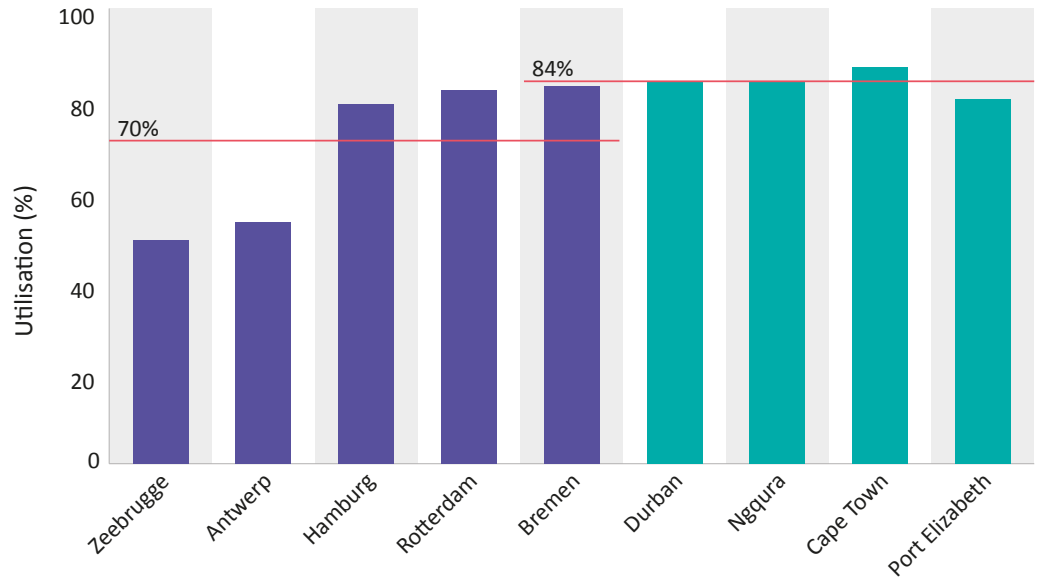


On average there is one crane for every 144m of berth length. The Port of Shanghai has lots of cranes on its quay wall simply because for every 28 metres of berth length there is a crane, this suggests that the port has to improve their crane productivity since they are below average in

Figure 4 which looks at TEU per crane. Looking at South African Ports particularly Cape Town, Port Elizabeth and Durban they are around the average. The Port of Ngqura is at the lower extreme where it has one crane for every 72 metres of berth, indicating that the port has not much room for expansion of superstructure.

The Adstrat (2012) research determined the utilisation levels of 5 North Western European terminals, which are amongst the leading world container terminals by volume (the leading ports are in China, the Far East and South East Asian ports). These North Western European terminals had an overall utilisation of 70% which is the accepted benchmark indicating full utilisation of the terminals. The average hides the much lower utilisation rates for Zeebrugge and Antwerp terminals. In comparison South Africa's container terminals' utilisation rate were overall much higher at an average of 84% (based on installed capacity).

Figure 7: **Utilisation Rates of Container Terminals SA and North Western Europe (2012)**

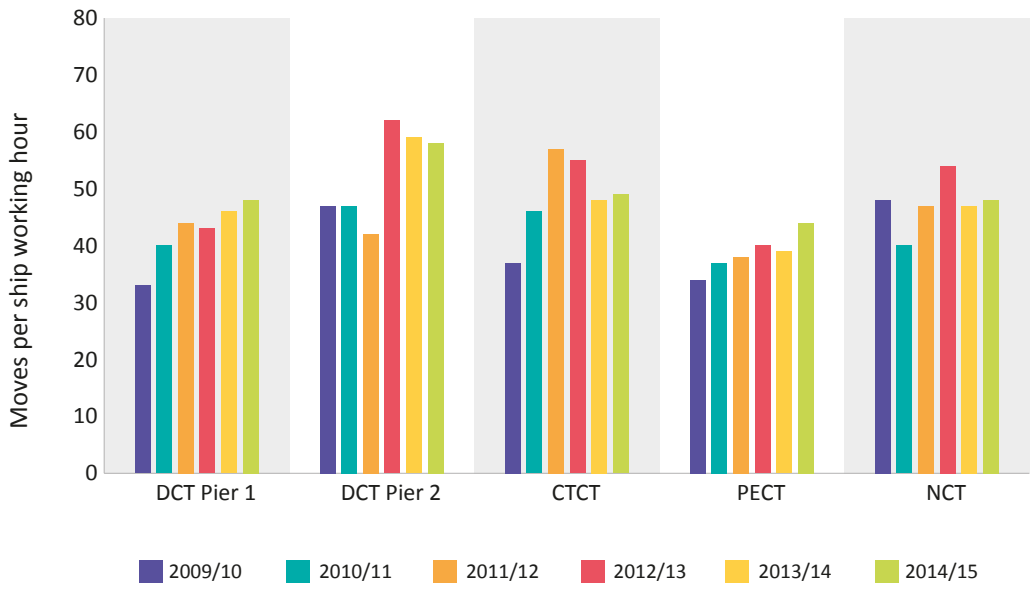


Source: Adstrat for North Western European Terminals and Regulators calculation base on NPA capacity and volume data for SA

Berth Productivity – Moves per Ship Working Hour/Across the Ship Rate

The 2014 study by Drewry provided average TEU per metre of quay per year at 1 072 TEUs while the TEU per hectare was 24 791 and TEU per gantry was 123 489 (Drewry, 2014b). The Regulator's report (See Benchmarking SA ports: containers and automotive terminals 2014/15) put the performance of the South African container terminals as below these global averages, except for the port of Durban's 1 071 TEUs per running metre of berth which was on the global average. This section focuses on moves per ship working hours for each of the four SA container terminals. Terminal performance on this measure was calculated using berth utilisation rates and throughput handled by the terminals and the results are captured in Figure 8 for all four terminals over a six year period.

Figure 8: **Container Moves per Ship Working Hour, SA Container Terminals**



The Durban container terminals, which feature in the International Top 100 container terminals have recorded the highest moves per ship working hour in the SA system. The overall performance of SA terminals places them with a majority of other global terminals in the range of 40 – 80 moves per ship working hour as reflected in Table 2.

Source: Input data from Transnet (SOC) Integrated Annual Reports (2009/10-2013/14)

Table 2: **Port Productivity-Moves per Ship Working Hour (2014 Global Ports)**

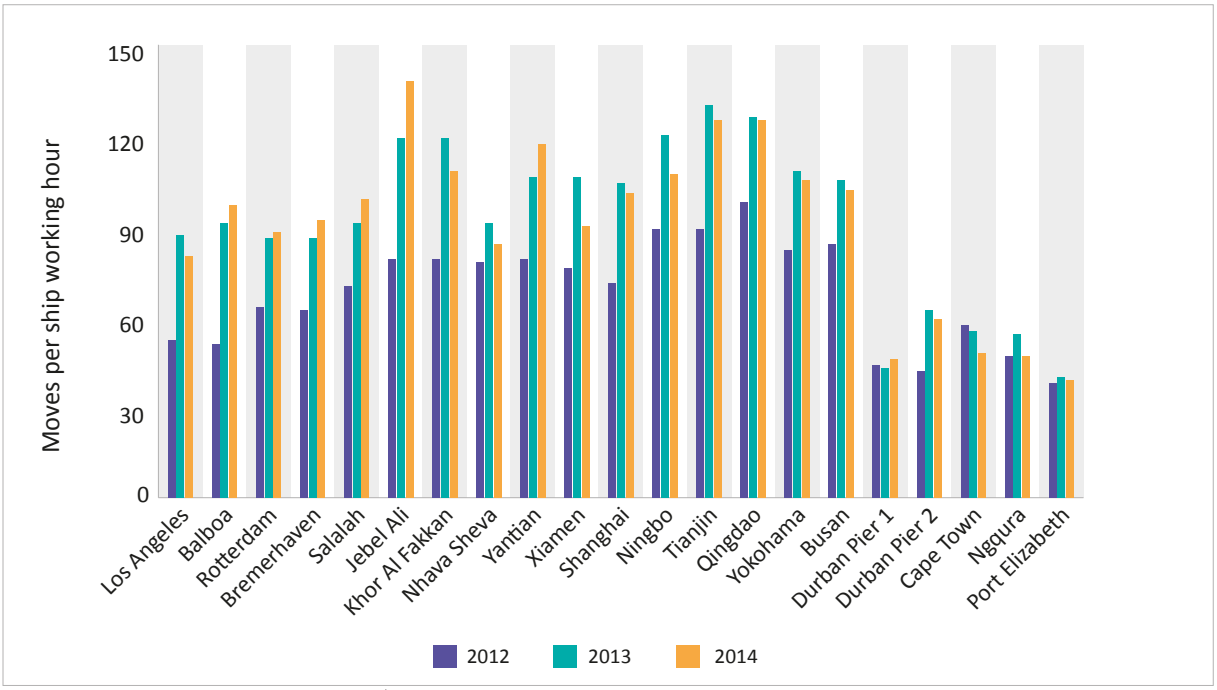
Port	Country	2014 Moves per Ship Working Hour
Alexandria	Egypt	Less than 40
Marseiles	France	Less than 40
Singapore	Malaysia	40 – 80
Le Havre	France	40 – 80
Valencia	Spain	40 – 80
Algeciras	Spain	40 – 80
Jeddah	Saudi Arabia	40 – 80
St. Petersburg	Russia	40 – 80
Rotterdam	Netherlands	40 – 80
Gioia Tauro	Italy	40 – 80
Antwerp	Belgium	40 – 80
Sydney	Australia	40 – 80
Melbourne	Australia	40 – 80
Santos	Brazil	40 – 80
Nhava Sheva	India	40 – 80
Yokohama	Japan	40 – 80
Felixstowe	United Kingdom	80 – 120
New Jersey	USA	80 – 120
Tianjin	China	120 – 167
Shanghai	China	120 – 167
Shenzhen	China	120 – 167

**Mega ships are defined as container ships with a dead weight (DWT) of at least 150 000 tons which translates into a 13 300 TEU capacity. In almost all ports at which mega ships call, they stay several hours longer than ships with a lower TEU capacity.*

Source: Merk. O. (2015) Impact of Mega ships: Case specific policy analysis, OECD.*

Recorded performance within the bands over a three-year period, shows that where there has been general improvement, the SA terminal's rates are relatively at a slower pace than others.

Figure 9: **Berth Productivity - Moves per Ship Working Hour Trends 2012, 2013 and 2014**



Source: UNCTAD secretariat and JOC Port Productivity Database 2015. From UNCTAD Maritime Review 2015 with own figures for Port Elizabeth, Ngqura, Cape Town, Durban (Pier 1 and Pier2)

**According to the report, the calculation of turnaround was based on vessel movements in May 2014 (38 843 port calls) and May 2011 (25 989 port calls) from Lloyds List Intelligence Unit. There are concerns with the month chosen. The database is above 95% of vessel movements globally, using only fully cellular container ships with GT greater than 100. Data used had arrival time at berth and departure time from berth as part of vessel call, allowing for calculation of duration of port stay. Port stay smaller than 0.20 days and longer than 7 days were excluded, which excludes bunkering and other extreme value call.*

Overall, moves per ship working hour, SA terminals can strive for improved performance in working the vessels faster. This especially so when considering that the terminals that are showing a trend of higher rates and increasing improvements are handling volumes that SA terminals are anticipated to handle in the future, in addition to the cascading of bigger vessels whose attraction and retention in a port is dependent in part on how fast the vessels can be worked. The next section looks at SA terminal performance on the related measure of ship-turn-around time.

Ship Turn-Around Time

"Every minute that a vessel stays at a terminal means money lost for the shipping company, and this in turn places pressure upon a terminal operator to ensure it does not lose business to more efficient competitors" - UNCTAD 2015: 71.

The quote from UNCTAD reflects one of the considerations for vessels in making decisions about port calls. Taking again from the OECD 2014 study, the average ship turnaround time* of world container ports was 1,03 days in 2014 with most ports achieving average ship turnaround times lower than two days. Asian ports had a turnaround of less than one day, Japan had half a day, etc. Ports in Africa have generally longer ship turnaround times, where an average turnaround time of more than three days are no exception, for example, Mombasa's is 4,1 Days.

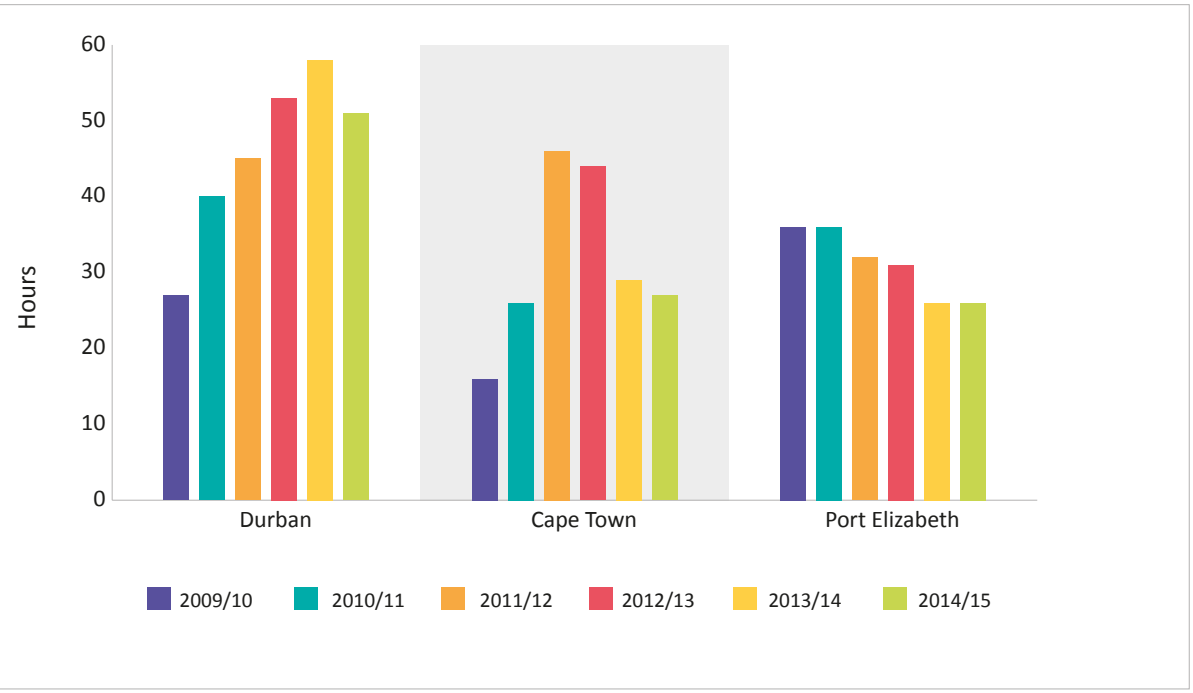
Table 3: **Ship Turnaround Times in Global Ports (2014)**

	Accepts megaships (Y/N)	2014 STAT Mega vessels	Number of Ship Calls per Month(mega vessels)
Port of Kelang/Klang	Y	0 – 1 day	1000
Tanjung Pelepas	Y	1 – 2 days	500
Singapore	Y	1 – 2 days	1500
Shanghai	Y	0 – 1 day	1500
Yokohama	Y	0 – 1 day	500
Hamburg	Y	1 – 2 days	400
Le Havre	Y	0 – 1 day	400
Rotterdam	Y	1 – 2 days	600
Bremerhaven	Y	0 – 1 day	400
Felixstowe	Y	0 – 1 day	400
Antwerp	Y	1 – 2 days	400
Genoa	Y	1 – 2 days	400
Barcelona	Y	0 – 1 day	400
Valencia	Y	0 – 1 day	650
Gioia Tauro	Y	1 – 2 days	400
Algeciras	Y	0 – 1 day	650
Valencia	Y	0 – 1 day	650
Tangier	Y	0 – 1 day	400

Source: Merk.O.(2015) Impact of Mega Ships: case specific policy analysis.

Ports captured in Table 3 handle the bulk of TEUs in global trade and operate on routes that are catered for by the larger container vessels. South African terminals handle far less TEUs and operate in the global trade route serviced mainly by 4 500 TEUs vessel although

Figure 10: **Average Ship Turnaround Time in SA Terminals (2009/10 - 2014/15)**



in recent years 8 000 to 10 000 TEUs are handled on a regular basis. Furthermore, Davidson (2014:08) reports that the trend of ever larger vessels being cascaded has seen the Europe-South Africa-Asia route increasingly serviced by 12 500 TEU vessels. Significant investment in infrastructure, superstructure and port management systems are required to enable the handling of TEUs from large vessels and allow these to depart within one to two days.

The average ship turnaround time in the port of Durban has deteriorated from just over a day to two days and 10 hours in 2013/14, with Cape Town terminal also following a similar trend from less than a day to peaking at almost two days and then reducing to just over 1 day. Port Elizabeth has shaved off 10 hours from its turnaround times. This performance must also be seen in the context of the number of vessels calling. There has been a marked reduction in the number of vessels calling (Table 4) with noticeable increases in the vessel sizes especially in Durban, Ngqura and Cape Town.

The ship turnaround times recorded in Table 3, which includes handling of mega-vessels, when contrasted with the trend in SA terminals captured in Figure 8 suggests that there may be challenges if too many larger vessels are cascaded on the SA trading route, unless there is sustained improvement in efficiencies on the port operations, road and rail and the interface between these.

Compared to the number of ships calling per month in Table 4 i.e. between 400 and 1500, South African average vessel calls per month are low at about 125.

Table 4: Vessel Calls in SA Terminals 2009/10 to 2013/14

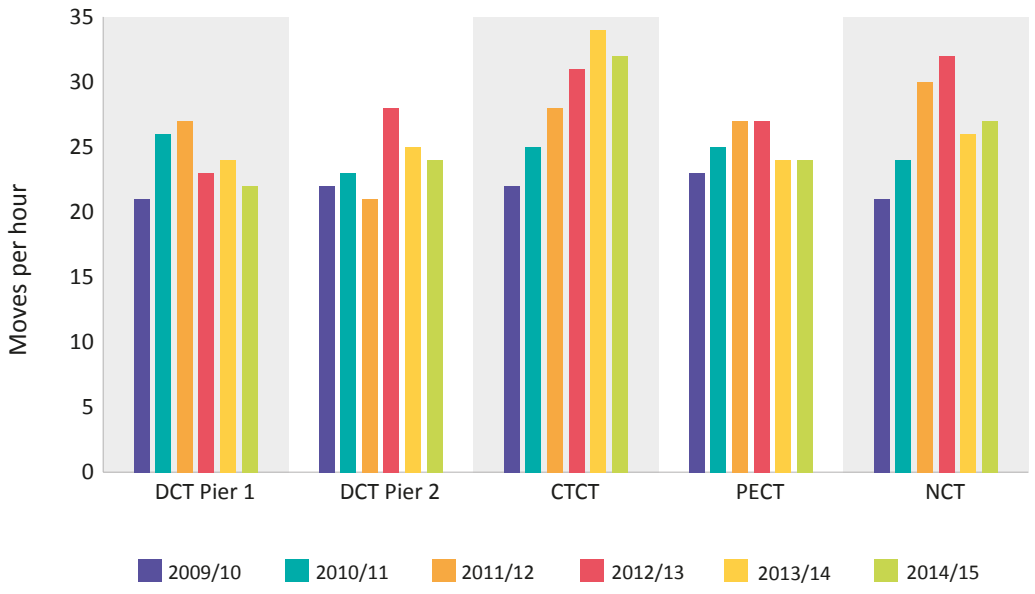
Port	2009/10	2010/11	2011/12	2012/13	2013/14	CAGR
Richards Bay	1,871	1,844	1,646	1,680	1,790	-1,1%
Durban	4,623	4,536	4,125	4,050	3,975	-3,7%
East London	269	297	320	270	281	1,1%
Ngqura	84	364	392	439	534	58,8%
Port Elizabeth	857	921	912	872	976	3,3%
Cape Town	2,820	2,550	2,123	2,279	2,435	-3,6%
Saldanha Bay	477	480	502	505	489	0,6%
Average monthly calls per port	131	131	119	120	125	-1,17%
Total	11,001	10,992	10,020	10,095	10,480	-1.2%

Source: Extracted and calculated from NPA's VTS system (2009/10-2013/14)

Gross Crane Moves per Hour (GCH)

This measure has seen sustained focus both in terms of its measurement but also investment in superstructure. Transnet Port Terminals(TPT) has invested in superstructure across the system; according to public reports, about R510m was invested at the DCT Pier 2 for seven tandem lift cranes (three commissioned in 2012 and four in the process of being commissioned) and R438 million in container handling equipment (mobile cranes, trucks, trailer and reach stackers) and has on order 4 Ship-to-Shore (STS) cranes and 18 Rubber Tyre Gantries (RTG) for Ngqura Container Terminal. This investment puts SA terminals on par with many European terminals handling similar volumes and vessel sizes. The use of the cranes must still yield similar

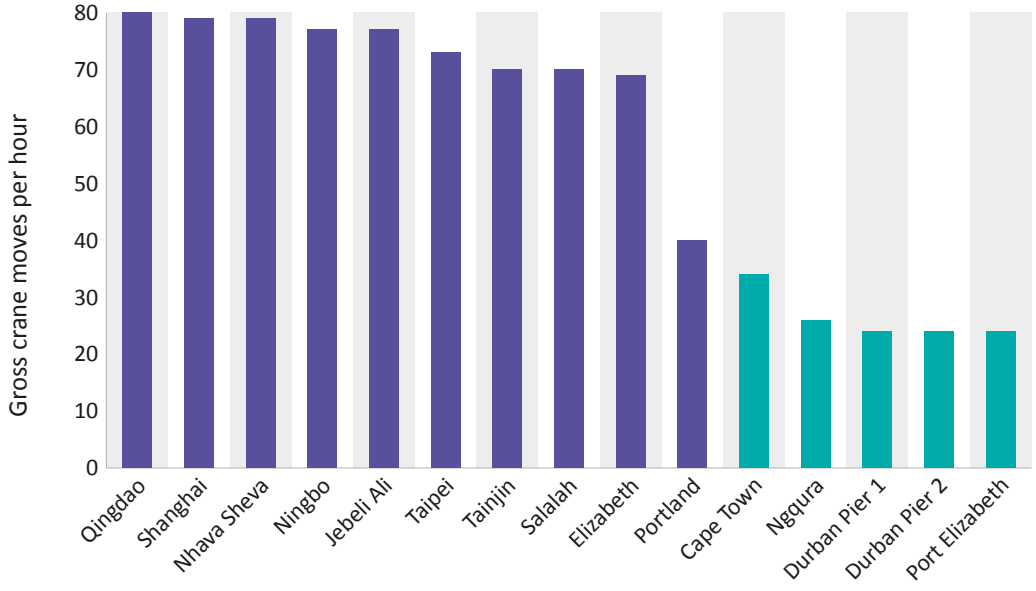
Figure 11: **Gross Crane Moves per Hour**



outcomes, though. Where the Medium Term Strategic Framework (MTFS) 2014 – 2019 has set a target for 35 gross crane moves per hour to be achieved by 2019, Figure 11 shows variable performance at the four terminals, all of which are still below the set target, notwithstanding the ports of Cape Town and Ngqura's coming close to the target, in previous years.

The global average is understood to be around 35 to 40 GCH. However, ports handling different type of vessels will be expected to perform at different levels. Based on the JOC's White Paper on Port Productivity, the following high level comparisons can be made.

Figure 12: **GCH for Terminals Handling 8000 TEU Vessels and Less**

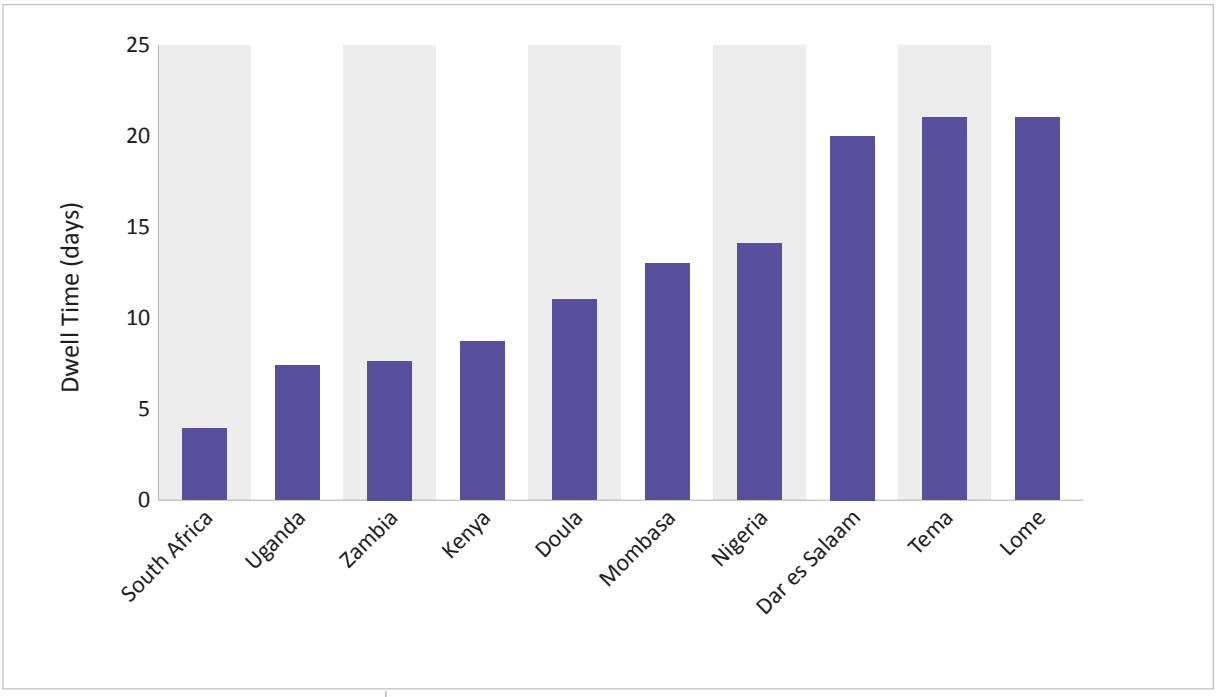


The numbers reflect what is achievable in terminal performance rather than being an indication of what South African terminals are expected to achieve with their current position in the global container terminal market. This is an area that will benefit from further analysis when data sets with appropriate information for terminals of different sizes and handling different vessel sizes are acquired, allowing for comparisons with similar ports and those whose performance would be an appropriate benchmark.

Dwell Times in Terminal

Cargo dwell time in a terminal is the average period that cargo stays within the terminal between the times of arrival to loading and vessel discharge to terminal gate exit for import, export and transhipment. "Dwell time figures have become a major commercial instrument to attract cargo and generate revenue" Raballand, et.al (2012:01) with linkages being made between dwell times and anti-competitive behaviour in ports which is similar to predatory pricing where long dwell times are used to prevent competition and/or to sustain comfortable rent generation. From a terminal capacity perspective, where high dwell times can be used as justification for expanding port capacity, improving dwell times would have the effect of increasing capacity for container handling without requisite investment in physical extensions (Raballand et al., 2012), therefore efforts to reduce overall dwell time times are a key element towards reducing logistics costs. Dwell times in South Africa's terminals are considered a good benchmark for ports in Sub-Saharan Africa as significant improvements have been made in reducing dwell times to between 3 and 5 days for imports and exports respectively and slightly longer for transhipment, with the latter possibly reflecting behaviour of shipping lines, call frequencies, etc.

Figure 13: **Cargo Dwell Times at Sub-Saharan African Ports**



Source: Raballand,et.al. (2012)

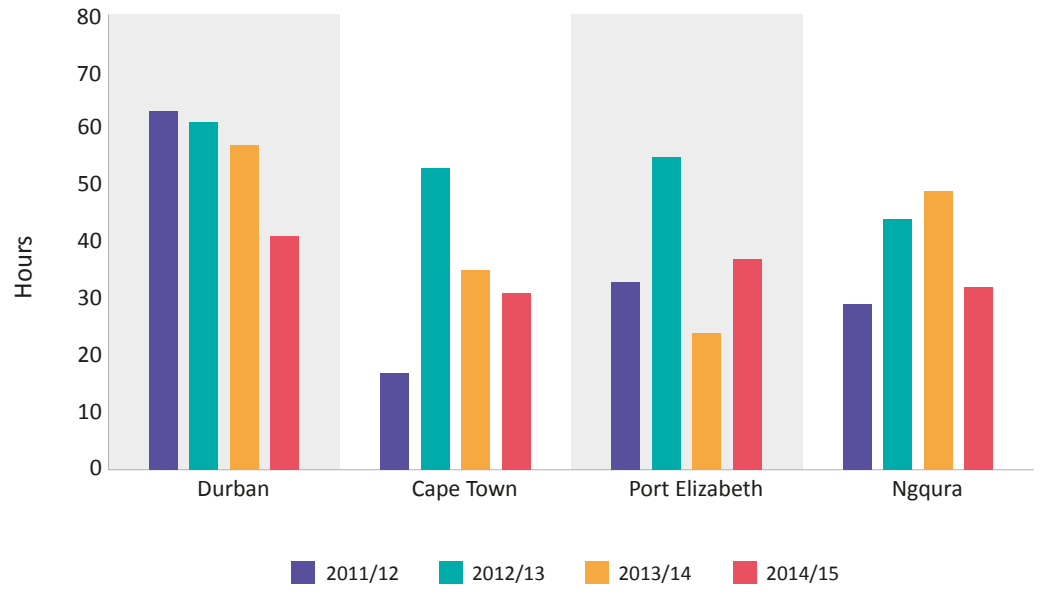
While there is a myriad of operational, transactional and storage factors (Raballand, et.al: 2012) affecting dwell times in a port, the port

of Durban's dwell time which can be categorised into dwell times in most European ports is reported to be three to four days which makes South Africa's performance on par with the global trends.

Time Spent at Anchorage

There is not much comparable data for time spent at anchorage which reflects all instances where ships are waiting for a berthing slot to be available. This is difficult to measure since it is not always attributed to the ports, as it can be related to scheduling issues, missing booked time window, etc. Long waiting times at anchorage are a result of lacking berthing slots able to accommodate specific ship classes (draft and cargo type) as well as terminal productivity issues. As reported by the Authority, the average number of hours that vessels have had to wait at anchorage due to berthing or marine services i.e. excluding weather and any other factors that are not under the control of the Authority in the four container terminals in the past 4 years (2012 – 2015) are reflected in Figure 14.

Figure 14: **Anchorage Waiting Time**



In 2011/12 vessels were spending up to two and a half days waiting at anchorage before they could enter the Durban port precinct for berthing and discharging/loading. This is reported to have reduced by almost a day to forty-one hours in 2014/15.

A total of 1 807 vessels spent on average 44.05 hours each at anchorage between March and September 2015 with causes for delays covering factors within and outside the Authority's control (see table 5). Significantly, the most of the delays are in the control and management of the Authority i.e. provision of pilots, berth allocation and terminal availability which collectively account for 1 439 vessels spending over a day and a half (39 hours) at anchorage.

A significant number of vessels affected by berthing delays were bulk carriers (420) followed by container vessels (134) and tankers (114).

Delays with terminal readiness affected mainly bulk carriers (398), container vessels (231) and 20 tankers. These measures are now being reported to the Regulator on a quarterly basis and will be monitored to identify bottlenecks.

Table 5: Reasons and Number of Vessels Delayed at Anchorage

Reason for delay	No of Vessels delayed	Total anchorage time (Hours)
Tugs	-	-
Pilot	2	3,4
Repairs	4	807,85
Weather	53	769,23
Orders	290	20 861,97
Cargo	21	1 170,62
Berth	780	33 623,04
Terminal	657	22 361,77
Total	1 807	79 597,87

Source: NPA quarterly reporting to the Regulator 2015.

Vehicles awaiting export at a RORO terminal.

Prior to the establishment of the Terminal Operators Performance Standards and Marine Operator Standards processes where the Authority has systematically started monitoring performance of terminals against consulted and agreed measures, there had not been significant strides in measuring the performance of SA terminals. The next section looks at scale efficiency and how SA terminals have fared relative to other ports on this measure.

Overall Efficiency Container, Oil and Bulk Cargoes

There is limited comparable information on the bulks to allow proper comparisons. The Regulator is considering the possibility of commissioning a dedicated study to determine efficiency frontiers for the four cargo handling types. The recent study by Merk and Dang holds potential as it links efficiency to port infrastructure utilisation.

Merk and Dang (2012) undertook work to determine port efficiencies not only in container but also bulk cargos which most literature does not cover. Using the Data Envelopment Analysis (DEA) method, they determine overall efficiencies in container, crude oil, iron ore, coal and grain terminals, from which they determine the difference between overall and technical efficiency. The results of the research ranks ports according to their efficiency scores. This is but one of different approaches to benchmarking port efficiency with the advantage that it includes performance of bulk cargo.

The work by Merk and Dang (2012) on which this analysis has been based, assists in linking terminal efficiencies to productive use of infrastructure and will be useful for future assessments of port efficiency, especially from an infrastructure perspective. The study sample and input parameters were as per Table 6

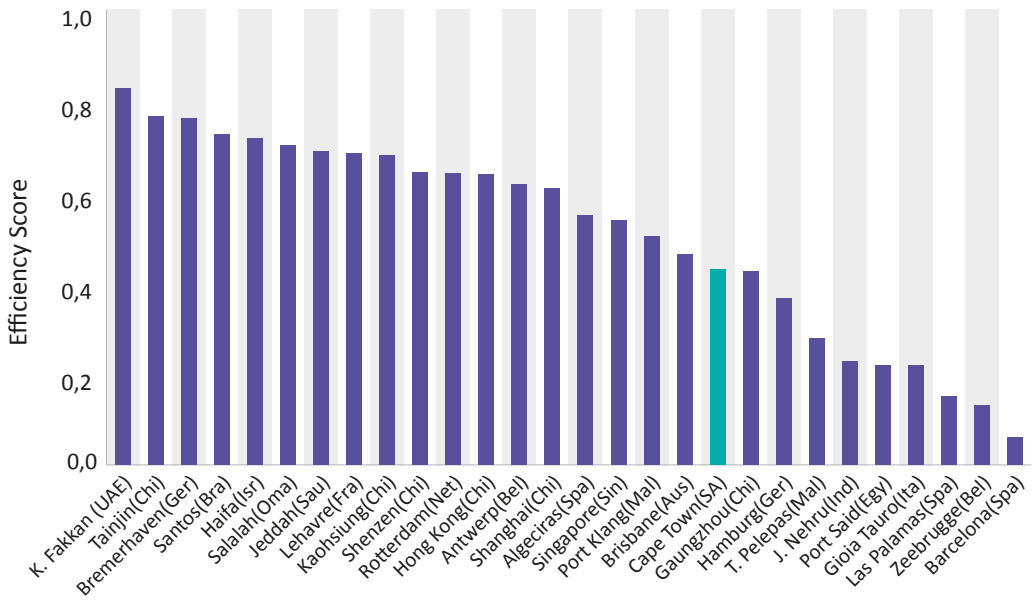
Table 6: Merk and Dang's Efficiency Outputs, Inputs and Sample Parameters			
Terminals	**Output**	**Input**	**Sample: number of terminals**
Container	Deadweight tons of calling vessels + TEUs, Dwt only	Quay length, surface terminal, reefer points, quay cranes and yard cranes	62
Crude oil	Deadweight tons of vessels calling at each of sample ports	Quay length, maximum depth, loading/ unloading arm capacity (tons/hour), storage capacity (tonnes)	71
Iron Ore			11
Coal		Quay length, storage capacity (tonnes), loading/unloading capacity (total capacity per hectare)	34
Grains			41

Following is a discussion of the findings with South African terminals that were included in the overall sample.

Container Terminals

The study did not find a strong correlation between terminal or port size and efficiency of container terminals. By this reason, the port of Cape Town which is smaller in terms of volume and terminal size than the country's primary container port of Durban is included in the sample. Based on the determined efficiency scores, Cape Town's container terminal ranked higher than the bigger ports including Hamburg, Las Palamas and Zeebrugge. The other African port which made into the ranking and which performed better than a few large terminals, is Port Said in Egypt. Port Said also made it into the Top 100 Container terminals in 2015 based on increased volumes handled.

Figure 15: **Container Terminals Ranked by Efficiency Benchmark Scores (TEU)**

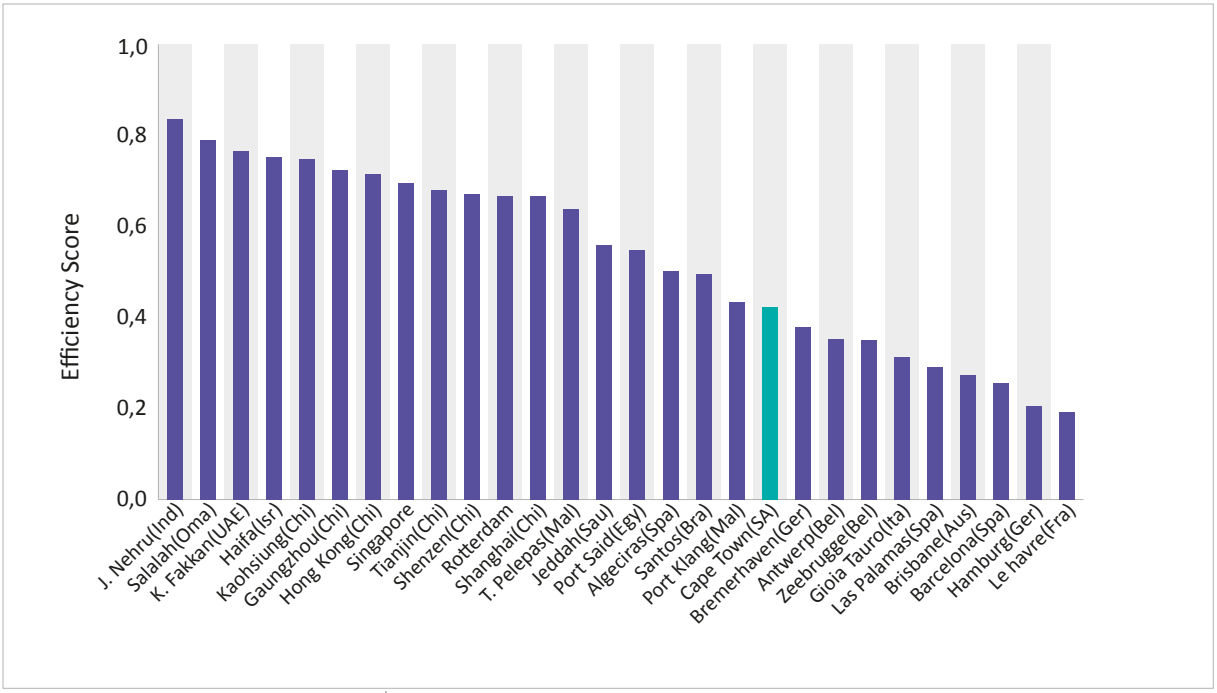


Source: Merk & Dang (2012).

As indicated earlier, port terminal calculations were based on five inputs and two inputs (TEU and DWT i.e. handling capability of a port) and DWT alone (as a proxy for throughput correlated to vessel size

thus handling capacity of a port). The rankings in Figure 15 with TEU and Figure 16 with DWT and TEU shows that Cape Town's performance and ranking did not change with the use of either output.

Figure 16: **Container Terminals Ranked by Efficiency Scores (DWT & TEU)**



Source: Merk & Dang (2012).

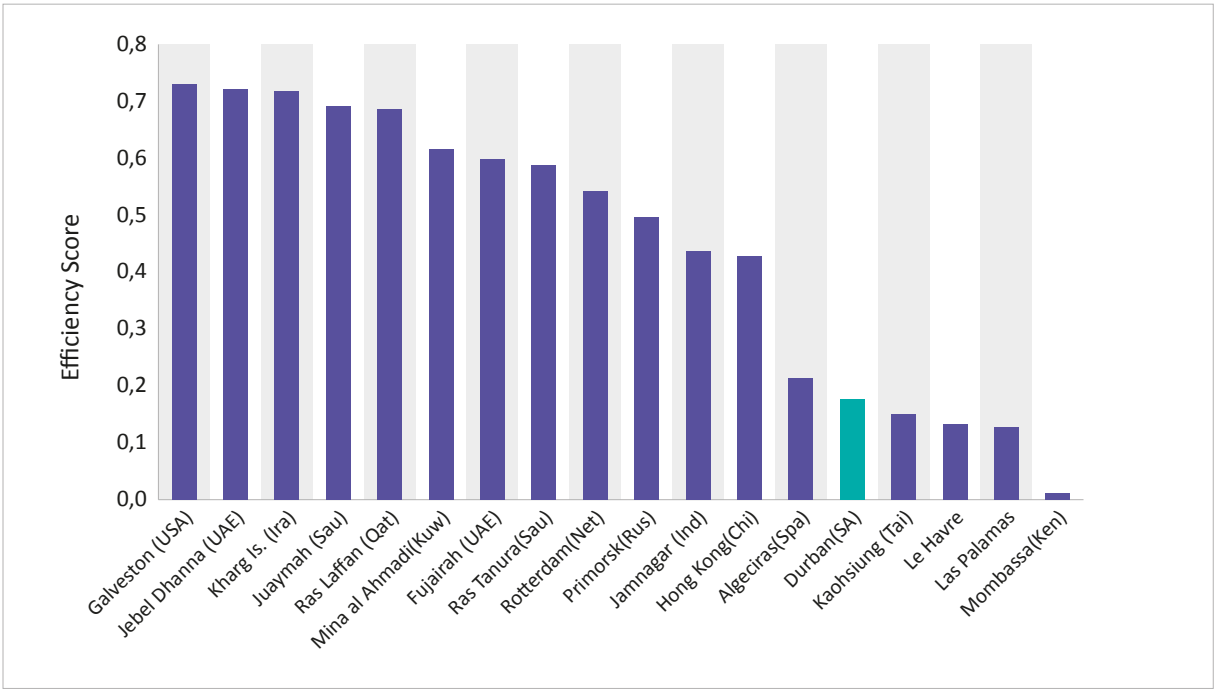
Reportedly, Cape Town's efficiency is higher than Bremerhaven, Antwerp and Le Havre where both factors are considered. Nonetheless the graph shows the extent to which a port needs to improve to edge closer to the leaders and a score of one. This applies across all the terminals. Accordingly, it should be noted that even the most efficient terminals have room to improve with the highest score achieved by the leading terminals.

Liquid Bulk Terminals

Analysis of a sample of 71 major oil terminals (crude oil, petroleum and liquid gas) across the World by Merk and Dang (2012), showed that efficiencies in these terminals is strongly and significantly associated with oil traffic volumes, such that the bigger the terminals the more likely they are to be efficient, thus for oil terminals, size does matter. Accordingly, efficient ports, excluding Galveston and Rotterdam, are mostly located in the Gulf Region. Notwithstanding, on average the most efficient terminal could still improve by about 30% from gains in production given their existing infrastructure i.e. even though they are efficient, they use up only 60% to 70% of their infrastructure or production capability.

The Port of Durban, the only South African terminal that featured in the sample, registered very low on the efficiency scale and is ranked as a follower performing below benchmark ports (that include the Port Fujairah which is on the same vessel route as SA terminals). In accordance with the findings by Merk and Dang (2012), South African terminals would also suffer from production scale inefficiencies due to the volumes they handle relative to the other terminals.

Figure 17: **Crude Oil Terminals Ranked by Efficiency Scores (DWT)**

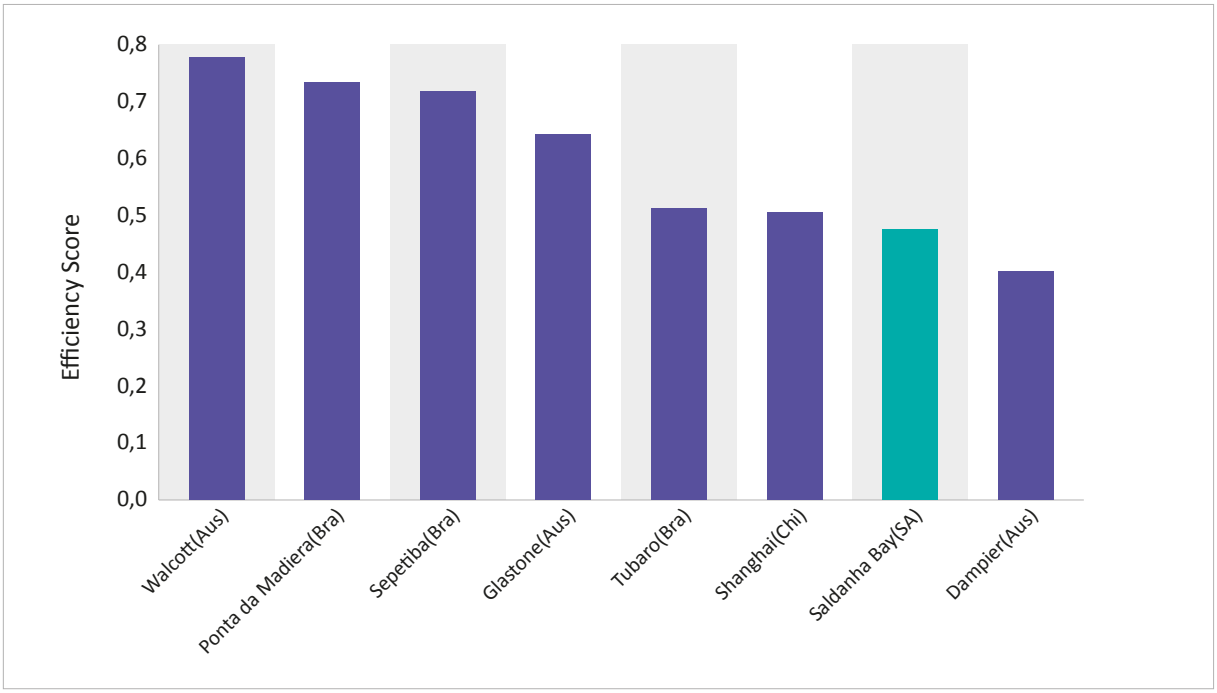


Source: Merk & Dang (2012).

Iron Ore Terminals

Iron ore terminals are large and are dominated by ports from the South where the leading ports, from a volume/deadweight ton perspective, are all ports in the southern hemisphere. Brazilian ports hold the first (port of Ponta da Madeira), second (port of Tubarao) and fifth (port of Sepetiba) place. The Australian ports of Walcott, Dampier and Gladstone take third, fourth and seventh place respectively, with the port of Saldanha in South Africa taking sixth place. In terms of efficiencies, the findings from the iron ore terminals is similar to crude oil in that the best performing terminals are about 30% shy of the

Figure 18: **Bulk Iron Ore Terminals Ranked by Efficiency Scores**



Source: Merk & Dang (2012).

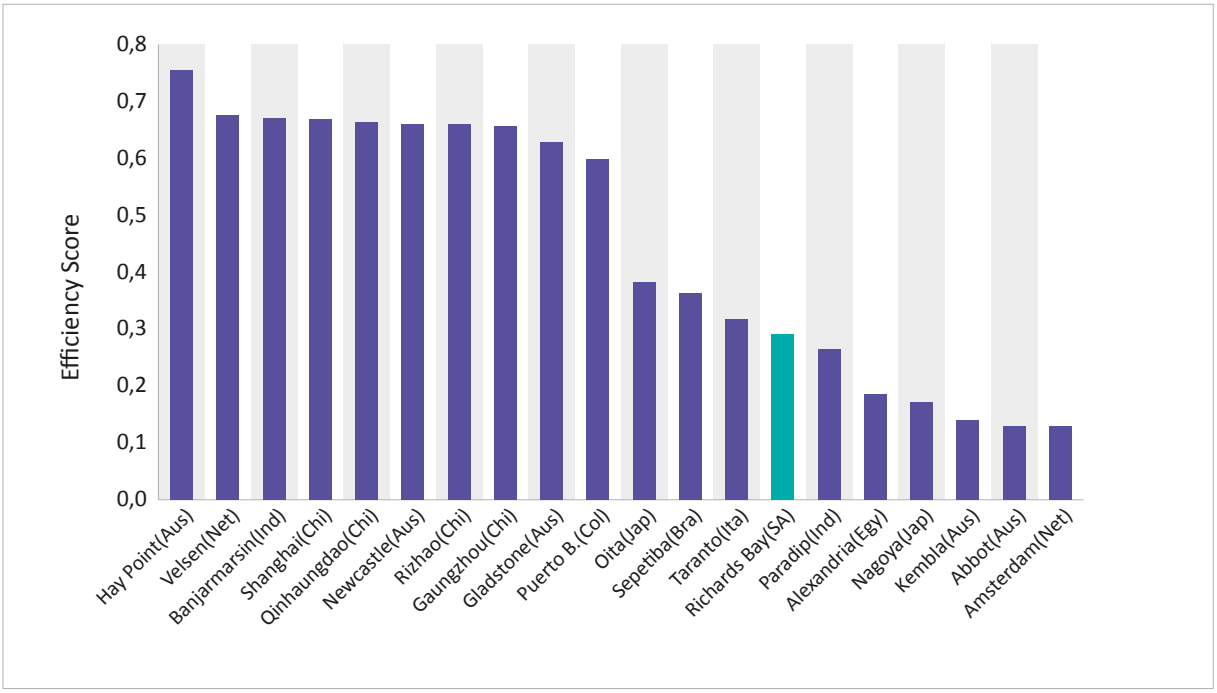
optimal efficiency score of 1. The Port of Saldanha was found to be operating at under 50% which implies much room for improvement.

Coal Terminals

Coal terminals, as with iron ore, are dominated by Australian ports which have 6 out of the top 34 ports by deadweight tons, followed by China and the United States with 4 ports each in the top 34. South Africa's Richards Bay Coal Terminal and Egypt's port of Alexandria represent African ports. The most efficient terminals are in groupings that comprise ports in Australia and China operating between 65% and 75% efficiency. The Port of Richards Bay falls within the group of ports with very low levels of efficiency at around 29%.

An important finding of the study was that significant efficiency gains in the coal bulk sector can be achieved by improving technology and equipment. This may be true for Richards Bay in that the productive use of the facility and throughput is impacted by the capacity on the rail side, even though this may not be the only factor. The low number shows that more must be done to identify the causes of this inefficiency so that it can be systematically addressed.

Figure 19: **Bulk Coal Terminals Ranked by Efficiency Scores**



Source: Merk & Dang (2012).

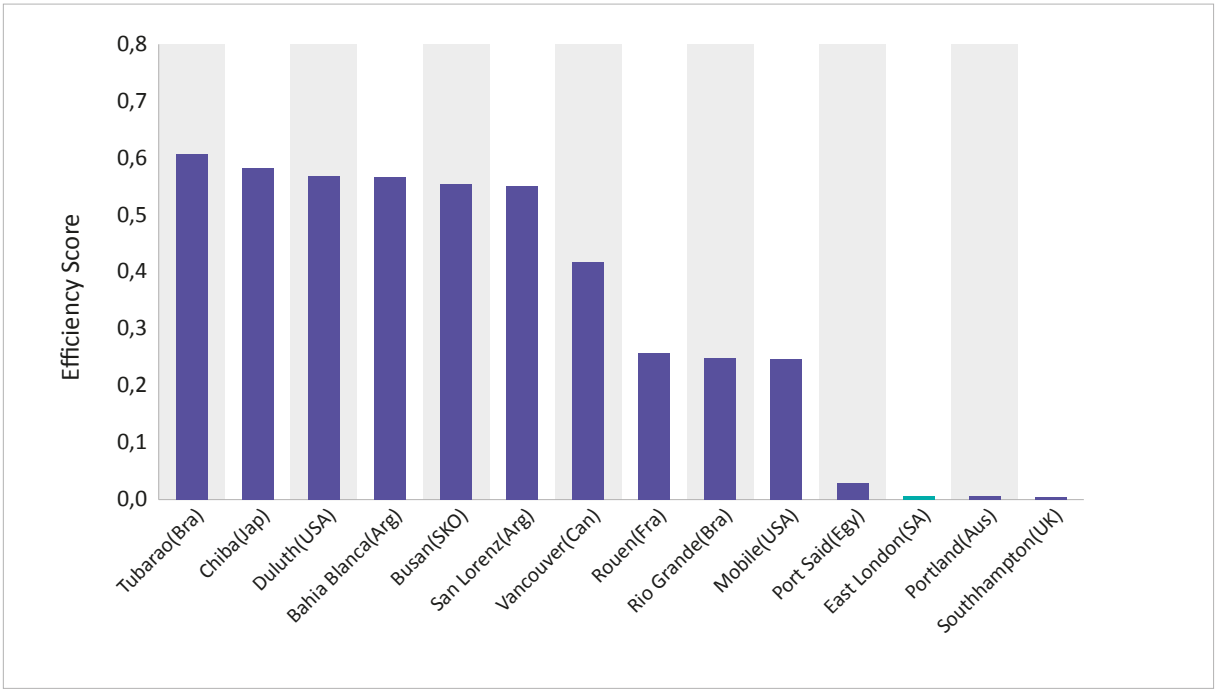
Grain Bulk Terminals

The main grain bulk facility in the South African system which serves not only the domestic grain industry but critically the SADC (Southern Africa Development Community) is the grain elevator in the Port of East London which has been used as part of security of food supply initiatives in times of supply shortages, including in the SADC region. In recent times the state of the grain elevator has deteriorated with lack of clarity between infrastructure owner and operator resulting in much needed rehabilitation work not being undertaken. Not surprisingly, the efficiency levels of the grain elevator could not be plotted even though it made it into the sample due to the deadweight

tonnes and volumes it handles. Overall, it was found that port size matters as most efficient terminals are amongst the top ten largest grain ports/terminals (Merk & Dang, 2012: 26). Port of East London ranked 34 out of 41 by volume.

Together with Port Said in Egypt and the Australian port of Portland and Southampton in the UK, East London's efficiency level are undetected pointing to a need for a serious overhaul to make this facility work optimally.

Figure 20: **Grain Terminals Ranked by Efficiency**



Source: Merk & Dang (2012).

Conclusion

This benchmarking report looked at the performance of SA terminals against what is achieved by terminals in other parts of the world that can be considered as benchmarks as summarised as snap-shot in Table 7.

Table 7 : **Port Benchmarking Summary**

Indicator	Sample	SA Ports above sample average	SA Ports at or close to the sample average	SA Ports below sample average
Container Throughput 2014 (TEU)	Global			Durban, Cape Town, Ngqura, PE
TEU/terminal square metre	Global		Durban	Cape Town, Ngqura, PE
TEU/metre quay	Global		Durban, Ngqura	Cape Town, PE
TEU/crane/year	Global	Durban, Cape Town		PE, Ngqura
Crane/berth length	Global		Cape Town, PE & Durban	Ngqura
Utilisation of container ports	Compared to North Western European terminals 2012	Durban, Cape Town, Ngqura, PE		
Port Productivity: Container Moves per Ship Working Hour	Global		Durban, Cape Town, Ngqura, PE	
Berth Productivity: Container Moves per Ship Working Hour	Global			Durban, Cape Town, Ngqura, PE
Ship Turnaround time	Global		Cape Town, PE	Durban
Gross Crane Moves Per Hour	Global			Durban, Cape Town, Ngqura, PE
Cargo Dwell Times	Sub-Saharan Ports	Durban, Cape Town, Ngqura, PE		
Merk & Dang Efficiency score: container terminal	Global			Cape Town
Merk & Dang Efficiency score: crude oil terminal	Global			Durban
Merk & Dang Efficiency score: coal terminal	Global			Richards Bay
Merk & Dang Efficiency score: iron ore terminal	Global			Saldanha
Merk & Dang Efficiency score: grain terminal	Global			East London

On operational efficiency measures, South African terminals have made significant strides in reducing cargo dwell time and to a lesser extent ship turnaround times.

It is imperative that more be done to ensure that as larger vessels are cascading into South Africa's trading route, the ports and terminals are able to address the resultant challenges e.g. bottlenecks in the road and rail interface, even when performance on these improves.

Targets set to measure port performance must gradually reflect both what the infrastructure is capable of as designed but they must be consistent and improved on, rather than reflect previous performance. Performance on GCH is a case in point.

The Port of Cape Town's performance was not only consistent but generally on the rise which might be due to targets set at a level higher than previous performance.

The overall comparative efficiencies of container, crude oil, bulk iron ore, bulk coal and grains have briefly been touched on through work done by the OECD. Such frameworks could go some way in developing performance monitoring and benchmarking system for SA terminals by either or both Authority and Regulator.

Lastly, the comprehensive output from the Terminal Operator Performance Standards of the Authority are awaited as input into the benchmarking process and output.

The value of the potential exposure to the practical side of what is developed in academic and other literature cannot be overstated in the process of benchmarking port performance for the benefit of South Africa.

Ships berthed at Island View at the Port of Durban.

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section 2

South African Port Capacity and Utilisation Report 2015/16

An oil rig at A berth at the port of Cape Town with the National Ports Authority Administration Building in the foreground.

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Cruise liner Nautica leaving the Port of East London.

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New haulers at the Durban Container Terminal.

"*There are a lot of insufficiencies to measure port capacity due to … the sheer number of parameters involved; the lack of up to date, factual and reliable data which are collected in an accepted manner and available for publication or divulgation, the absence of generally agreed and acceptable definitions, the profound influence of local factors on the data obtained and the divergent interpretations given by various interest to identical results … port performance and capacity cannot be determined by only one indicator or by a single all-encompassing value. The complexity of port operations and in particular the interaction between various essential elements such as the efficiency with ships, equipment and labour utilised, make it compulsory to rely on a set of indicators if one wants to arrive at an accurate and meaningful evaluation of a ports performance*" - Park, Yoon & Park (2014: 176).

Introduction

Economic regulation aims generally to address market failures or monopoly behaviour where there are no effective competitive conditions to set efficient prices in the provision and maintenance of infrastructure.

Economic regulation generally must protect the users and infrastructure owners by creating an enabling environment characterised by openness, transparency, inclusivity and due process. Critically, economic regulation must bring about allocative and/or productive efficiencies as well as open up market to appropriate competition or competitive conditions through coherent regulatory framework and tariff determination processes.

In the case of the South African ports regulation, the National Ports Act of 2005, establishes the Port Regulator of South Africa as an independent agency of the Department of Transport with the following mandates: to exercise economic regulation of the ports system in line with government's strategic objectives; promote equity of access to ports and to facilities and services provided in ports; and monitor the activities of the Authority to ensure that it performs its functions in accordance with the Act.

The Regulator has progressively aimed to improve benefits in the port system for port users, industry and the broader South African economy and has been balancing tariffs from their historically high levels, with tariffs increasingly being rationalised; the regulatory trajectory is proactive, moving towards a fair tariff incidence in the future.

This process in turn is affected by the Capex programme of the Authority which is an important factor in ensuring not only that there is capacity in the system but also affects port pricing by influencing tariffs.

This report does not subsume the Authority's function for "planning, construction, development and maintenance of ports" as per section 68 of the National Ports Act. Instead the report will represent an assessment of NPA published port capacity and analysis of its utilisation so as to:

- Establish capacity levels in the SA port system
- Analyse the extent to which this capacity is utilised
- Reflect on performance of SA terminals as it relates to the use of the infrastructure and projected demand in the form of volumes
- Reflect on planned capacity to meet projected demand whilst reflecting on trends in previous years.

As a discussion document which provides and disseminates information, this report will:

- Facilitate discussions with the Authority, port users and industry players on the role of and treatment of Capex in the Regulatory Framework;

- Lead to the development of commonly accepted measures for port capacity and utilisation levels as they influence and impact on the possible capacity expansions and the tariff manual's envisaged port efficiency measures; and

- Contribute to the definition of what is used and useful capacity as it relates to the Regulatory Asset Base.

- Be the basis, for benchmarking the performance of South African port terminals. This will be alongside the Authority's Performance Standards with Terminal, Marine, Road and Rail Operators known as TOPS, MOPS, HOPS and ROPS respectively.

The discussion document is structured as follows:

The mandate of the Regulator for infrastructure and efficiency regulation is outlined and briefly discussed in Section 2 which provides a background and outlines the strategic and necessary link between the Regulator's assessment of South Africa's port capacity and productivity with the tariff reform process and thus the relevance of the Authority's Capex to the regulatory processes. The section summarily highlights concerns with the Capex programme without repeating the complexities in the South African port pricing and tariff system which are adequately covered respectively in the Regulatory Manual for Tariff Years 2015/16 – 2017/18 and the Tariff Strategy for the South African Ports System 2015/16 documents (for more on these access: www.portsregulator.org/economic and follow links to tariff methodology and tariff strategy documents).

Section 3 focuses on an assessment of the Authority's capacity and utilisation rates in relation to both performance or productivity and planned capacity in the five different cargo handling types, starting with defining and setting a common basis for capacity and utilisation.

Section 4 summarises and concludes on the discussed capacity and utilisation and highlights the various areas for further investigation by the Regulator in consultation with the NPA and port users.

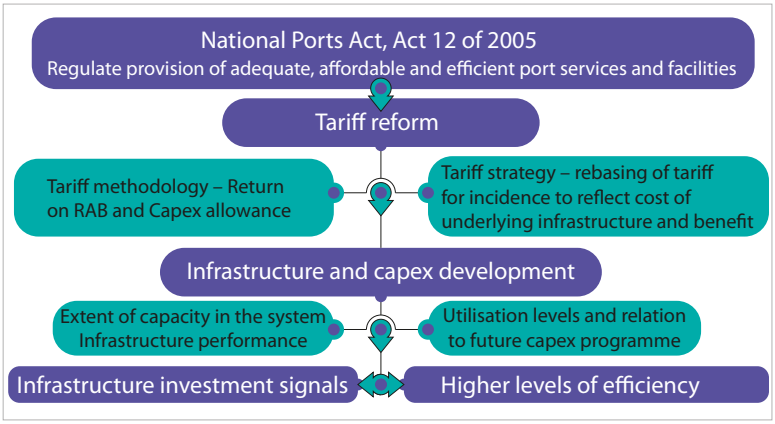
Due to the long history of the development of the port system in South Africa, this report cannot be, and is not intended to cast judgement on the Authority, and port operators, public or private; but should rather be used as a baseline for improvement where necessary, and an acknowledgement of excellence where relevant.

The Ports Regulator of South Africa's Mandate for Infrastructure and Efficiency Regulation

The mandate of the Regulator for infrastructure and efficiency regulation emanates from the National Ports Act, Act 12 of 2005, (the Act) particularly section 30 which, in defining the functions of the Ports Regulator of South Africa (the Regulator), requires the Regulator in subsection (2) (f) to "…regulate the provision of adequate, affordable and efficient port services and facilities."

A RORO vessel berthed at the Port of East London car terminal.

Figure 1: **Mandate, Functions and Objectives for Infrastructure Regulation**



To carry out its mandate effectively, with available resources and capacity, the Regulator began a tariff reform processes to improve port pricing, efficiency and access in the SA system with a particular focus on creating certainty in port tariff setting by defining a process for determining the Authority's Required Revenue.

The "Regulatory Manual for Tariff Years 2015/16 – 2017/18" is a multi-year tariff methodology to determine the Required Revenue as applied for by the Authority over a three-year period. The multi-year tariff methodology process will enable the Regulator to balance the need to support infrastructure provision in meeting the country's current and future needs with ensuring that the right infrastructure investment signals are sent and that the NPA manages port operations/operators to achieve higher levels of efficiencies.

With regard to infrastructure, and in line with the Directives issued in terms of Section 30 of the Act, the Regulatory Manual allows the NPA to earn a return on the Regulatory Asset Base and an allowance for Capex spending in the form of capital works in progress as it is allowed to:

- Recover its investment in owning, managing, controlling and administering ports and its investment in port services and facilities;
- Recover its costs in owning, managing, controlling and administering ports and its investment in port services and facilities; and
- Make a profit commensurate with the risk of owning, managing, controlling and administering ports and its investment in port services and facilities.
- Feedback from stakeholders and port users through the Port Consultative Committee (PCC) in compliance with the Regulation (15)(1) – (30) and submissions to the Regulator in its stakeholder consultation/workshops on the Authority's application inclusive of Capex projects, shows that stakeholders are not entirely happy with the methodology because it does not provide any incentive for the Authority to reduce costs or improve efficiency as it ensures that it (Authority) recovers its full costs and profits which may be high due to inefficiencies.

Cognizant of this challenge, the methodology addresses itself to the question of an appropriate return allowed to the Authority whilst the Tariff Strategy envisages a Phase 3 where the Regulator will undertake regulatory re-design which may include the adoption of an alternative tariff methodology that may be required.

With a mandate to ensure port pricing efficiency and efficient use of port assets, the Regulator must, as part of its current activities and beyond, in allowing the Authority to earn a return, also identify and conduct an assessment of the utility's Capex programme, and be satisfied that adequate infrastructure is provided at the right time, that it is used productively and efficiently, and that there is appropriate phasing of additional capacity.

The Regulator has to date never disallowed any Capex applied for. It has only disallowed expenditure towards the acquisition of the old Durban International Airport and related costs (because the site has not been promulgated as a port in terms of the Act), operational expenditure for the operationalisation of Ngqura Manganese terminal, and in the recent ROD the removal of property outside of port land with the associated rental from the RAB. The Regulator has, instead, clawed back what the Authority underspent amounting to R8,6 billion of Capex and the associated return on it over the past 6 years, in fairness to port users.

The Regulator is also in the process of conducting a valuation of main assets in the different asset classes in the RAB to develop valuation methodologies for these which will address the perennial problem of the acceptable value of the Authority's starting RAB. The project will develop a valuation methodology manual to guide future valuations of the different asset classes by the Authority.

The question of "used and useful" assets that an infrastructure regulator must contend with will also be addressed in the valuation project. This report focusses on the other element which is an assessment of the extent to which port terminal capacities are currently used and so partly informs the required future capacity, and a broad sense of when capacity might be required.

SA Port Capacity and Utilisation

Port capacity refers to the maximum traffic a terminal can handle in a given scenario i.e. the maximum amount of throughput that can be handled at a terminal (potential production capacity) whereas capacity utilisation is the actual production output as a percentage of the potential production capacity i.e., the proportion of capacity actually used in a given period, expressed as a percent. Berth and terminal area represents, alongside installed cargo handling, operational systems and labour, the static and dynamic capacity in a terminal. Generally, the physical berths are static, in the short term, determining the size of vessels that can be accommodated. Terminal area capacity is dynamic, affected by operational and technological changes i.e. terminal operating equipment, technology and systems to allow higher stacking and/or increasing number of containers per unit area of terminal or stockpiling area for dry bulks or storage/parking in the case of ROROs. It is generally accepted that when berth capacity utilisation exceeds

Tugboat Enseleni in the Robison dry dock at the Port of Cape Town.

70% to 80% of available capacity it becomes costlier to conduct and handle additional trade through a port. Vessel waiting times generally increases and associated cost rise exponentially and would rapidly grow to become unacceptable unless additional berth capacity is introduced. An outline of the overall system capacity is presented below after which the capacity and utilisation levels per cargo handling types is described and analysed.

Capacity in the Overall System

The capacities in South Africa's port terminals for the five different cargo handling types (container, vehicle (ROROs) dry bulk, break bulk and liquid bulk cargoes) are summarised Table 1 as extracted from the Authority's Long Term Port Development Framework (2013).

Table 1: **Overall Capacity in SA Terminals – All Cargo Handling Types**

All cargo handling	Terminal area(ha)	Total Berths	Usable berths	Berth Length(m)	Design Capacity(TEUs, Units, Million tons) per annum	Installed capacity (TEUs, Units, Million tons) per annum	Latent (under) capacity
Container	367	18	18	5 590	8 013 000	4 790 043	3 222 957
RORO	66	7	5	2 050	850 000	681 041	168 959
Dry Bulk	535	30	25	8 081	229 084 000	187 666 802	17 782 802
Break Bulk	231	40	37	6 476	32 513 153	17 344 903	15 168 250
Liquid Bulk	419	18	17	3 715	66 451 207	26 141 684	40 309 523
Total	1 618	113	102	25 912			

Compiled from Long Term Port Development Framework (NPA) 2013.

Across all the cargo handling types in the port system, there is latent or excess capacity which is the difference between design and installed capacity across the system. Overall, the highest level of spare capacity is in liquid bulk terminals with 61% latent capacity – due to inclusion of SBM/CBM volumes, followed by break bulk (47%) and container terminals (40%). With 20% and 18% latent capacity respectively, the RORO and Dry-bulk terminals demonstrate the least amount of latent capacity. Terminal capacity includes seaward infrastructure (light houses service infrastructure, port control and safety, entrance channels, breakwaters, turning basins, aids to navigation, vessel traffic services, maintenance dredging; landward infrastructure (quay walls, back of port operational space, storage and stockpiling area, roads, rail lines, buildings, fencing, port security, lighting, bulk services); and sea-land interface (berths and quays). Due to the common-user nature of some of seaward infrastructure, a comprehensive breakdown and assignment of the value of the asset base and infrastructure to each cargo handling type in not entirely feasible, at a detailed level, although the tariff strategy has apportioned a share thereof along the four port user types; shipping lines, cargo owners, terminal operators and all other lessees in the port system.

Container Terminals

The capacity numbers in all the tables drawn from the NPAs Long Term Port Development Plan shows the terminals in the port of Durban have reached capacity with installed capacity equalling design capacity. This is in stark contrast to the port of Ngqura whose container terminal's installed capacity is significantly below design such that it operates with 75% latent capacity. The other terminals are operating at almost half of the determined designed capacities, except at the port of Durban, which means there is significant excess container terminal capacity. Capex applied for with regards to container terminal expansion, outside the port of Durban, cannot therefore be easily justified without determining how much of this capacity can be made available in the system through performance and efficiency improvements.

Container Terminal Capacity

A port by port breakdown of the container capacity given previously is captured in Table 2 for dedicated container terminals. Berth length and draught determine the sizes of vessels the terminals can handle and how heavily they can be loaded. The ability to handle cargo from a vessel is dependent on the number of cranes available, through hourly throughput capability of those cranes and the availability of the cranes.

The following large vessels called at the four dedicated container terminals in 2013:

Durban:
MSC Fabiola *(140,259 grt)*, MSC Luciana, *and* MSC Ivana *(both 131,771 grt)*

Port Elizabeth:
Maersk Labrea *and* Maersk Lota *(89,505 grt)*

Ngqura:
MSC Fabiola *(140,259 grt);* MSC Luciana *and* MSC Ivan *(131,771 grt)*

Cape Town:
MSC Susanna *and* MSC Joanna *(107,849)*

Table 2: **Container Terminal Capacities**

	Durban	East London	Port Elizabeth	Ngqura	Cape Town	Total
Berth Length	2 578	506	635	720	1 151	5 590
Total berths	8	0[1]	2	4	4	18
Usable berths	7	2	2	3	4	18
Draught	8,2 – 12,3	10,7	12,2	16,5	12,8 to 15,5	
Vessel sizes that can be accommodated (length x width x draught)	Container Panamax – 4 500 TEUs (240m x 32m x 12,0m)		Post Panamax x 6 600 TEUs (305m x40m x 14m)	Ultra Large 15 000 TEUs 400	Post Panamax 6 600 TEUs|(305m x 40m x 14m)	
Design Capacity (TEUs pa)	3 020 000	93 000	600 000	2 800 000	1 500 000	8 013 000
Installed capacity (TEUs pa)	3 020 000	53 390	325 211	491 442	900 000	4 790 043
Latent capacity	0%	43%	44%	75%	40%	49%
Crane numbers	22	-	5	10	8	45

The Ngqura Container terminal accounts for the highest proportion of latent capacity. The depth of a berth, or draught, is an important aspect of a terminals capacity as it determines the size of vessels that can call at a port and ultimately the extent to which a terminal is used. In the Port of Durban, the berths at Pier 2 (berths 202 – 205), are the primary container terminals with a published maximum depth of 12,3 m. Pier 1 comprises berths 105 – 107 with a published maximum

depth of - 12,1 m. In addition to allowing easy passage for 4 500 TEU vessels (generally 240m x 32m x 12m), the terminal can and handles bigger vessels on tide or not fully laden.

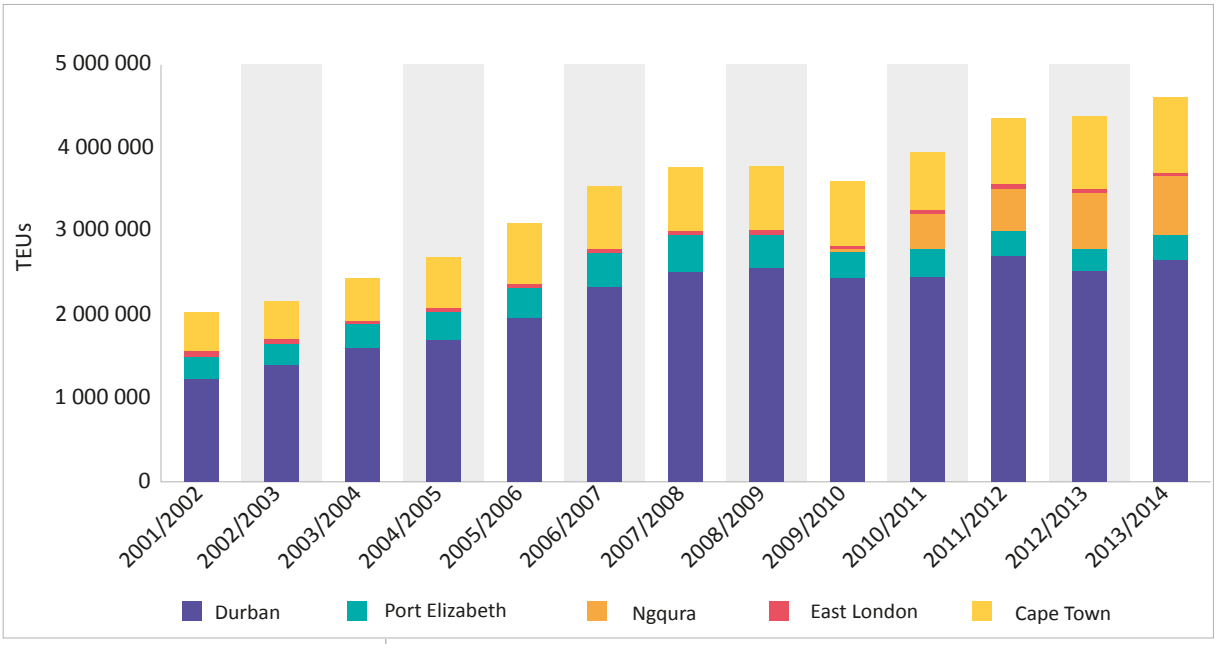
Port infrastructure requires long lead times before additional capacities can be created when required which requires high levels of diligence and conscientiousness in assessing capacity development plans submitted by the Authority for consideration by the port users (in the PCCs and NPCC specifically) and through various other forums available for influencing the Authority's Capex programme. The Regulator recognises that not all capacity that seems to be latent will be usable.

For example, there are low levels of utilisation of container terminal capacity at the port of Port Elizabeth which may be linked to a combination of the depressed economic conditions affecting that port's hinterland and thus container traffic on the one hand, and critically the proximity of the port of Ngqura and how this would affect vessel calls to Port Elizabeth especially with Ngqura being a deep water port attracting larger vessels which would not be able to call in port Elizabeth. A regulatory concern that starts to emerge is one of appropriate levels of excess infrastructure that should be allowed for in the system, in supporting the provision of capacity ahead of demand. To this end a container sector strategy that identifies and addresses the trade off in the development of container terminals in servicing their hinterlands and as part of the broader complementary port system is needed.

Container terminal capacity and volumes

With more than 90% of trade moving through the ports, the Authority, in carrying out its mandate of developing South Africa's commercial ports, provides capacity to meet not only current but future demand, to ensure that ports continue to support the country's economy.

Figure 2: **NPA Container Volumes (2001/02 - 2013/14)**



Calculated from data submitted to the Ports Regulator by the National Ports Authority. The number for Ngqura is from 2009/10 when the terminal was first operationalised.

As alluded to earlier in the introduction, in developing terminals to meet demand, a balance has to be struck between providing infrastructure to meet demand, and optimising non-infrastructure parameters to address capacity, i.e. improved productivity and efficient use of infrastructure and superstructure. Figure 2 summarises the use of South African container terminals through the prism of volumes and terminal throughput.

Due to its relative proximity to the Gauteng hinterland and economic hub of the country, the port of Durban is one of the main drivers of container traffic, followed by the port of Cape Town which services a major economic region in the country.

Volume growth has been on a rising trajectory having more than doubled in the decade from 2001/02. The accompanying compound annual growth rate for containers was 6.97% (see Table 3). Although the port of Ngqura has registered the highest growth rate, this has been from a very low base where less than 50 000 TEUs were handled by the terminal when it was operationalised in November 2009.

Table 3 which captures 12 year historical compound annual growth rate (CAGR) for container traffic in each of the container terminals shows during this time, overall growth has been driven by the ports of Durban (6.65%) and Cape Town (5.17%).

Table 3: **Historical Compound Annual Growth Rate for Container Traffic per Port (2001/02 - 2013/14)**

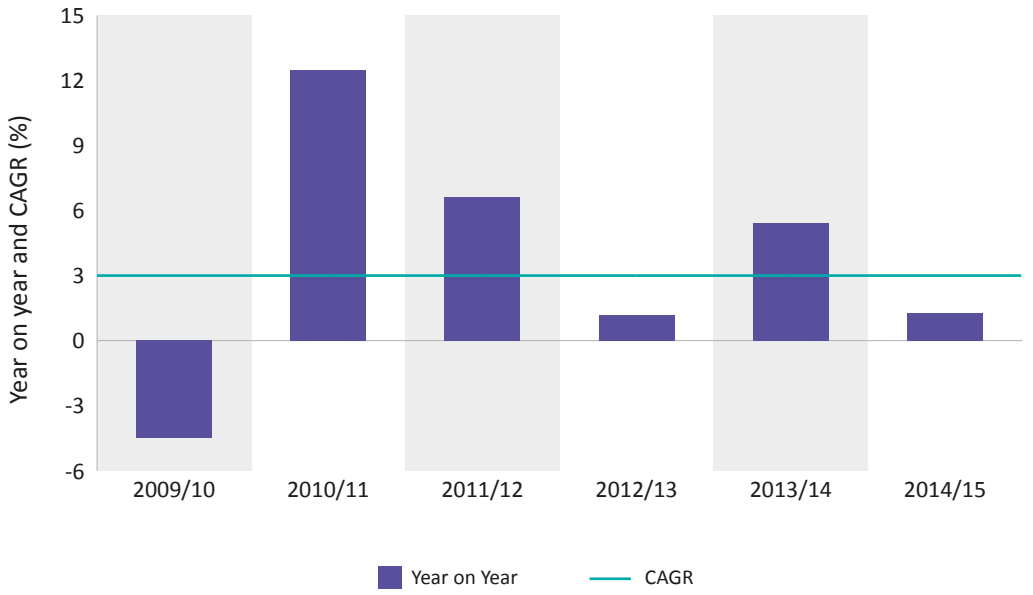
Port	TEUs: 2001/2002	TEUs: 2013/14	CAGR
Durban	1 228 493	2 660 146	6,65%
Port Elizabeth	261 957	291 233	0,89%
Ngqura	34 533*	713 306	113,19%
East London	68 674	41 080	-4,19%
Cape Town	496 036	907 796	5,17%
Total	2 055 160	4 613 561	6,97%

**Operations only started in November 2009/10.*

Volumes from the port of Port Elizabeth and East London have been consistently on the decline, in contrast to the optimistic projections of future volume growth for these two ports reported later in Figure 4. The significantly high CAGR number for the Port of Ngqura reflects the low base from which this port started in November 2009/10 where the 34 533 TEUs it handled set a baseline against which future increases would be measured.

Overall, the Authority projects container volumes to grow from the current 4 million TEUs per annum to about 17 million TEUs by 2042. This level of capacity planning is based on a projected 4,8 % (see Figure 4) annualised growth rate for container traffic up to 2041/42. Considering that most of the ports currently handling more than 10 million TEUs are in countries where economic growth rates exceed South Africa's growth rate, 17 million TEUs by 2042 may seem too optimistic a number. This projection may be supported by the 6,9% historical rate in Table 3, including the high growth years from 2004/05 to 2007/08 which correlated with amongst the highest GDP growth years in SA.

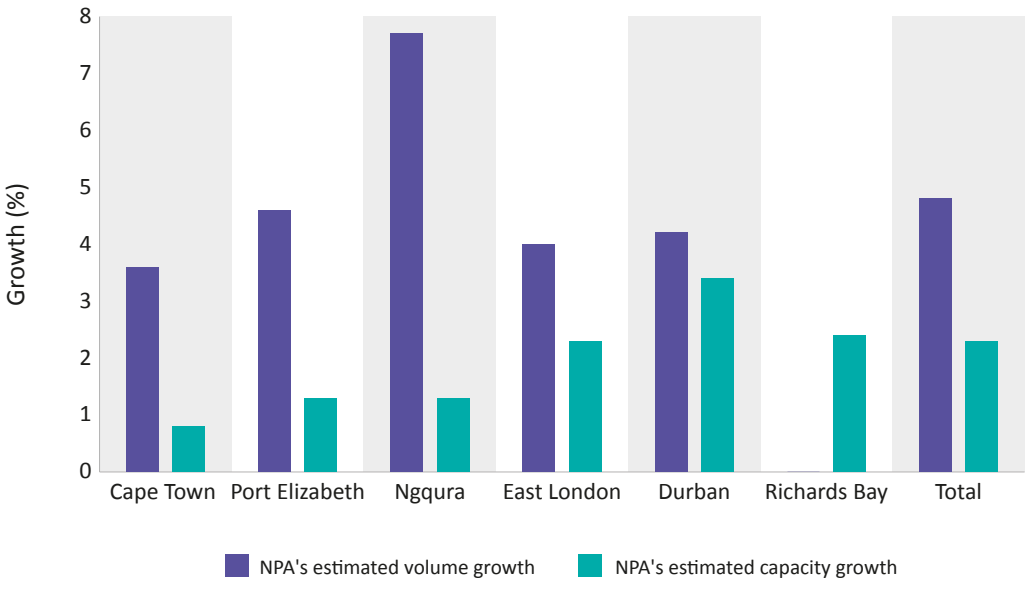
Figure 3: **Year on Year & Compound Annual Growth Rates (2009/10-2014/15)**



Calculated from data submitted to the Ports Regulator by the National Ports Authority.

Figure 4 reflects this projected compound container volume growth rates over a 31 year period up to 2041/42 per Container Terminal and the required proportional increase in capacity to meet demand for the projected volumes. More volumes are projected for the port of Ngqura relative to the other ports whose volumes are also projected to grow. As highlighted earlier, volume projections for the port of Port Elizabeth are not consistent with this port's historical performance. In 2015/16 the National Port Consultative Committee, after considering recent trends, supported the Authority's decision to put on hold the planned deepening of container terminal berths until such time that volumes and related developments will justify such investments.

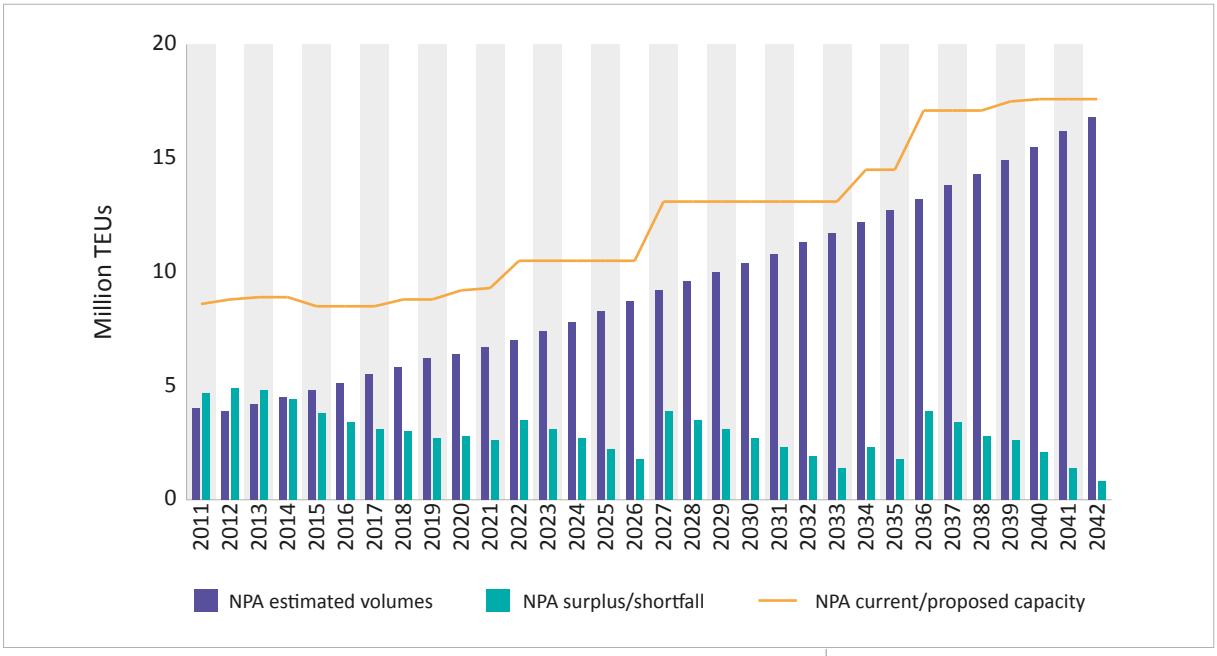
Figure 4: **Compound Container Growth Rates and Planned Capacity to Meet Growth**



Similarly, the port of East London's volumes are projected to grow by 4% over the period, suggesting a reversal of the -4,19% CAGR of the past 12 years and growth thereon. Although there is currently no dedicated capacity for container handling in the Port of Richards Bay, the Authority's plans suggest that in the long run container capacity may be provided for in this port.

Future volumes and capacity requirements are summarised in Figure 5 below. Capacity is captured in the red line, which reflects current capacity and periods in the future where additional capacity will be required. As it is impractical to provide for infrastructure for a marginal unit of volume at a time, providing capacity ahead of demand means the green bars (which reflect surplus capacity in the system) will always be a feature of this type of graph. Questions to be considered relate to the size of the bars, in terms of both tariff (affordability to users) and what capacity is required for ports to continue to play their role in supporting trade and South Africa's economy. It is important that the drivers of port specific plans, assumptions about regional/ hinterland growth that would support the projections as well as the role of each port in regional as well as global trade be made clear.

Figure 5: **Overall Container Capacity and Volume (2010/11 – 2041/42)**



The Authority's planning principles are informed by these, amongst other considerations, and articulation of these in a comprehensive container terminal strategy will assist development.

The following projects are in the Authority's future plans:

- 2019: Port of Port Elizabeth - The Charl Malan Quay becomes available for handling containers, taking capacity from 600 000 TEUs to 900 000 TEUs per annum.

- 2020: Port of Durban - Completion of the deepening and lengthening of the North Quay which will increase capacity from 3,5 million to 3,9 million TEUs per annum. An additional 400 000 TEUs per annum.

- 2022: Salisbury expansion by 2 new berths, taking capacity to 5,1 million TEUs per annum (additional 1,2m TEUs).

- By 2027: Port of Durban - Phase 1 of the Dig Out Port completed increasing capacity to 7,7 million TEUs.

- 2034: Port of Ngqura - 4 new berths adding 1,4 million TEUs.

- 2039: Port of Cape Town - An additional berth at the Container Terminal adding 400 000 TEU capacity.

The planned additional capacity is based on combined capacities of the ports of Cape Town, Port Elizabeth, Ngqura, Durban, and Richards Bay. The assumptions are that the Salisbury Island Infill project for Durban will continue; if it does not happen then the first phase of the Dig-Out Port will be operational at the end of 2024 with the second 4 berths by 2033, although only 2 would be required until 2042. The infilling of Salisbury Island would push the Dig-Out Port's first 4 berths to 2029 and the rest to 2039. The 2016/17 application by the Authority to the Regulator includes the following major container terminal projects to expand capacity over the next seven years:

- Execution of the Pier 1 Phase 2 infill - Salisbury Island;

- Durban Container Terminal deepening (Berth 203 – 205);

- Operationalisation of the port of Ngqura for container handling (automated mooring system D101 – 103); and

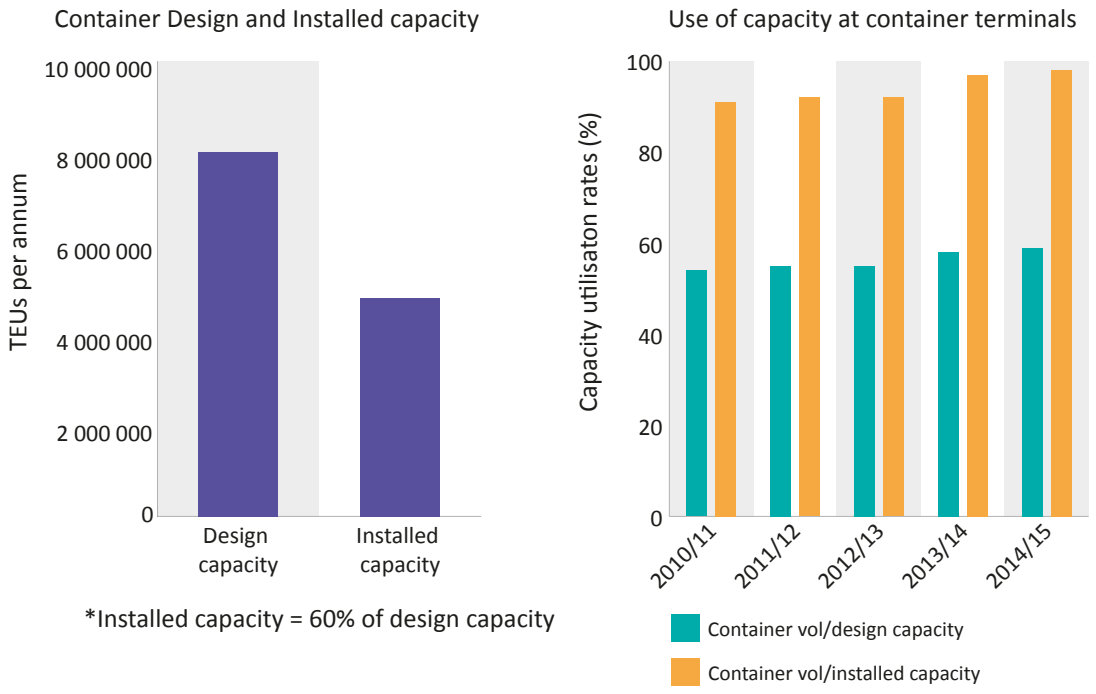
- Container berth expansion (4 berths and extension of breakwater and sand-bypass).

These interventions are meant to maintain current capacity up to 2018/19 where it will grow by another 400 000 TEUs in 2019/20 and 10,143 million TEUs in 2021/22 and beyond. In the immediate intervening period, the difference between capacity and use of the terminals (discussed in the next section below) suggest that there is excess capacity that should be exploited before additional capacity is provided through new Capex. The next section looks at how the current capacity is being utilised.

Container Terminal Utilisation

Due to the legislative framework pertaining to port economic regulation in South Africa, the Regulator effectively regulates port infrastructure with a lever to address operational performance as part of the broader mandate, to ensure an effective and efficient port system. On this basis, the utilisation of South African terminals is looked at from primarily an infrastructure perspective, hence consideration of capacity utilisation in terms of terminal design and installed capacities. The official numbers are obtained from the Authority's various planning documents (up to 2014), data submitted to the Regulator on request, as well as Transnet's official data as published in its Annual Reports since 2006.

Figure 6 : **Use of Container Terminals' Design and Installed Capacity**



Overall mapping of annual throughput at container terminal against design and installed capacity shows low levels of utilisation of design capacity, highlighting excess capacity in the system. In the previous iteration of this Report in 2014, the Regulator only looked at one year. The Table below confirms a general trend across the years. As alluded to earlier, this may be explained in the Authority's approach of providing capacity ahead of demand; however, the variance in utilisation between design and installed capacity in the system is significant to warrant closer scrutiny of the causes.

Installed capacity in SA container terminals is 60% of the published design capacity. Of the installed capacity, annual utilisation computed from annual TEUs handled in the system shows that terminals are edging close to fully utilising installed but not design capacities. There is about 41% capacity in the system that is not utilised.

Berth utilisation shows how productively or efficiently the terminals are used. The Regulator's previous report (2014/15) focussed on throughput per berth metre and terminal area, and container moves per ship working hour as an indication of productive and efficient use of terminals. This section presents results on the Regulator's analysis of trends relating to terminal performance as indicators of efficiencies in the system, namely: moves per ship working hour indicating how fast vessels can move in and out of South Africa's container terminals, thus how competitive South African terminals are viewed; time spent by vessels at anchorage as an indicator of delays, thus congestion in the system; gross crane moves per hour, measuring the moves per ship working hour contributing to the ship turnaround times; and ship turnaround times.

The Regulator will in future also undertake work to confirm the veracity or otherwise of the Operator Standards (Terminal, Marine, Road and Rail i.e. TOPS, MOPS, ROPS and HOPS) process, to have that data as input into research and future analysis of productivity and efficiency measures.

Container Moves per Ship Working Hour

There are various ways of calculating berth utilisation to arrive at how effective the berths are being utilised or berth productivity. The 2014/15 report focussed on throughput per metre of berth as well as throughput per terminal area, as covered in the methodology. This Report focuses on berth productivity as determined through moves per ship working hour/across the ship rate, as it relates to container terminals. All of the designated container terminals in South Africa are 24 hour operations and as per the tariff book, open for business 365 days in a year. The berth utilisation hours per annum for each terminal in Durban, Port Elizabeth, Ngqura and Cape Town are 8 760 hrs with East London at 4 576 hrs a year. In terms of the UNCTAD berth utilisation factors, the following utilisation rates were therefore established for the four terminals, as reflected in Table 4 .

Table 4: **Container Moves per Ship Working Hour – Based on Design and Installed Capacities, 2013 Performance and 6 Year Average**

Container terminals	(1) Berth Utilisation hours (per annum, using UNCTAD factors)	(2)Ship rate based on design capacity (TEUs/hr)	(3) Ship rate based on installed capacity (TEUs/hr)	(4) 2012/13 ship rate (ATS) TEUs/hr based on throughput	(5) Actual ATS as per 2012/13 Annual Report (TEUs/hr)	(6) Reported Average Container moves per hour (6 years)
Durban	42 924	70	70	62	52	47
Port Elizabeth	9 636	62	34	30	40	39
Ngqura	15 768	178	31	45	55	47
Cape Town	24 528	61	37	37	54	49

What Table 4 reflects is the number of hours that each of the terminals should be operating in a year given the number of berths and published operating hours, assuming they are appropriately resourced and managed. This is captured in the first column.

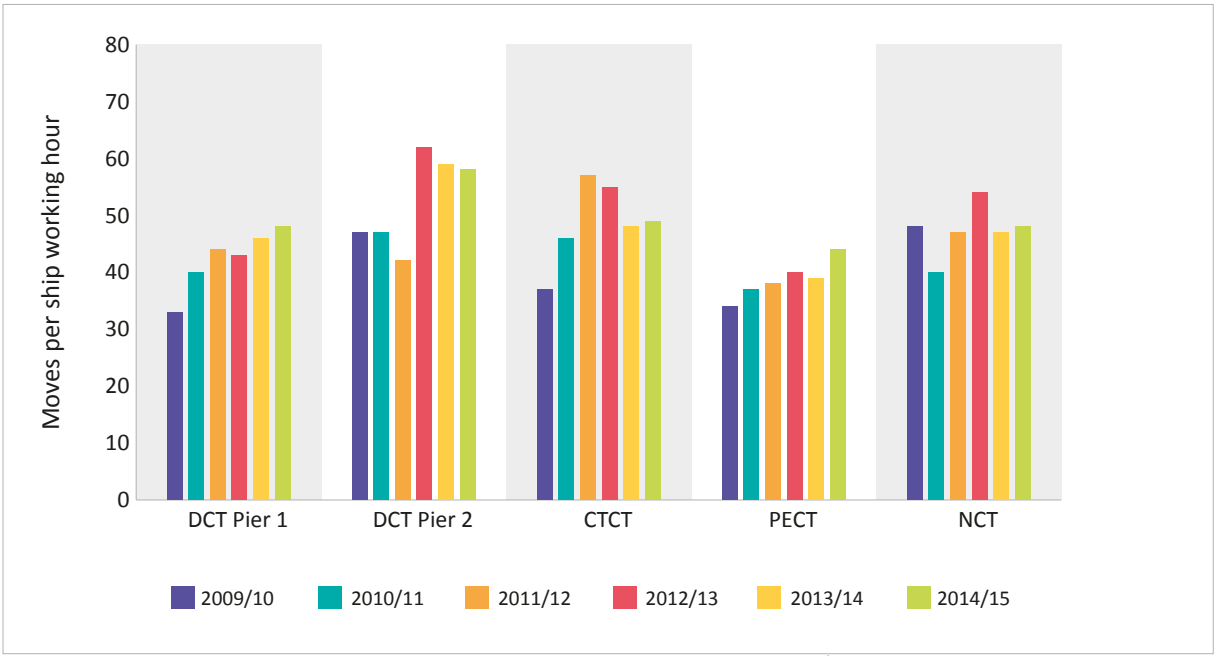
The next two columns highlight what the moves per ship working hour should be based on design (2) and installed (3) capacity of the terminals. In the previous report, the container moves per ship working hours were determined based on 2013 throughput which is presented in (4) whilst (5) captures each terminal's performance as reported by the Authority. With this performance measure constantly reported on in the past 6 years, the last column presents the 6 year average (6). From an infrastructure point of view, column 2 and 3 sets the performance norm or benchmark for the respective terminals.

The port of Durban's performance results for 2013 is the closest to what it should be based on design and installed norms. Nevertheless, across the terminals, the container moves per ship working hour based on design capacity are significantly higher than what is obtained when annual throughput is used, meaning that if design capacity is used, even the better performing terminals fall short. With regards to installed capacity, only the port of Cape Town's container terminal performance is exactly where it should be in terms of its installed capacity. With the other terminals, the situation does not change significantly when comparing performance against installed capacity as the performance is still less than where installed capacity numbers requires it to be.

The results for the port of Ngqura show how underutilised the container terminal capacity is, even though its performance is relatively better in relation to installed capacity. Overall, it would seem that more capacity can be provided in the system by improving the productivity of terminals.

The individual terminal's performance since 2009/10 as captured in Figure 7 shows a general trend of unsteady performance on container moves per ship working hour, save for DCT Pier 1 and the port of Port Elizabeth. Even though their performance dipped in 2013 and 2014 respectively, both terminals' performance has generally been improving year on year.

Figure 7: **Container Moves per Ship Working Hour (All Terminals)**

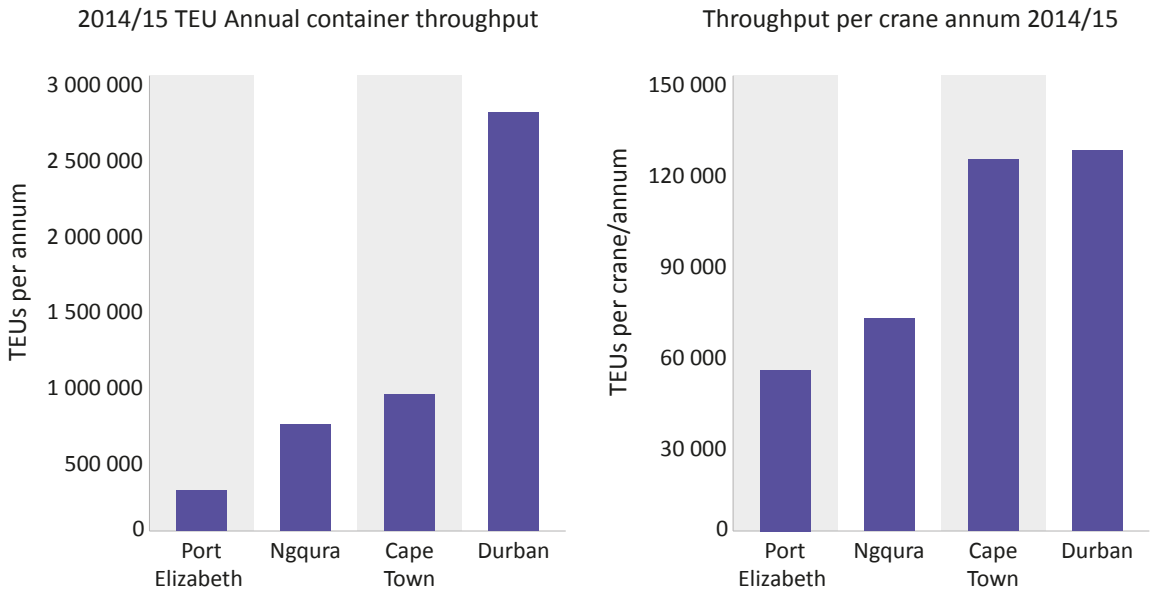


DCT Pier 2 and the Ngqura Container terminal, each handling the most containers per ship working hour in 2013, have not maintained improvements in their performance which has "see-sawed" instead over the period. Cape Town demonstrates the same unsteady pattern having handled the most average containers per ship working hour a year earlier in 2012. It is expected that there would be consistency or an upward trend, up to a point, in the performance of terminals which is not demonstrated in Figure 7. Next we look at terminal performance in terms of gross crane moves per hour, a measure for which a target has been set in government's Medium Term Strategic Framework.

Gross Crane Moves per Hour (GCH)

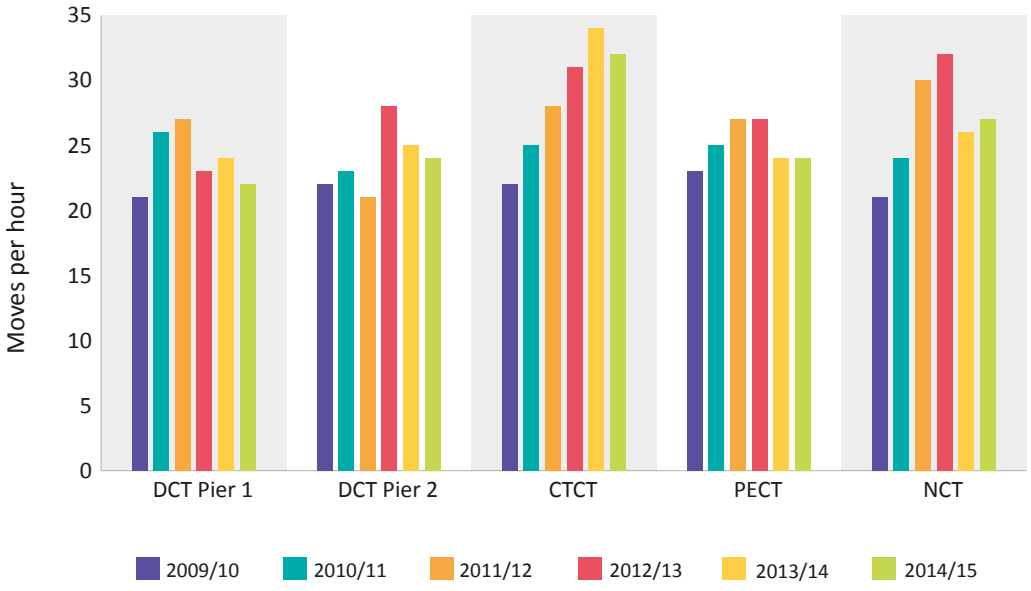
The number of crane moves per hour has been used as a composite indicator for productive and efficient port operations. Crane moves per hour is different from moves per ship working hour in that moves per ship working hour indicates how many boxes should be moving over the quay (with many cranes working), where gross crane moves per hour indicates how many are attributed to a crane. In a simple example, if one crane is deployed to a vessel and the operation achieves 62 moves per ship working hour, then crane moves per hour will be 62. However, if 2 cranes are deployed and the same moves per ship working hour are achieved, then the number will be divided by two. Figure 8 reflects the number of TEUs per crane for each of the Terminals.

Figure 8: **TEU Throughput and TEUs per Crane**



The port of Cape Town has recorded 112 374 TEUs per crane per annum, compared to Durban's 125 340 TEUs per crane. Durban's performance compares well with the global average of 123 000 TEUs per crane per year, as reported in 2014. Against this backdrop gross crane moves per hour and related terminal performance is reported.

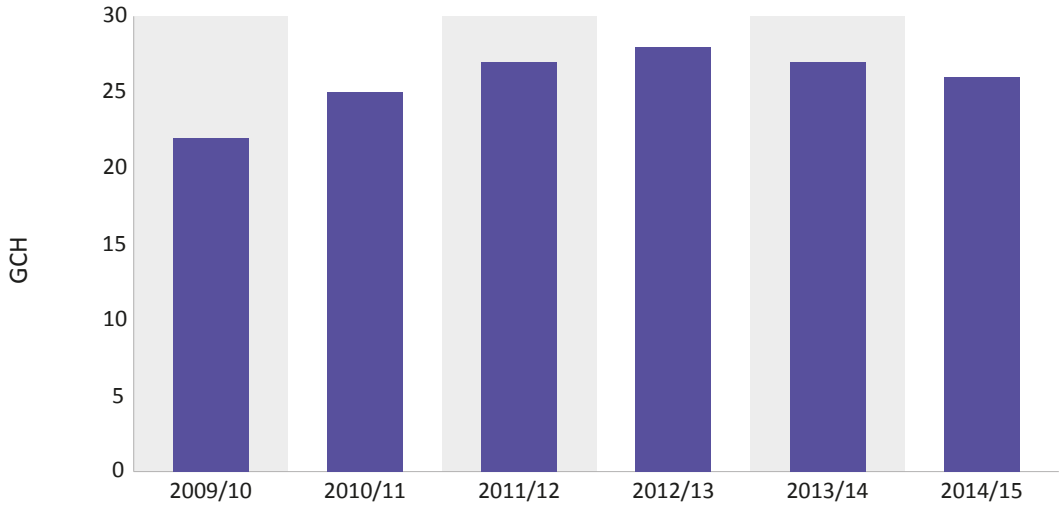
Figure 9: **Gross Crane Moves per Hour (GCH) 2010/11 to 2014/15.**



The port of Cape Town, where gross crane moves per hour numbers are higher than at the other terminals and generally increased since 2010, has seen a slight decline in 2014/15. With the other terminals there is no consistent performance reflected in the ups and down. This might be a function of the performance target setting process (discussed below) where targets are based probably on previous performance rather than a set standard or even stretching of previous performance.

The terminal's average gross crane moves per hour performance over the last 5 years (2009/10 – 2014/15) has varied significantly year on year and is still below the 2014 – 2019 Medium Term Strategic Framework target of 35 moves per hour, set to be achieved by 2019 - a target that the port of Cape Town only came close to in 2013 but has not sustained since.

Figure 10: **Average GCH: Container Terminals 2009/10-2014/15**



The average performance for all terminals shows that more effort is required if the MTSF target is to be met by 2019 since to date, average performance by all terminals is yet to reach 30 moves per hour and beyond.

Table 5 summarises the year on year improvements in GCH since 2010/11 and the compound annual rate for the period.

Table 5: **Year on Year GCH and 5 Year Compound Annual Growth Rate**

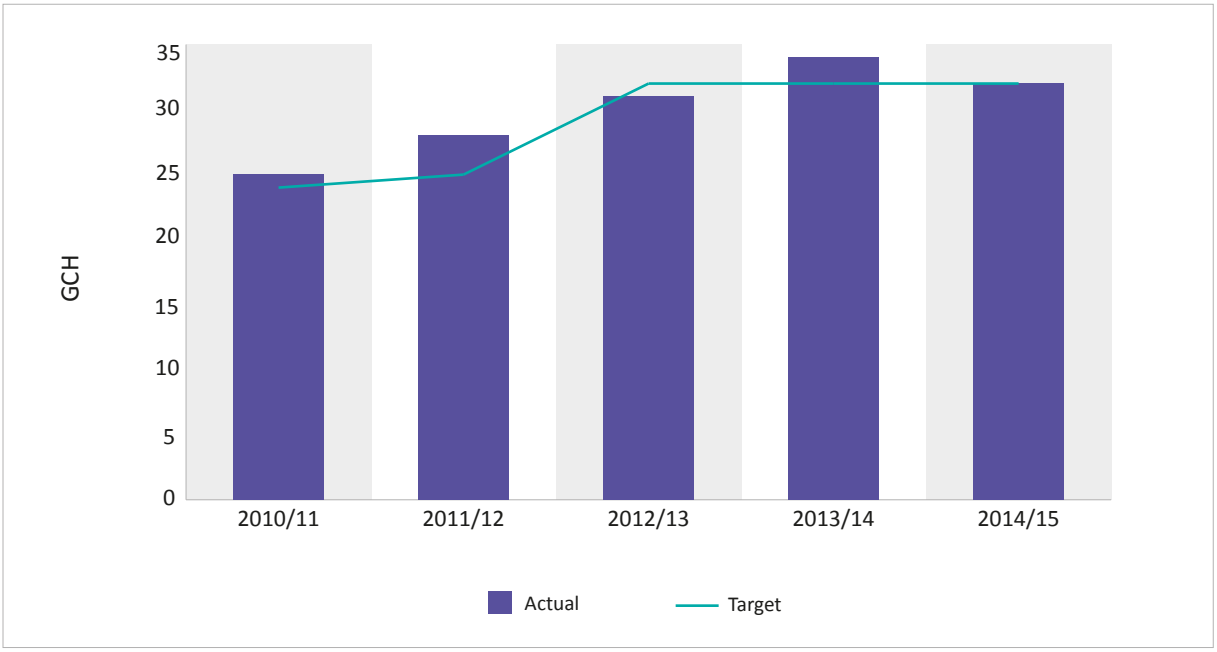
Terminal	2010/11	2011/12	2012/13	2013/14	2014/15	5YR CAGR
DCT Pier 1	24%	4%	-15%	4%	-8%	1%
DCT Pier 2	5%	-9%	33%	-11%	-4%	2%
CTCT	14%	12%	11%	10%	-6%	8%
PECT	9%	8%	0%	-11%	0%	1%
NCT	14%	25%	7%	-19%	3%	5%

Cape Town (8%) and Ngqura (5%) registered overall improvements from 22 to 32 GCH and 21 to 27 GCH respectively.

DCT Pier 2 recorded a significant improvement in crane moves per hour in 2012/13 but has not maintained the momentum since, only managing a compound annual growth rate, or improvement, of 2% over the period. Except for 2014/15, the Cape Town container terminal leads the country's container terminals with consistent double digits year on year improvements in gross crane moves per hour, and an overall 8% improvement over the period. Ngqura container terminal follows with an overall 5% compound growth rate which is marred by a significant year on year 19% reduction in performance for 2013/14. The Port Elizabeth terminal's performance has gradually decreased and stagnated during the 5 years, with the positive changes of 2010/11 and 2011/12 not repeated since.

Figures 11a - 11d look at targets that are set per port to understand the varied performance by the terminals.

Figure 11a: **Cape Town Gross Crane Moves per Hour per Terminal Target vs. Actual**



All the terminals have missed some of the set targets over the period; the port of Cape Town only missed its target in one year, performing relatively better than the others. The set targets neither reflect alignment with the MTSF target of 35 GCH by 2019, nor the pursuit of a sustained and/or improving performance, as they lack consistency. Notwithstanding other explanatory factors that may apply, just looking at the numbers, the port of Cape Town's performance not only performed better, it is also the only terminal that has consistent targets at 32 GCH for the past three years, suggesting that targets set on an upward trajectory can produce performance close to what is required. The setting of targets that stretches performance of the terminal operators, rather than being based on previous performance, is encouraged.

Figure 11b: **Durban Gross Crane Moves per Hour per Terminal Target vs. Actual**

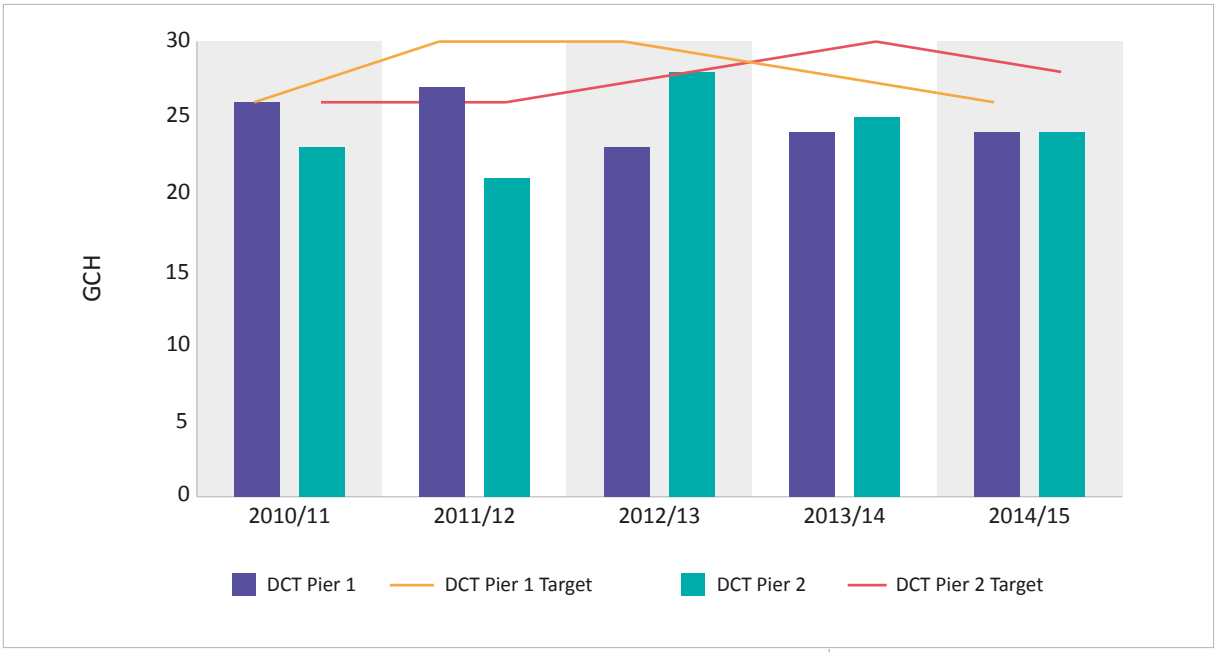


Figure 11c: **Port Elizabeth Gross Crane Moves per Hour per Terminal Target vs. Actual**

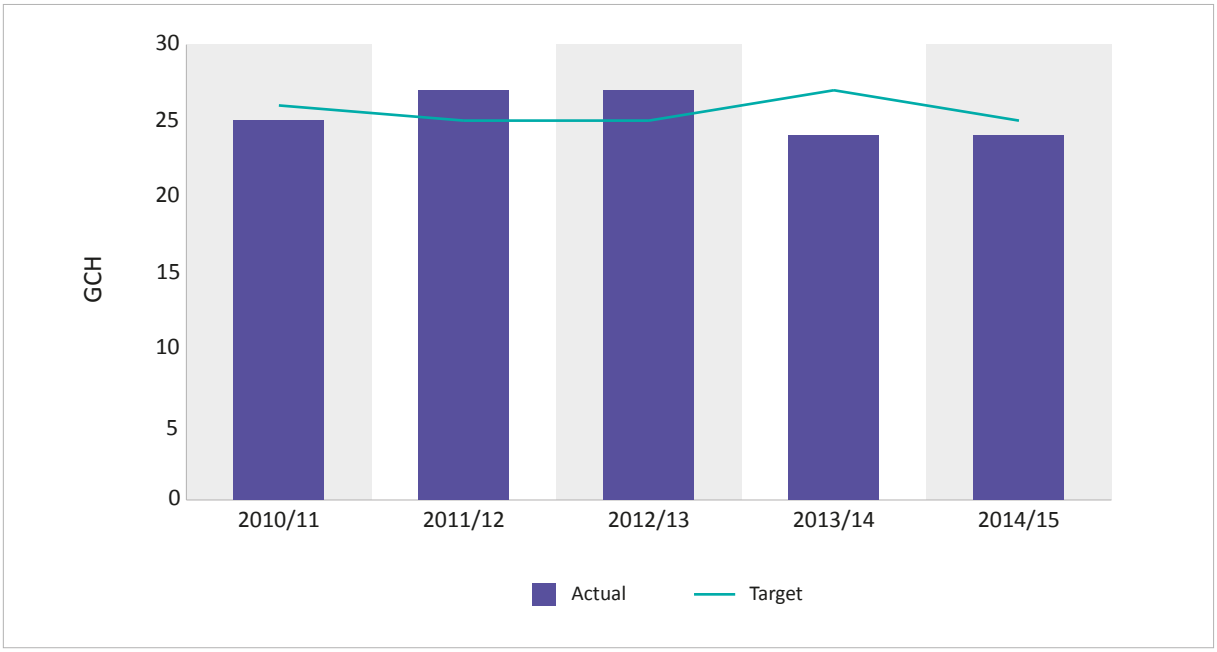
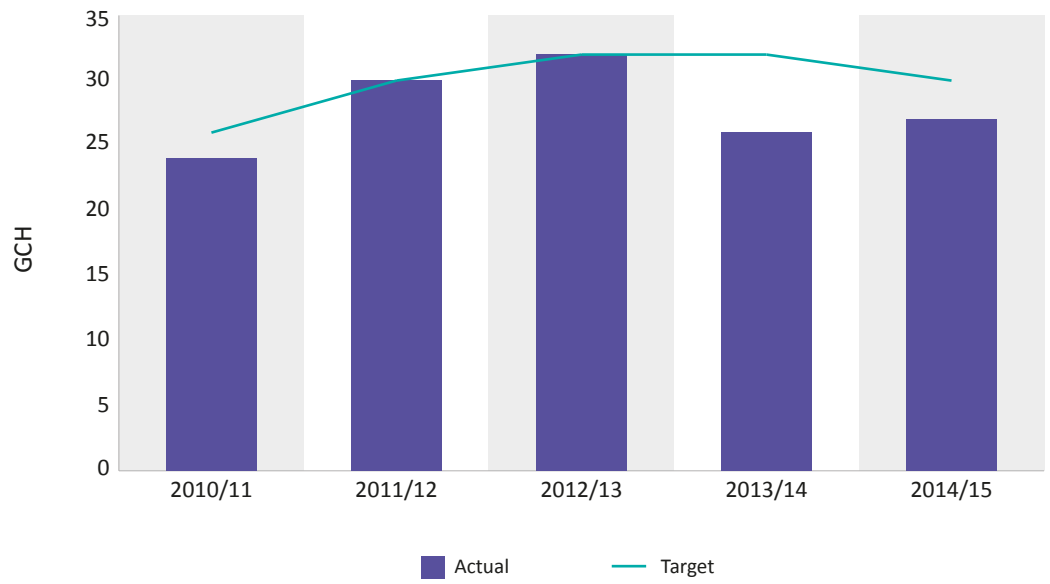


Figure 11d: **Ngqura Gross Crane Moves per Hour per Terminal Target vs. Actual**



Time Spent at Anchorage

Time spent at anchorage by container terminals is summarised below. The only marked and improved performance on this measure is at the port of Durban, which shows a steady improvement between 2011/12 and 2014/15 with a 35% reduction of time spent at anchorage. A part of this improvement may be due to fewer but larger vessels calling at the port. The port of Cape Town's improvement between 2011/12 and 2012/13 is notable, raising questions about the inability of the port to sustain its performance. The other ports performance has overall been inconsistent.

Figure 12a: **Time Spent at Anchorage: SA Teminals 2011/12 - 2014/15**

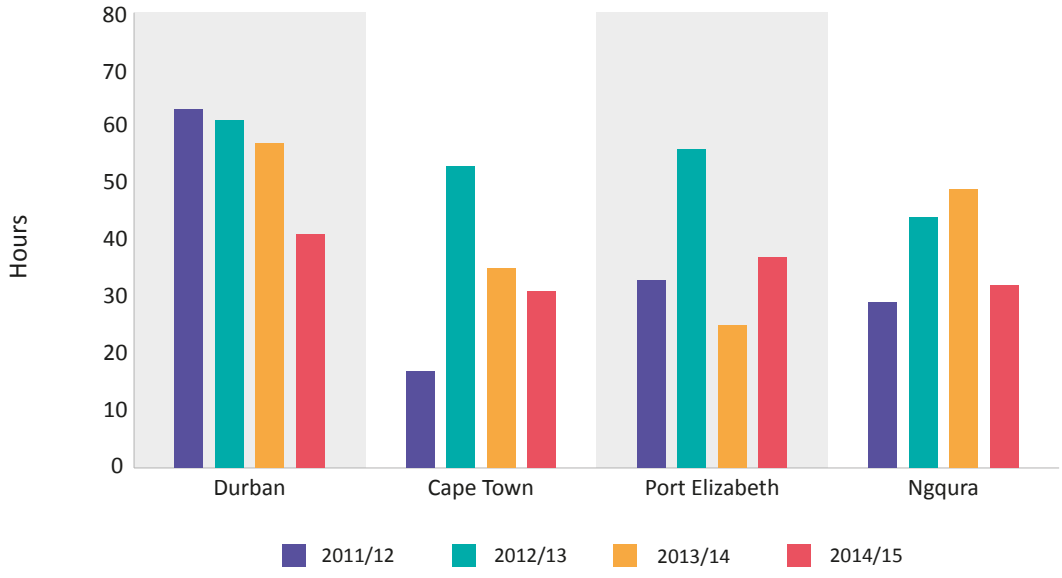
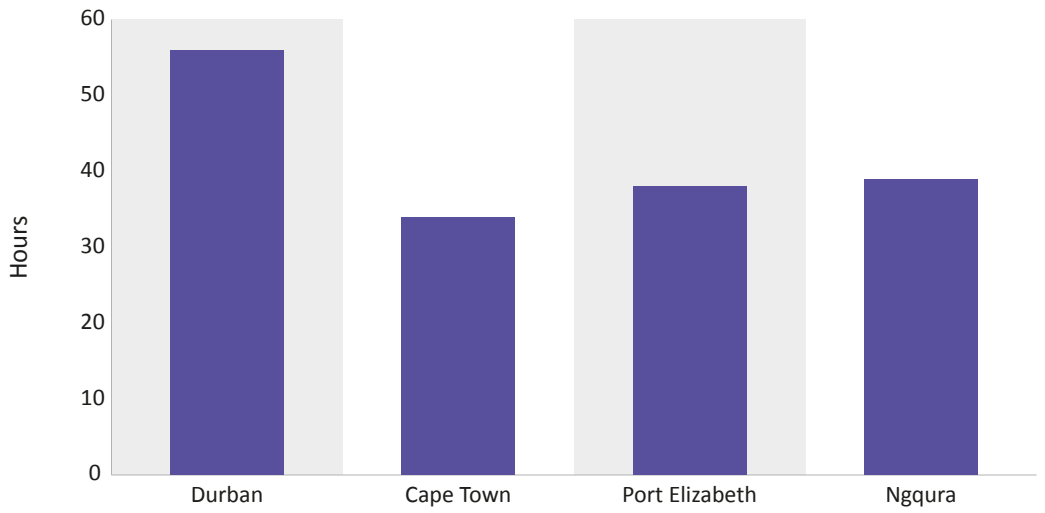


Figure 12b: **Average Time Spent at Anchorage: SA Container Terminals 2011/12-2014/15**



Owing perhaps to the highest level of container activity, Durban's average for the past four years is higher than at the other three ports and shows vessels waiting more than two days, compared to a day and several hours in Cape Town, and just over a day and a half in Port Elizabeth and Ngqura.

Ship Turnaround Time

The definition of ship turnaround time is the measurement of time from when a vessel crosses the port limit in and out, including berthing, loading/offloading etc.

Figure 13: **Average Ship Turnaround Time - Container Terminals 2009/10 - 2014/15**

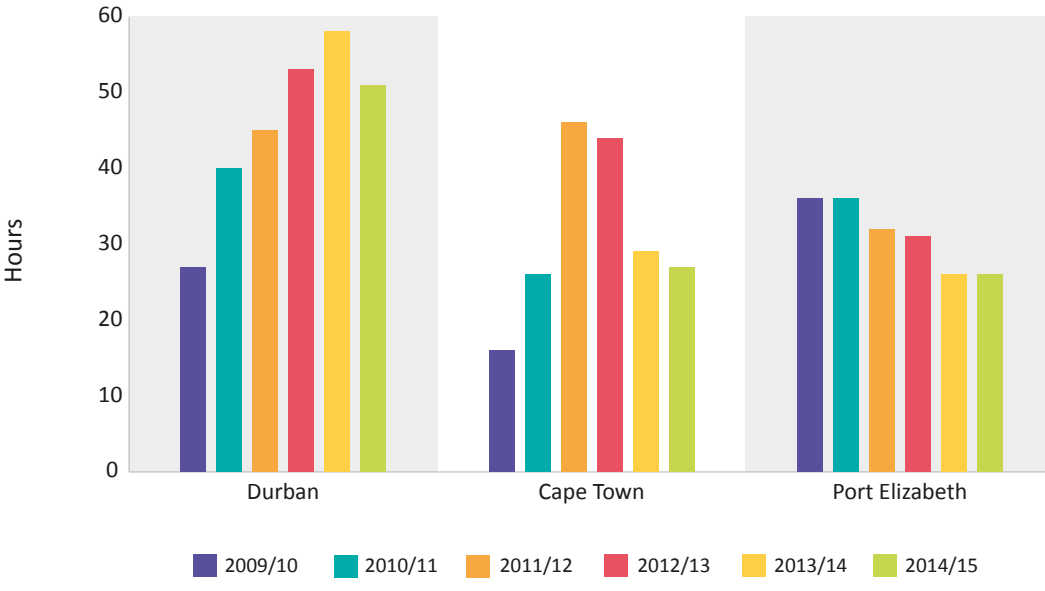
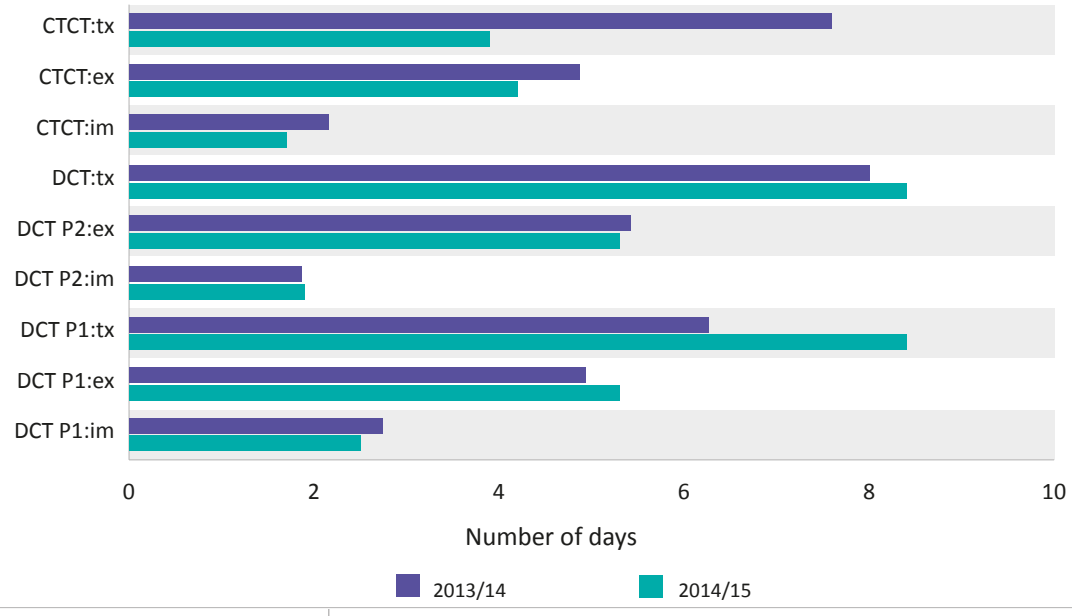


Figure 13 shows the port of Port Elizabeth's ship turnaround time steadily decreasing with 10 hours being shaved off since 2015. Whist the port of Cape Town seems to be improving in the last three years, it has not yet reached the 16 hr ship turn around recorded in 2010. The Port of Durban's ship turnaround time has deteriorated, doubling between 2010 and 2014 before a slight improvement in 2015.

Dwell Times

The last measure for container terminals is dwell times, i.e. the time that cargo spends at the terminal after being off loaded or before being loaded for export. Data for the Port of Ngqura and Port Elizabeth on this measure is yet to be captured by the Authority. Cargo dwell time at a terminal contributes significantly to the efficiency of a terminal, and is one of the measures where different port users' interests diverge, with some gaining from longer dwell times. An OECD/ITF study into reasons why cargo dwell times are so high in terminals/port in Sub-Saharan Africa reported that cargo dwell times can be used to constrain competition, in addition to managing inventory costs. Faster turnaround of containers means that more can be handled with the same capacity. The set target for cargo dwell times differ depending on the movements. For imports, there is a three-day dwell time target, whereas export containers can stay on for a further two days. The average stay for transhipment boxes is 10 days, except at the port of Cape Town where 15 days are allowed. Figure 14 shows Pier 1 exports and transhipment dwell times increasing, with Pier 2 almost the same. There is a general reduction in dwell times at the port of Cape Town.

Figure 14: **Cargo Dwell Time at SA Container Terminals**



Terminal performance, as captured in Figure 14, shows that, in general, transhipment (reflected as "tx" in the graph) and import (reflected as "im") targets were met in the two year period, with transhipment faring even better with reported cargo dwell times of less than 10 days even in Cape Town with a higher number of dwell time days allowed. Export (reflected as "ex") cargo has tended to stay slightly longer than the targeted time in the port of Durban in 2014 and 2015.

The three terminals generally performed better than the set target on dwell times for imports and transhipments where cargo has stayed relatively shorter periods than what was targeted.

The performance of the terminals on these key measures is noted and will be tracked by the Regulator in line with the Terminal, Marine, Road and Rail Hauliers' Operator Performance Standards process which is nearing its 3-year gestation period allowing for operators to be held to perform against set, agreed and tested targets.

Summary

All container terminals in the South African terminals are still managed by one operator, i.e. Transnet Port Terminals (TPT).

- The difference between design and installed capacity indicates some 40% of capacity that can be available to the system, should installed capacity be expanded to meet design capacity (these were not the focus of this Report, thus there are no specific recommendation thereon).
- The capacity expansion projects that the Authority will be implementing in the medium to long term are based on volume projections of 4,8% between 2011 and 2042; this is against the recorded previous compound annual growth rate (2001/02 till 2013/14) of 6,97%, and a reduced CAGR of 3% over the last 5 years.
- GCH target of 35 moves per hour set by the Presidency within the MTSF (2014 – 2019) in order to achieve the objectives of the long term National Development Plan (NDP) are unlikely to be met in the current term of office, with the 2014/15 GCH still at 26 moves per hour.
- The setting of performance standards based on previous performance needs to be reviewed including revisiting performance targets in relation to design and installed capacities, whilst balancing this with the provision of capacity ahead of demand.
- There must be consistent and improved performance on the terminal's efficiency and productivity across the entire chain of measures from time spent at anchorage, to moves per ship working hours, GCH and so on.

The next section focusses on the Automotive or Roll-on-Roll-off (RORO) terminals.

A view of the Durban Container Terminal.

Automotive/ RORO Terminals

Automotive terminals account for 681 022 m^2 of terminal area in the ports system. As with containers, automotive operations are licensed exclusively to Transnet Port Terminals in the ports of Durban, East London and Port Elizabeth. Although full capacity in the RORO terminals is for handling of 850 000 units per annum, the available or installed capacity is 681 041 units per annum.

RORO Terminal Capacity

The breakdown of capacity per port at the RORO terminals is provided below.

Table 6: **Automotive Terminal Capacity**

Port	Terminal Area (ha)	Total Berths (no.)	Usable Berths (no.)	Berth Length (m)	Berth Draft	Design Terminal Capacity (Units per annum)	Installed Terminal Capacity (Units per annum)
Port Elizabeth	21	2	1	342	12,2m	200 000	133 552
East London	9	2	1	559	9 m	130 000	67 489
Durban	39	3	3	1 149	10,1m to 10,6m	520 000	480 000
Total	69	7	5	2 050		850 000	681 041

The largest automotive vessels that called in any of the country's ports during the 2013/14 period were: Figaro *with 74,258 registered tons (and a draught of 10,1m), followed by* Tiger *and* Titania, *both with 74,255 registered tons (and draughts of 8,7m).*

In October 2015, the port of Durban's RORO terminal berthed the largest car carrier in the world, the Hoegh Target. *The vessel, which is 200m long and 36m wide, has 14 decks and a combined deck space of 71 400 square meters and a carrying capacity of 8 500 vehicles.*

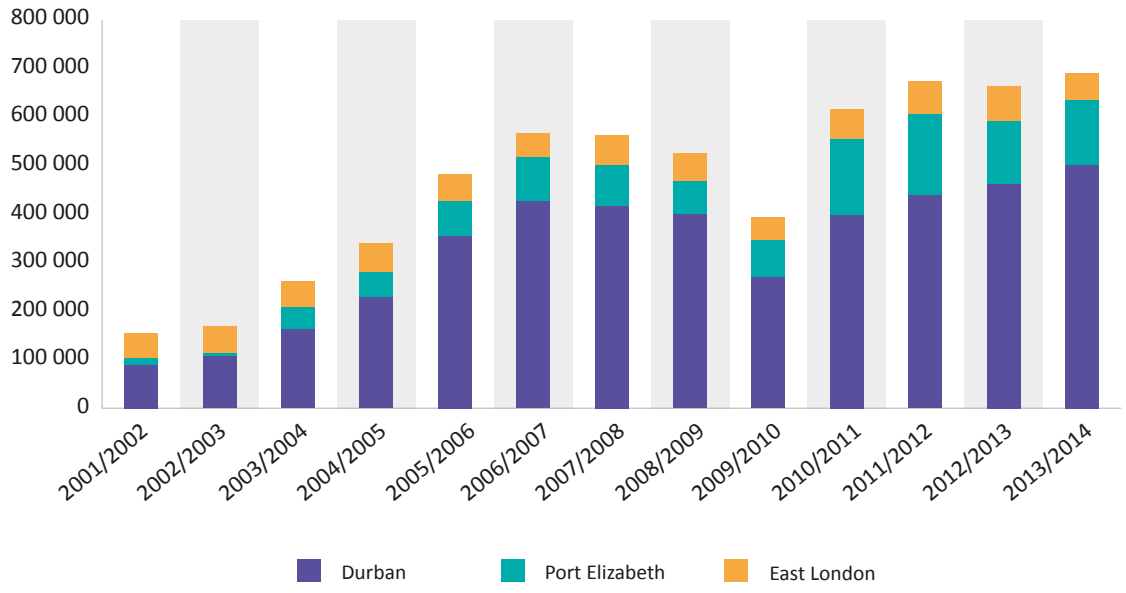
The smallest draught in the system is at the port of East London with a 9 m draught, and the deepest is at the port of Port Elizabeth at 12,2 m draught. The port of Port Elizabeth's berth length is the shortest of the three and, given the size of vessels below, it can only work one vessel at a time. Yet, it has more installed capacity than the port of East London. All three of South Africa's RORO terminals are able to accommodate the largest RORO vessels based on the terminal capacity and vessel dimension. Key performance factors for RORO terminals after terminal capacity where vessels will berth, is the layout of the parking as well as efficient operations on berthing, stevedoring, and delivery/receipt of the vehicles. The three terminals have road and/or rail interfaces and it is the management of these interfaces and safe passage of the vehicles to/from the vessels that determines the efficient performance of RORO terminals.

RORO Capacity and Volume

Figure 15 shows the growth in RORO volumes in the South African ports system between 2001/02 to 2013/14. As with containers, volume growth in this sector was driven by the port of Durban, with significant numbers also coming from the port of Port Elizabeth which has experienced higher growth rates compared to the other two.

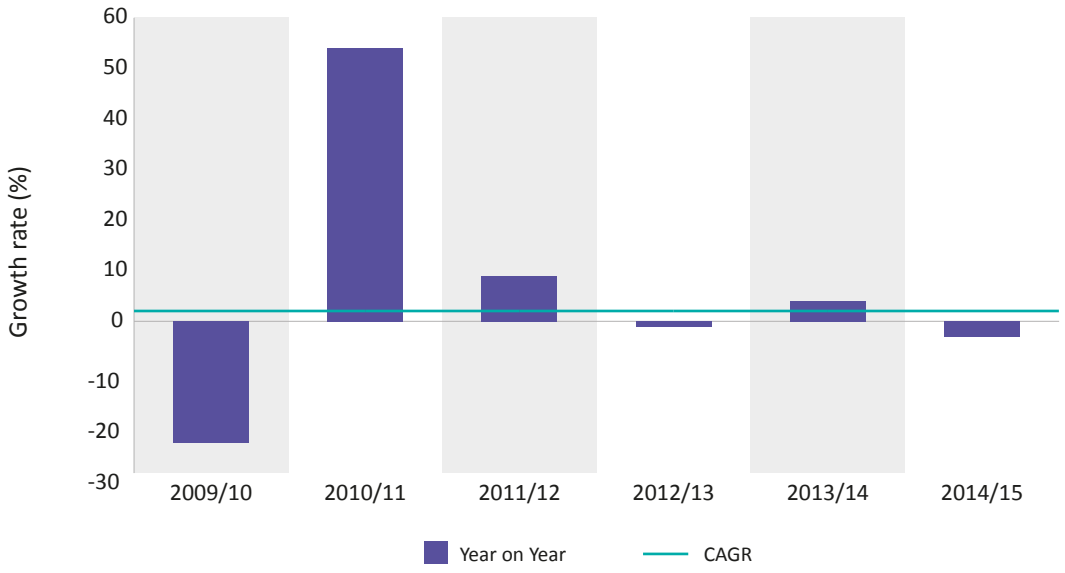
Post the global economic crisis of 2008; automotive port volumes experienced a significant dip in 2009/10, with a year on year decline of - 24% from which it recovered in 2010/11. The compound annual growth rate over the 6 year period is a conservative 2,04% volume growth rate.

Figure 15: Historical RORO Volumes



Source: NPA submission to the Regulator 2015/16.

Figure 16: Year on Year Vehicle Volume Growth Rates 2009/10 - 2014/15



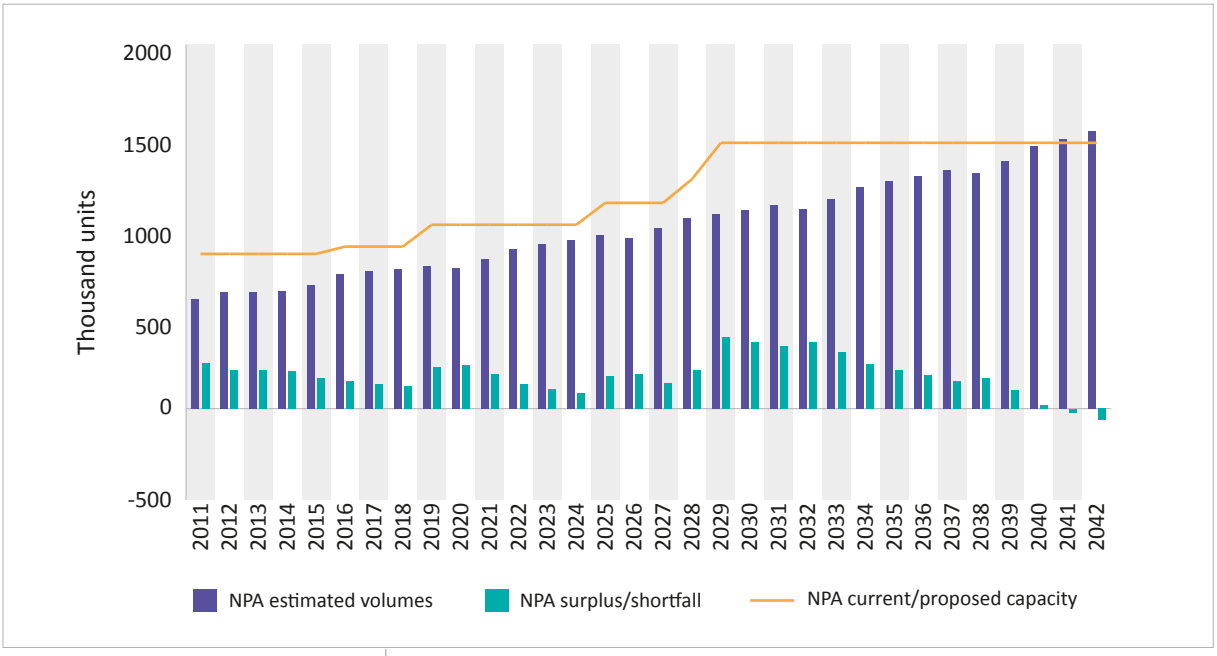
The past 6 year's growth rates are not reflective of historical growth rates recorded in the RORO sector. The overall growth rate between 2001/02 and 2013/14 was 13,32%, driven mainly by numbers in Port Elizabeth and Durban with East London's rate recording very low growth over the same period.

Table 7: **Historic RORO Volume per Annum and Corresponding Growth Rate 2001/02 - 2013/14**

RORO	2001/2002	2013/2014	CAGR
Durban	89 407	501456	15,45%
Port Elizabeth	13 215	133194	21,23%
East London	51 361	56193	0,75%
Total	153 983	690843	13,32%

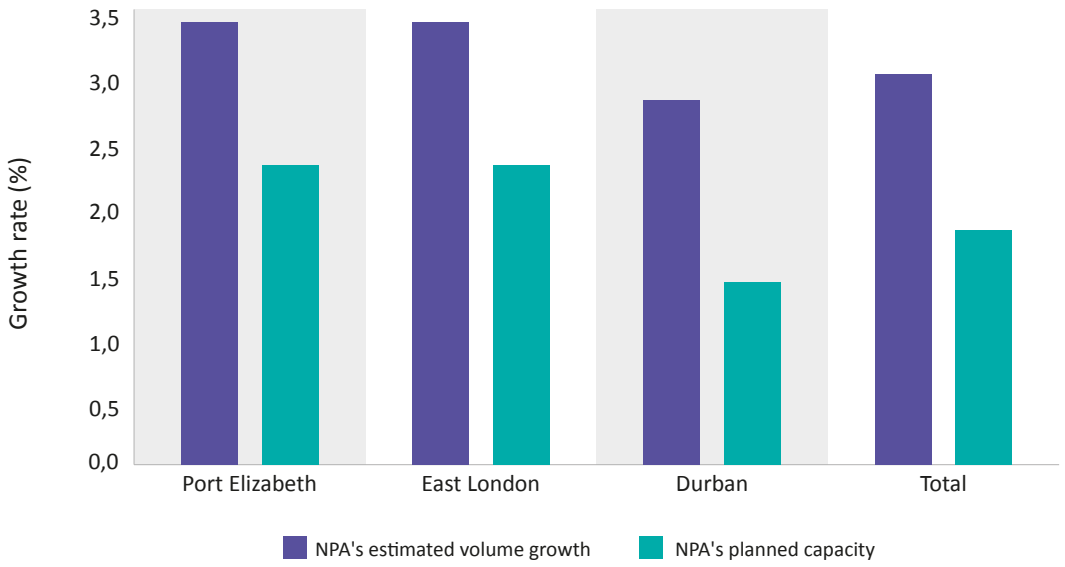
The Authority's plans for capacity expansions to cater for Automotive volume growth based on the projected growth rates and existing capacity are modest, with existing capacity projected to meet demand around 2040. Currently there are no major investments tabled for the RORO terminals, but it is anticipated that PE RORO capacity will be enhanced in the medium term.

Figure 17: **Overall Automotive Capacity and Volume Projections (2011/12 to 2041/42)**



Overall system capacity is anticipated to grow from the current 850 000 (2015/16) units to over 1 400 000 units by 2042. With the repositioning of the RORO terminal in the port of Port Elizabeth after the relocation of the tank farms and manganese terminal, created capacity is expected to sufficiently cater for volume growth until 2028, which is when the Authority anticipates there will be a need for a new berth in the port of Port Elizabeth to double its capacity to 400 000 units per annum in 2029. Overall system capacity will increase to above 1 400 000 units to cater for projected volumes by 2040. The only projects planned to increase RORO terminal capacities are two berths in the port of Port Elizabeth, which suggests that additional capacity to be created in the system will mainly be due to operational and efficiency gains.

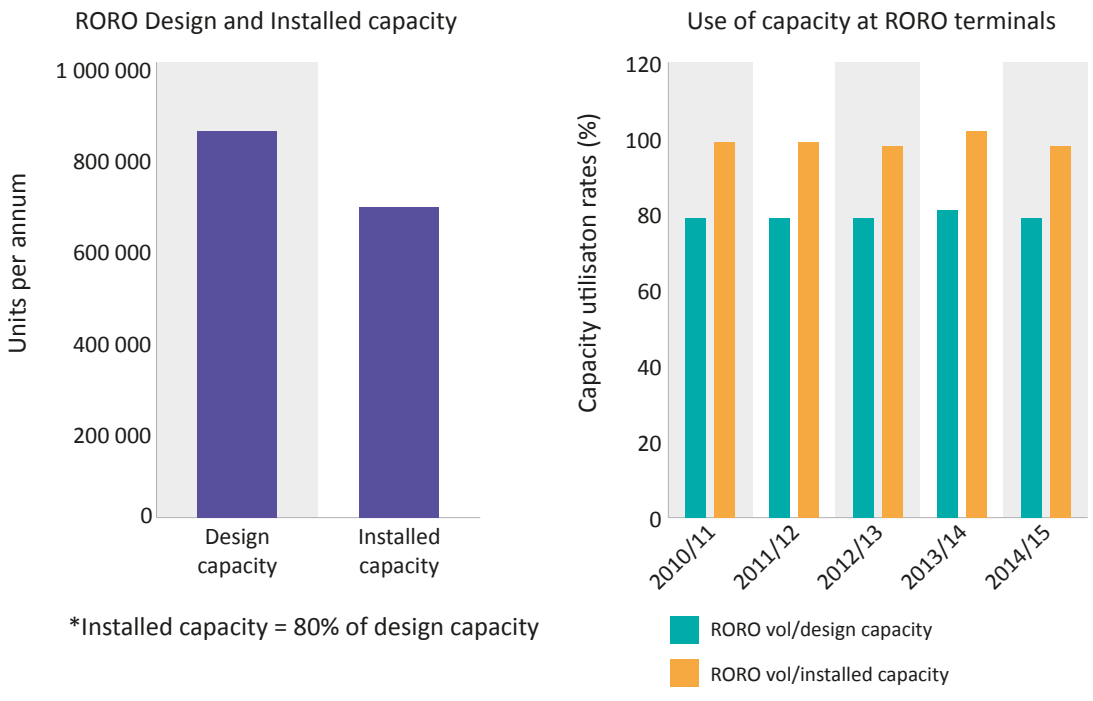
Figure 18: **Overall Automotive Capacity and Volume Projections 2012-2042**



RORO Terminal Utilisation

Installed capacity in RORO terminals is 80% of the published design capacity. Of the installed capacity, annual utilisation computed from annual TEUs handled in the system shows that terminals are at full utilisation of installed, but not of the design capacity, with around 20% of design capacity not used.

Figure 19 : **RORO Terminal Design and Installed Capacity and Utilisation Levels**



The high utilisation levels in the RORO terminals without need for immediate capacity expansions highlights the importance of operational parameters more than infrastructure in determining efficiencies in this sector. The capacity created when the terminals were expanded earlier on in the 2000s is being sweated such that even with increasing volumes, the Authority is only planning to provide significant additional capacity much later. The interplay between storage/parking (with dwell times of about 10 days in Durban) and rail (Durban RORO terminal is serviced by trains that share the same lines and scheduling with General Freight) in building parcel sizes (an average of 3000 cars per vessel) as well as the stevedoring functions are critical in the RORO sector.

RORO Terminals Units per Ship Working Hour

Figure 20 captures the performance of RORO terminals in relation to units handled per ship working hour. Although demonstrating a steady improvement over the reported period, the Durban RORO terminal handles the least number of units per ship working hour compared to Port Elizabeth and East London. The port of East London has the best performance having reached 80 units per hour in 2011/12, a feat it has not repeated in the period reported on herein. Given that Durban handles the most volumes, the lower numbers of units per hour is worth looking into.

Figure 20: **Vehicle Units Handled per Ship Working Hour 2009/10-2012/13**

As with the container terminal's performance in Cape Town, discussed earlier, when consistent targets are set year in and year out, performance has tended to generally start matching the same trend, even if below target. In all three terminals the targets, as reflected in Table 20 are either stable or increasing. The port of East London's performance was notable in that it had the most stretched target, a targeted 33% improvement, of the three and achieved the most consistent performance, despite the fact that the port of Port Elizabeth recorded the highest number of units in one year.

Another factor may be berth/terminal configuration which is simple and one –dimensional in Port Elizabeth and East London, whilst Durban has three disconnected berths.

Figure 21: **RORO Perfromance Targets - Units Per Ship Working Hour 2010/11-2012/13**

Critical operational factors for RORO operations are: storage, stevedoring, and the receipt/delivery process, which are critical and are areas that require specific attention as more is understood in setting targets for and measuring performance of RORO terminals. Proper "roll-on/roll-off" of the vehicles within time and without damage is just as important and the equivalent of container moves per ship working hours. It is commendable that the Authority's efficiency targets in the Long Term Port Development Framework are significantly higher at between 100 and 170 units per hour in the three terminals.

Summary

- There is no competition in South Africa's RORO terminal space with TPT being the only terminal operator.
- Although the terminals are operating close to installed and design capacity, other operational factors affect RORO terminal performance, such that a large step up in additional capacity is only required by 2029 and the longer term rather than the immediate period.

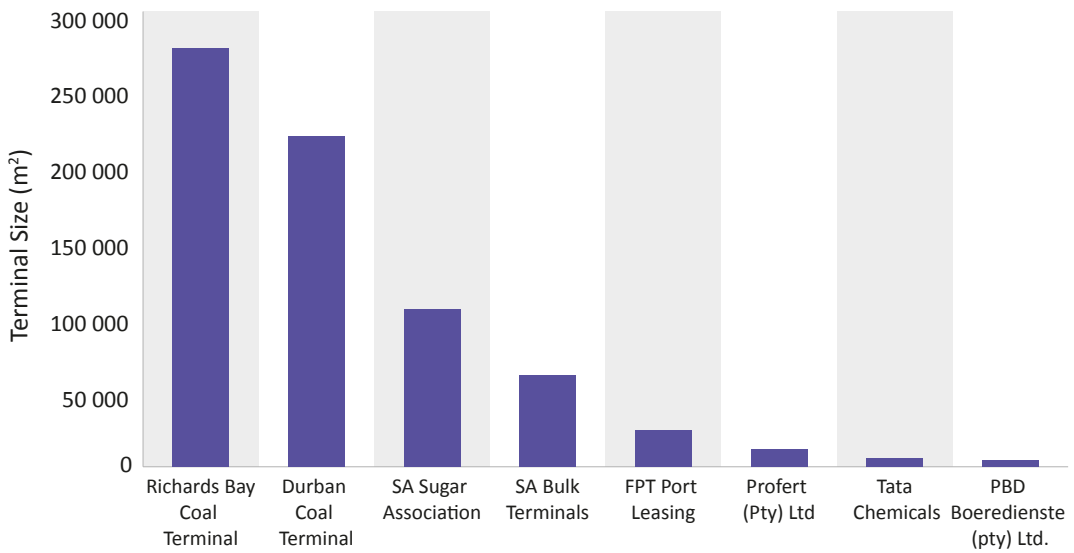
Dry Bulk Terminals

Dry bulk terminals are responsible for the shipping of major and minor bulks. Major bulks constitute the majority of dry bulk cargo by weight and they include iron ore, coal and grains. Minor bulks generally comprise agricultural products, mineral cargoes, cement, forest and steel products. The South African port system handles three main major dry bulk cargoes, i.e. iron ore (port of Saldanha Bay), coal (port of Richards Bay), and manganese (ports of Port Elizabeth and Saldanha Bay).

TPT holds the most number of licences for handling dry bulk cargo (five), followed by SA Bulk Terminals. The other operators each hold one dry bulk licence: Richards Bay Coal Terminal (RBCT), Durban Coal Terminal, FPT Port Leasing, PBD Boeredienste, Profert, and Rocasync/ Proterminal. TPT's land area include the manganese terminal in the port of Port Elizabeth, with terminal capacity of 5,5 million tons per annum. The Richards Bay Bulk Terminal handles the import of alumina, aluminium fluoride, coking coal, petcoke and sulphur, as well as the export of anthracite, steam coal, discard coal, chrome, fertiliser, chloride, rutile, zircon, sulphate, magnetite, vermiculite, hematite/iron ore and woodchips. RBCT's 276 010 square meters is reported to have design and installed capacity of 91 mtpa.

With dry bulk operations requiring space, the size of a terminal as well as capacity gives a better picture of who the main role players are in the dry bulk sector. The Authority places TPT's total terminal area for dry bulk at 642 123 square meters. The rest of the terminals occupy land area as per Figure 22 with RBCT and coal handling facility at the Port of Durban with holding the second and third largest terminal areas.

Figure 22: **Extent of Terminal Area for Dry Bulk by Terminal**



The port of Durban's nine dry bulk terminal operators represent 65% of dry bulk terminal licences, followed by Richards Bay's two, representing 14% and the balance is accounted for by single licences in the ports of East London, Ngqura, Port Elizabeth, Cape Town and Saldanha Bay.

Dry Bulk Terminal Capacity

The capacity for handling dry bulk cargo is summarised below.

Table 8: **SA Dry Bulk Terminal Capacity**

Port	Berth Length (m)	Total Berths (no)	Usable Berths (no)	Berth Draft (m)	Vessel Sizes Accommodated (length x width x draft)	Design Capacity (tons per annum)	Terminal Installed Capacity (Tons per annum)
Richards Bay RBCT	2 060	6	6	19	Capesize 180 000 dwt (289m x 45m x 18,4m)	131 000 000	105 000 000
Richards Bay	1 863	8	6	14,5-9	Capesize 180 000t (289m x 45m x 18,4m)	21 000 000	14 600 000
Durban	1 581	9	7	8,6	Handysize 35 000t (177m x 28m x 10m)	11 000 000	11 000 000
East London	388	1	1	10,7	Handysize 35 000t (177m x 28m x 10m)	984 000	470 478
Port Elizabeth	360	1	1	12,2	Handy size 35 000t (177m x 28m x 10m)	5 000 000	4 459 369
Cape Town	569	3	2	12,2 - 12,8	Handysize 35 000t (177m x 28m x 10m)	2 100 000	1 400 000
Saldanha Bay	1 260	2	2	23	Capesize 180 000t (183m x 32m x 11m)	58 000 000	50 736 955

South African dry bulk terminals are able to handle three of four traditional categories of dry bulk carrier vessels, i.e. Handy size, Panamax, and the Capesize. The ports of Richards Bay and Saldanha Bay are the only two that can handle the specialised and large Capesize vessels (180 000 deadweight tons), which, worldwide, can only be accommodated by few ports due to infrastructure constraints. The ports of Durban and Ngqura can handle the next larger size dry-bulk carrier, i.e. the Panamax (between 60 000 and 100 000 deadweight tons).

The work horses in the bulk sector are the Handymax vessels carrying up to 60 000 dwt, including their own cranes for loading/off-loading. All three vessel sizes operate on South Africa's major iron ore, coal, and grain trade routes, namely South Africa to Western Europe, South Africa to Far East, and South Africa to Europe. Notably, the iron ore and thermal coal trades tend to be Capesize trades. Overall, the indication of vessel sizes that can be accommodated for dry bulks in the table is based on the general design specifications. In practice there are variations as dictated by trades associated with the facilities. For example in the case of Durban, some facilities are capable of accommodating Panamax-size bulk carriers whilst Richards Bay would generally accommodate Capesizes, outside of the RBCT.

The largest bulk carrier to call during 2013/14 was CSB Talent, *a vessel with 152,333 gross registered tons, followed by* CSB Prosperity, *a vessel with 151,825 gross registered tons. Both these bulk carriers called at the port of Saldanha Bay.*

The reported GRT sizes handled in each of the ports are lower than what the ports capacity indicates can be handled per port.

The trend with vessel sizes for bulk carriers is influenced by market determinants, the most important of which being the freight and charter rates which affects the profitability of routes and vessels and thus deployment on trade routes.

The Gross Registered Tons (GRT) of vessels that have called at the various terminals suggests that the terminals have capacity to handle even bigger vessels.

Figure 23: **Year on Year and Compund Annualised Dry Bulk Volume Growth Rates**

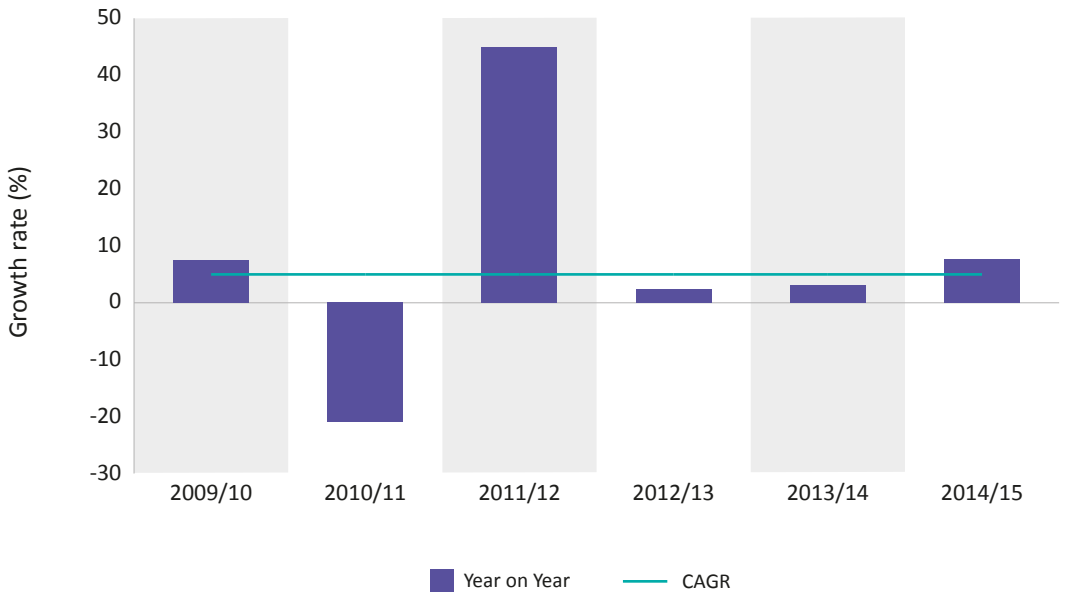
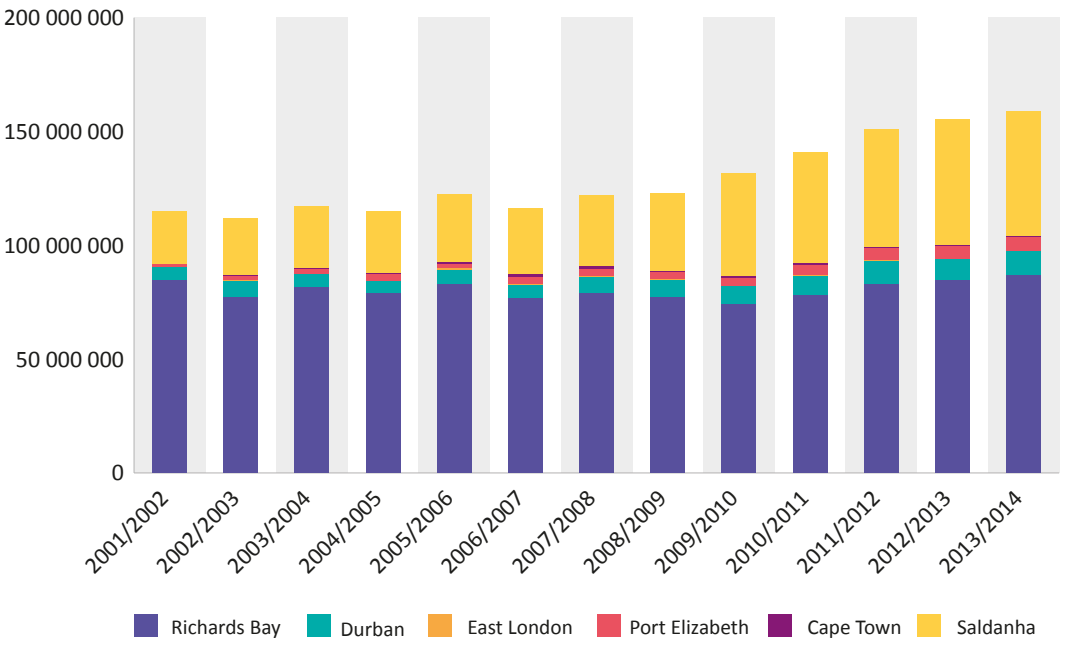


Figure 23 shows that between 2011 and 2013, dry bulk volume growth rate declined significantly. There are signs of some pick up in 2014/15, which may be further dampened by the recent low commodity prices due to the slowdown in China's economic growth. The global demand outlook for dry bulk over a five year period from 2011 was an average of 5,9% (6,7% for major bulks like coal, iron ore and grains), and 6,4% for minor bulks

Figure 24: **Annual Dry Bulk Volumes (Tons) (2001/02 – 2013/14)**



The dry bulk terminals compound annual growth rate over the same period is about 4,99%, which more or less reflects the global projections. The cumulative annualised dry bulk volume growth rate over longer term, between 2001/02 and 2013/14, is a lower 2,73%. Actual volumes over the period are captured and summarised below, together with the compound annual growth rates over the same period.

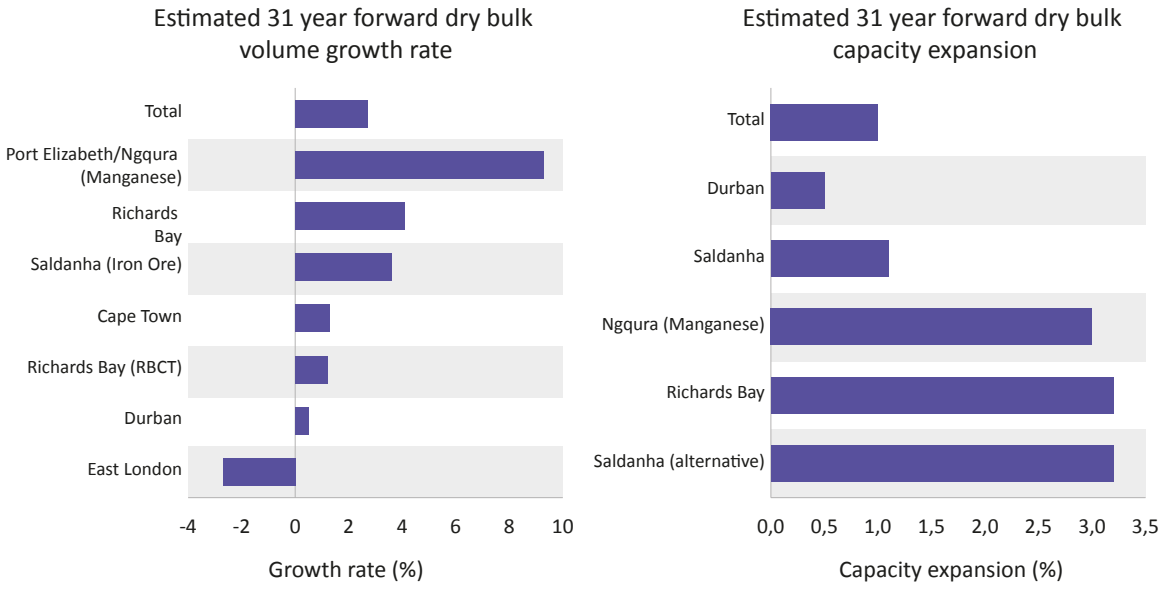
Figure 24 generally confirms that coal and iron ore dominates dry bulk volumes, with Durban and Port Elizabeth (manganese) also featuring and very low volumes in the remaining ports. The growth rates in Table 9 should be read in this context.

Table 9: **Compound Annual Growth Rate, Dry Bulk (2001/02 - 2013/14)**

Port	2001/2002 volumes(tons)	2013/14 volumes (tons)	CAGR
Richards Bay	84 463 129	86 800 028	0,23%
Durban	5 818 480	10 443 959	5,00%
East London	103 572	105 637	0,16%
Port Elizabeth	1 283 348	6 019 655	13,75%
Cape Town	9 396	646 659	42,28%
Saldanha Bay	23 234 548	54 833 018	7,42%
Total	114 912 473	159 848 956	2,73%

Although the port of Cape Town's dry bulk volumes seem to have grown significantly at a compound annual rate of 42,28%, this is was from a very low base. East London's volumes have not grown over this period. Port Elizabeth's 13,75% CAGR is notable as it is driven by Manganese which will be migrated to the Port of Ngqura. Capacity to meet demand is influenced by global trends, volumes and vessels. The Capex plans for dry bulks, captured in Figure 25, are based on these projections.

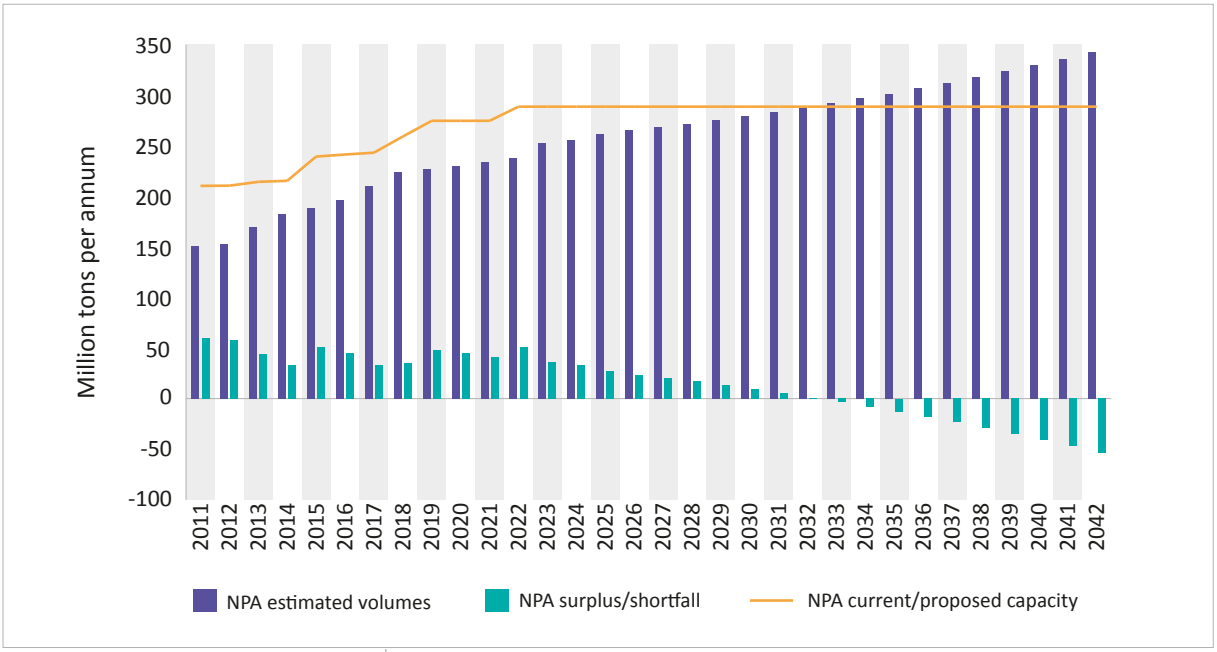
Figure 25: **All Dry Bulk Volume Projections and Estimated Capacity Requirements**



Over the period 2011 to 2042, the Authority estimates an average dry bulk volume growth rate of 2,7%, with only 1,2% projected for the country's biggest coal export terminal, RBCT. The main growth in volumes of dry bulks is anticipated from Manganese whose CAGR is estimated at 9,3% over the period up to 2041/42 – which will be migrated from Port Elizabeth to Ngqura. On the coal side, owing to the latent capacity that can be accessed at RBCT through rail capacity, only 1,2% CAGR is estimated over the same period.

With regard iron ore capacity expansion, the figures for the port of Saldahna Bay are recommended to be capped at 82,5 million tons per annum to take into account rail line restrictions. With unrestricted rail capacity, an additional 3,2% of port capacity would be available in the system. The Authority recommends that capacity be restricted to the current 82,5 million tons per annum and for a policy decision to be taken in support of beneficiation of excess volumes, rather than increase in exports and thus only a CAGR of 1% in Iron Ore capacity at the port (NPA - LTPDF: 2014). Thus manganese volume growth is expected to dominate capacity development in the dry bulk sector up to 2041/42.

Figure 26: **Dry Bulk Capacity and Volume**



The Authority's estimated volumes and capacity requirements for all the dry bulks are captured in Figure 26 showing very limited requirements for capacity expansions up to 2032 when a capacity shortfall is reflected. These will be met by specific interventions in each of the commodity handling types: manganese, coal and iron ore. The next section briefly describes what is anticipated in each of these.

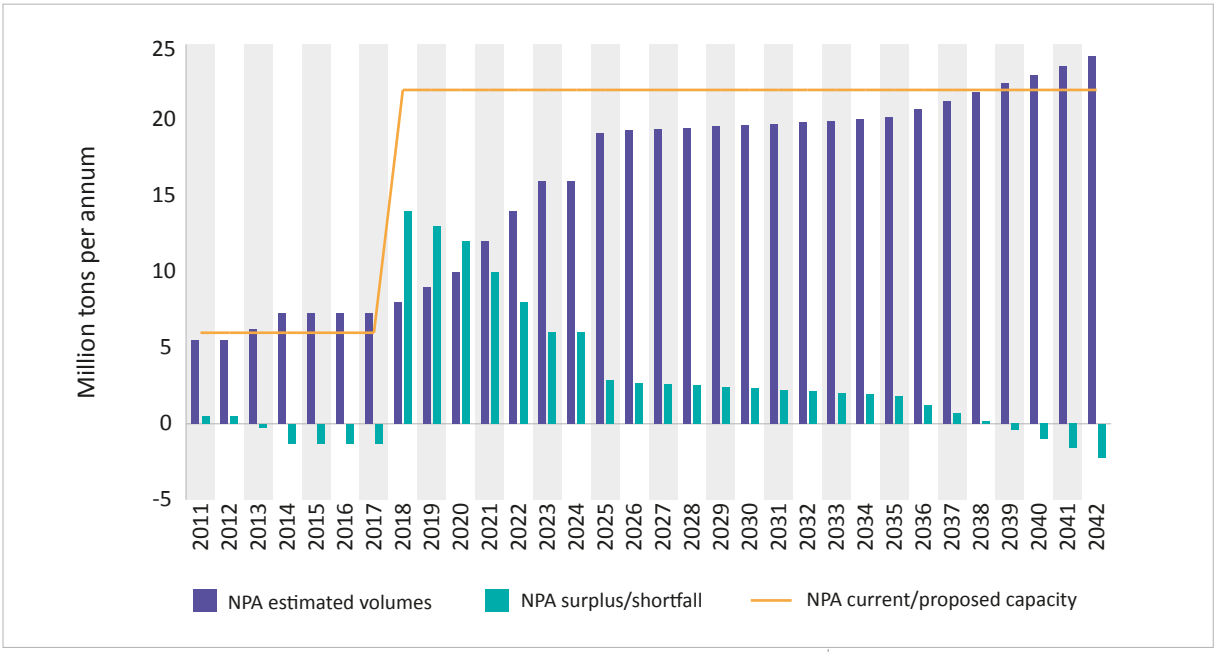
Manganese

Total manganese capacity is based on combined capacities of the ports of Port Elizabeth and Ngqura. In the port of Port Elizabeth, based on the Freight Demand Model, manganese handling terminates at the end of 2018 (with estimations that it would be in August 2018) and moves over to the port of Ngqura. Currently, the port of Ngqura

has two berths without ship loading equipment, which is part of a construction package and will be commissioned by the end of 2018.

The Authority's reported plans for capacity to handle manganese, coal and iron ore is based on long term volume growth projections of 4,9%, 1,3% and 3,6% respectively, and growth in existing capacity. Manganese plans are to migrate the manganese terminal from the port of Port Elizabeth to the port of Ngqura, hence the -100% growth rate in the port of Port Elizabeth. With the migration, it is anticipated that manganese volumes will grow by 4,9% over the long term and the capacity to handle manganese, currently at 6 mtpa (Port Elizabeth and Saldanha combined) will increase to 22 mtpa which will be at the port of Ngqura. The specific projections for manganese are captured below.

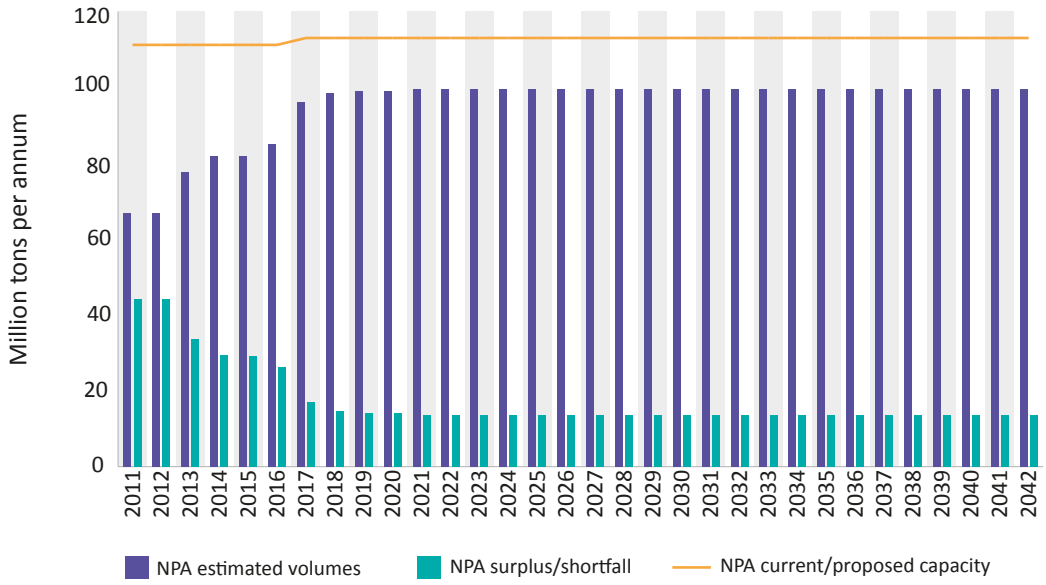
Figure 27: **NPAs Estimates of Volume and Capacity Requirements for Manganese Terminals**



Coal

Coal volumes are catered for mainly by Richards Bay Coal Terminal (RBCT). RBCT capacity is dependent on complementary capacity on the rail side. It is anticipated that there will always be surplus capacity in the dry bulk system thus there would be no major projects, except to respond to localised demand, e.g. coal plans in the port of East London which is anticipated to respond to export requirements by miners in the region. The overall capacity will remain more or less the same at just under 120 mtpa.

Figure 28: **NPAs Estimates of Volume and Capacity Requirements for Coal Terminal**

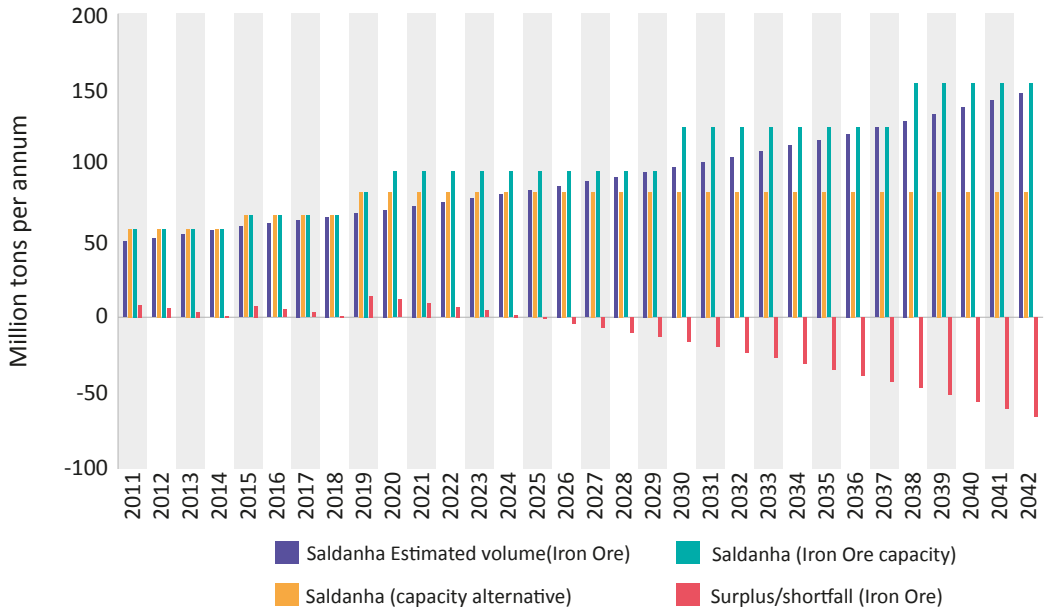


Required total coal capacity is based on combined capacities of the ports of East London and Richards Bay.

Iron Ore

Iron Ore is moved primarily through the port of Saldanha Bay, with a dedicated rail line and system from the Northern Cape. Current capacity is 58 million tons per annum, whilst volumes are 50 million tons per annum (mtpa), and thus excess capacity of 8 mtpa. This capacity is projected to be depleted in approximately 2023/24. Plans for total capacity to meet demand will be through construction of 2 berths in the Port of Saldanha Bay, which will be phased with 1 berth anticipated to be commissioned by the end of 2019.

Figure 29: **NPAs Estimates of Volume and Capacity Requirements for Iron Ore Terminal**



The Authority recommends the capping of iron ore export volumes to the current maximum of 82,5 mtpa and for iron ore volumes above this capacity to be beneficiated. This will mean that existing rail capacity is maintained instead of being extended. Should a decision not be taken in this regard and volume growth is beyond 82,5 mtpa, then rail capacity on the Sishen Saldanha line will have to be increased.

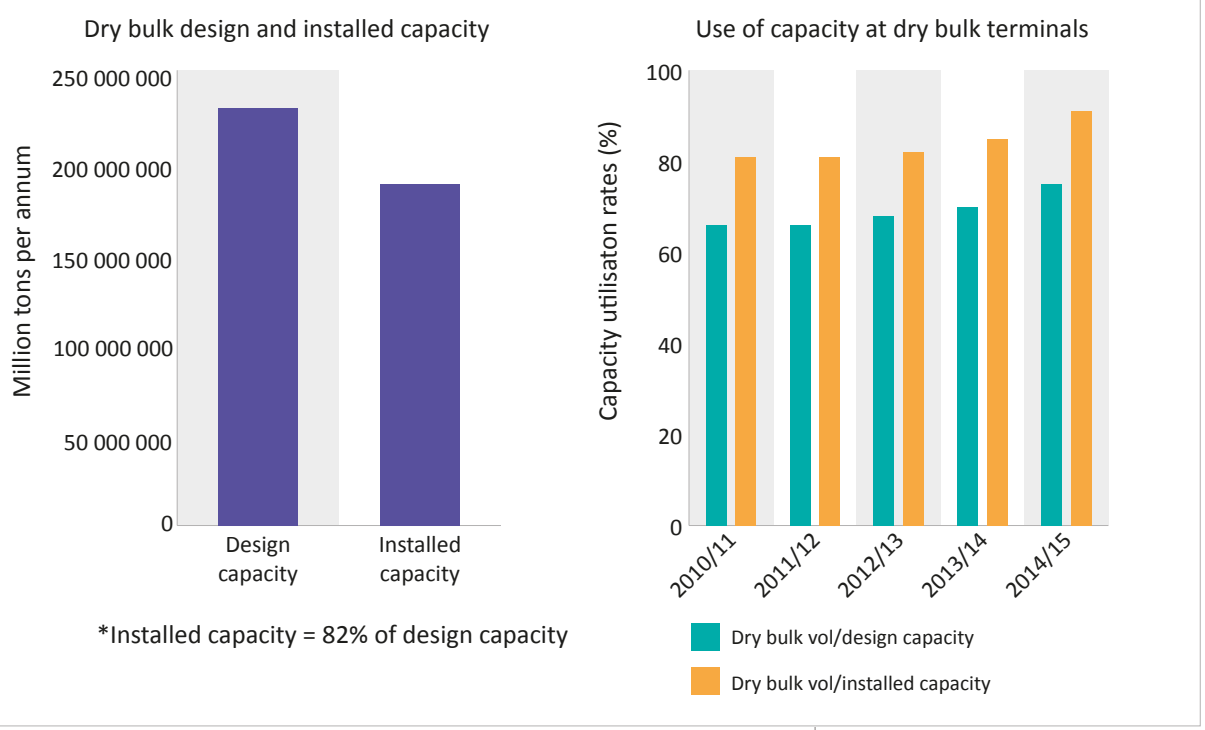
Terminal Utilisation

The utilisation of dry bulk terminals is looked at in relation to the use of design capacity and installed capacity and commodity handling rates in the terminals.

Throughput in relation to design and installed capacity

In each year the amount of volumes handled in the terminals shows a utilisation rate of more than 80% of installed capacity and above a third of design capacity, pointing to significant utilisation of dry bulk terminal capacity. However, due to different vessel arrival patterns and homogeneity of cargo, high utilisation rates in the major dry bulks are more manageable thus do not present similar challenges discussed in container trades.

Figure 30 : **Dry Bulk Terminal Design and Installed Capacity and Utilisation Levels**



Installed capacity for dry bulk terminals is at 82% of overall design capacity which means about 18% capacity is still available in the system that can be addressed by, amongst others, installation of handling equipment.

Figure 30 shows a trend where, overall, the volumes being handled are reaching installed capacity given the differences between 2010 and 2015. The same applies if design capacity is considered. In the case of RBCT, installed capacity of 91 mtpa can only be fully realised if design capacity is met by related rail capacity and system.

Commodity Handling Rate

Various authors, e.g. Park, Yoon and Park (2014) and Merk & Li (2013) have made a point that conventional utilisation rate calculations in measuring performance of bulk terminals are not as easily applicable as is the case with containers, where the unit is standardised, due to the differentiation of dry cargo and the resultant handling requirements. Accordingly, the terminal utilisation for dry bulks should focus on the main commodities being handled, which in the case of the South African terminals are coal, iron ore and manganese as opposed to just aggregating across the sector.

Figure 31: **Iron Ore Handling Rate per Hour Targets and Actuals**

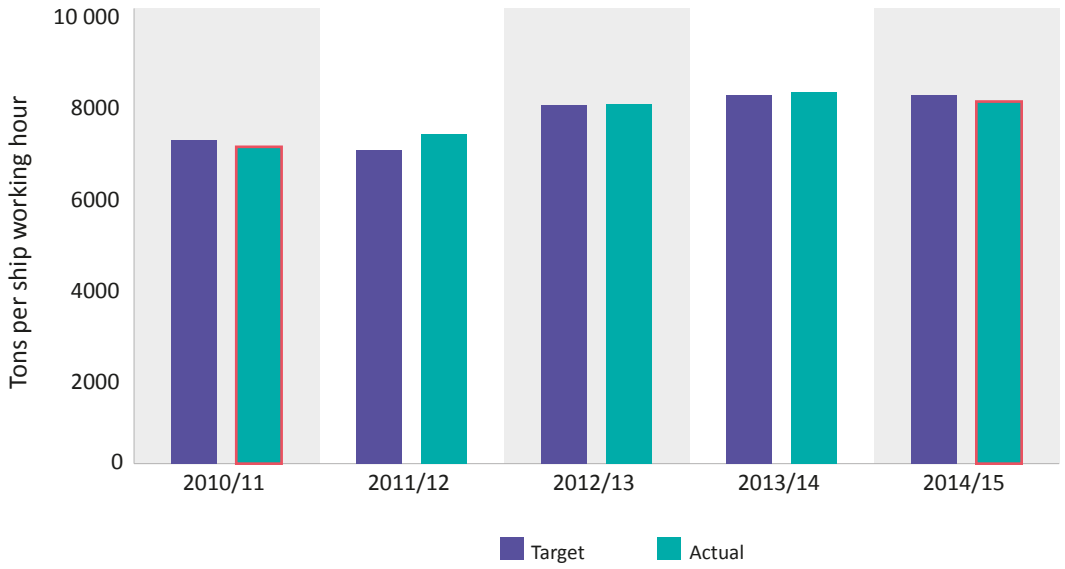


Figure 31 captures the handling rate for iron ore at the Port of Saldanha Bay, with targeted performance reflected in the purple bar and actual achievement in turquoise. The bars with a red outline indicate where targets were not met, which suggest that to a great extent the port is reaching set targets, which in turn are beginning to stabilise.

Again, the set targets are variable and will need to heed some recommendations made in earlier sections of the Report. To determine a set of benchmark numbers, the same methodology followed in the preceding sections was applied with dry bulk, namely for coal and iron ore. An indication of performance norms or benchmark based on design and installed capacity is captured in column 1 and 2 in Table 10. Column 3 captures the calculated benchmark based on actual volume performance recorded for the terminals. This was computed using the formula with UNCTAD factors and is treated as indicating what the throughput per ship working hour should be. Column 4 provides a 4 year average from which to gauge performance trends.

Figure 32: **Coal Loading and Unloading Rates per Hour**

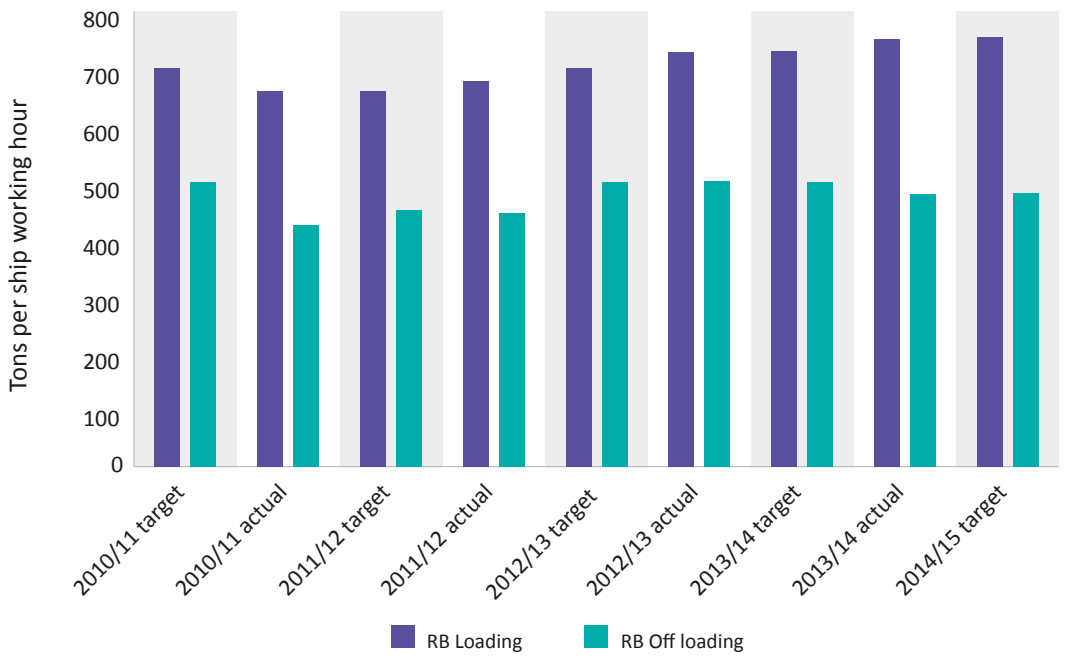


Table 10: **Dry Bulk Cargo Handling Rates: Design, Installed, Actual and Average Performance**

Dry bulk terminals	(1)Across the ship rate benchmark based on design capacity (tons per ship working hour)	(2) Across the Ship rate benchmark based on installed capacity (tons per ship working hour)	(3) Across the Ship rate benchmark based on 2013 throughput (tons per ship working hour)	(4) 2013 Actual performance as per NPA Annual Report (tons per ship working hour)	(5) Reported 4- year average dry bulk moves per hour
Coal	3 561	2 854	2 368	2 243	1 996
Iron Ore	4 729	4 139	4 489	3 609	3 248
Manganese	815	727	995	Not reported	Not reported

Two observations can be made from the Table: First, the calculated terminal performance (column 3) in relation to the reported numbers. Secondly, the difference between both these numbers and what they should be in terms of column 1 and column 2. Overall, the actual performance numbers (own calculation and as per the Authority's performance reporting, are lower than those calculated where the terminal capacity (design or installed is considered). What is encouraging though is that the numbers are closer to the benchmark for installed capacity.

Without discrediting whatever historical and operational challenges in the system that may account for current performance, the design and installed capacity numbers represent the targets that the country's ports should be striving towards, if country competitiveness is to be addressed.

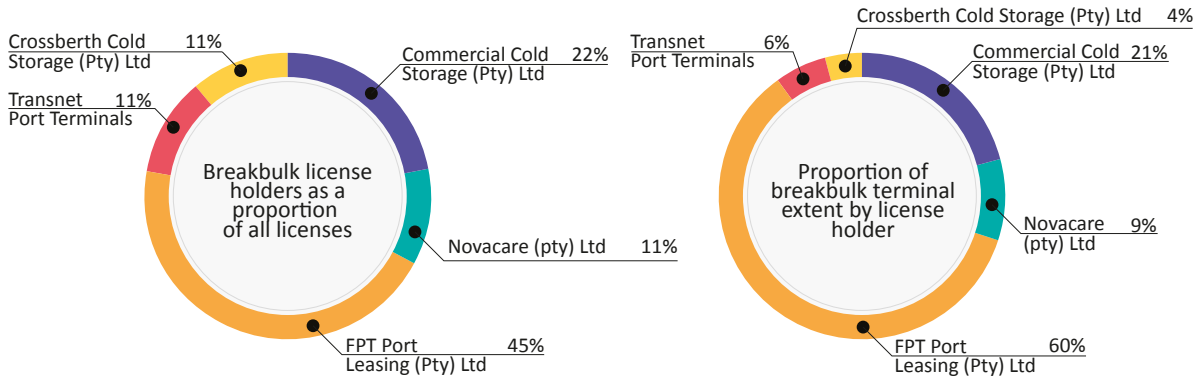
Summary

- Iron ore, manganese and coal are the main commodities being moved in the system at the ports of Saldanha Bay, Ports Elizabeth, and Richards Bay respectively.
- The volume projection for dry bulk is in line with global projections for major and minor dry bulks.
- The main capacity expansion project is the relocation of the manganese terminal from Port Elizabeth to Ngqura, and the consolidation of manganese handling in Ngqura. The anticipated/ projected coal volumes in the port of East London contribute to the additional capacity required in the long run.
- Port performance based on handling rates shows a trend of underperformance with actual performance figures below the targets. Issues with target setting for dry bulk terminals, i.e. targets that are based on infrastructure capacity and not just previous performance must be addressed.
- Installed capacity is at 82% of design capacity. Volume throughput per annum places dry bulk terminal utilisation at an average of 69% of design capacity and 84% of installed capacity.

Break Bulk and Multi-Purpose Cargo

Break bulk cargo is handled in the ports of Durban, Richards Bay, Port Elizabeth, Ngqura and Cape Town, at either dedicated break bulk terminals and berths or multi-purpose terminals. Five terminal operators run the dedicated break bulk terminals in the ports system, with FPT Port Leasing (Pty) Ltd holding almost half (four) of the terminal licences and the other four operators accounting for the balance; Commercial Cold Storage (two); and one each for Cross Berth Cold Storage, Transnet Port Terminals and Navocare (Pty) Ltd.

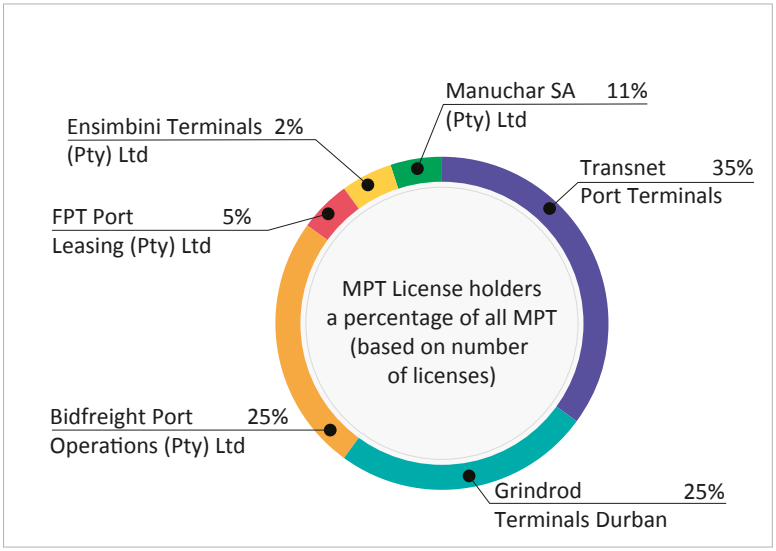
Figure 33: Licence Holders in Break Bulk Terminals and Proportion of Terminal Extent



The two terminals operated by Commercial Cold Storage (Pty) Ltd in Maydon Wharf have a combined terminal area of 28 552 m^2. The main operations thereof are in the intake, cold storage and dispatching of citrus and dry goods, and the cold treatment of specialised products, which are avocado pears (fruit, break bulk). NovaCare (Pty) Ltd holds a single terminal operator licence covering a 12 033 m^2 facility. NovaCare's main operations cover storing and loading consignments of break bulk cargoes; loading and discharging of vehicles and rail wagons; tailing and sorting of break bulk; handling of fertilizers, animal feed, agricultural products and equipment. With four licences, FPT Port Leasing (Pty) Ltd holds the most number of break bulk terminal licences covering a break bulk port area of 90 782 m^2. The licence allows for the handling of fresh produce and other commodities, such as steel, off-season. Transnet Port Terminals is licensed to operate a Maydon Wharf break bulk 7 880 m^2 facility in Maydon Wharf for loading, off-loading and stowage of break bulk, transhipment/re-shipment, stacking or unstacking, temporary storage, collect and delivery, loading and discharging trucks and rail wagons, transfer, working break bulk on hold and all reasonably associated services. The main actual operations are: steel, overflow project cargo, and containers. In the port of Cape Town, Cross berth Cold Storage is licensed to operate a facility covering 5 359 m^2, where it handles the import and storage of fresh and frozen fish and fish products.

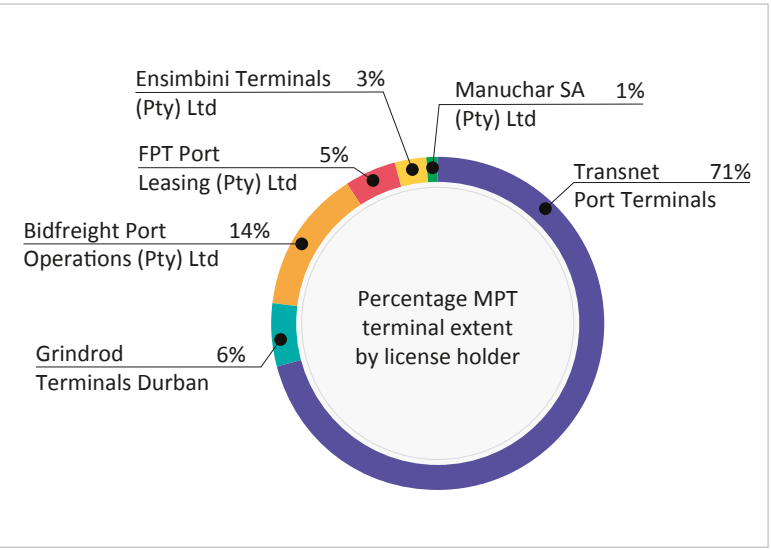
There are twenty multi-purpose terminal licences in the ports system, with a majority (thirteen) concentrated in Maydon Wharf Durban amongst five licence holders, i.e. Bidfreight Port Operations (five licences), Grindrod Terminals (five licences), Transnet Port Terminals (two licences) and Ensimbini Terminals, and Manuchar SA (Pty) Ltd, each with one licence on Maydon Wharf.

Figure 34: **Proportion of Licences Held at Multi-purpose Terminals by Licence Holders (Based on Number of Licences)**



Unloading logs at Maydon Wharf break bulk terminal at the Port of Durban.

Figure 35: **Proportion of MPT Terminal Extent by Licence Holder**



In terms of extent of terminal area for each of the multi-purpose terminal operators, Transnet Port Terminals holds the most with its facilities covering 1 059 977 m^2 or 35% in all the ports, except in Mossel Bay and Ngqura, which do not license multi-purpose facilities. This includes the facilities in Maydon Wharf and the Point at the port of Durban. This is followed by Grindrod Terminals' licensed facilities, only in the port of Durban Maydon Wharf covering 85 257 m^2, and Bidfreight Port Operations covering 211 668 m^2 also only in the port of Durban Maydon Wharf. FPT Port Leasing (Pty) Ltd in Cape Town operates a facility that covers 73 984 m^2 terminal area, whilst the Ensimbini Terminals (Pty) Ltd facility, also in Maydon Wharf, covers 12 217 m^2, and the Manuchar SA (Pty) Ltd facility covers 10 569 m^2.

The number of licenced operators in Maydon Wharf should result in competition and in turn better operational efficiencies. However, these operators handle different, and to some extent distinct, commodities that makes comparisons on a generalised and like to like basis difficult.

Break Bulk and Multipurpose Terminal Capacity

The largest vessel coming to work general cargo during the 2013/14 period was MSC Susanna*, a container ship of 107,849 registered tons calling once at the port of Cape Town.*

Break bulk and multi-purpose cargo is handled mainly by bulk carriers that, as captured below, tend to require some depth, compared to RORO vessels as an example. The break bulk terminals in Ngqura, Saldanha Bay, Richards Bay and Cape Town have the deepest berths in the ports system. Only Richards Bay and Saldanha Bay are able to handle the largest Capesize dry bulk carrier with 180 000 tons. The main reason that a container ship is found classified as a general cargo vessel is because the port of Cape Town at times categorised vessels as "working" as they call in multiple berths.

Table 11: **Break Bulk Terminal Capacity**

Port	Terminal	Berths	No of berths (No.)	Usable berths (No.)	Design terminal capacity (mtpa)	Installed Terminal capacity (mtpa)	Berth Length (m)	Berth Draft
Richards Bay	Break bulk	606, 607, 608, 706, 707, 708	6	6	9 935 915	7 200 000	1 244	14,5m
Durban	Maydon Wharf, Point and Island View.	MW 9,10,11, & 12, Point B,C,D,E, MW 6 and 15, O&P Jetty, MW 7, 13 and 14, IV 6	14	14	4 000 000	3 800 000	871	5,1 - 13,7m
East London	Quay 3 and 4	G, I	2	2	166 667	3 096	492	11m
Ngqura	Ngqura Multi-Purpose	C101	1	1	3 000 000	0	316	16,5m
Port Elizabeth	Multipurpose	8,9,10,11,12	3	4	1 180 500	403 676	1 037	7m to 11m
Saldanha Bay	Multi-purpose	201, 202, 203,	6	3	3 300 000	1 708 047	874	13m to 15m
Mossel Bay	Quay 4	Quay 4	1	1	53 000	30 084	274	7,0m
Cape Town	Multipurpose	B,C, D,E,F,J	7	6	10 877 071	4 000 000	1 368	9,1m to 12,2m
Total			40	37	32 513 153	17 144 903	6 476	

Break Bulk and Multipurpose Capacity and Volume

There was a steep decline in break bulk volumes since 2009/10 and growth rates have not stabilised as depicted by the W-shape of the chart.

Despite the past few years negative break bulk volume growth rate, the Authority's future volume projections are optimistic with an anticipated 2,8% average annual growth rate over the 31 year planning horizon. Growth is anticipated in all break bulk terminals, except in Mossel Bay and Durban, and the Authority plans to provide capacity additions in Saldanha Bay, Cape Town and Richards Bay as reflected in figure 37.

Figure 36: **Year on Year and Compound Annual Break Bulk Volume Growth Rates**

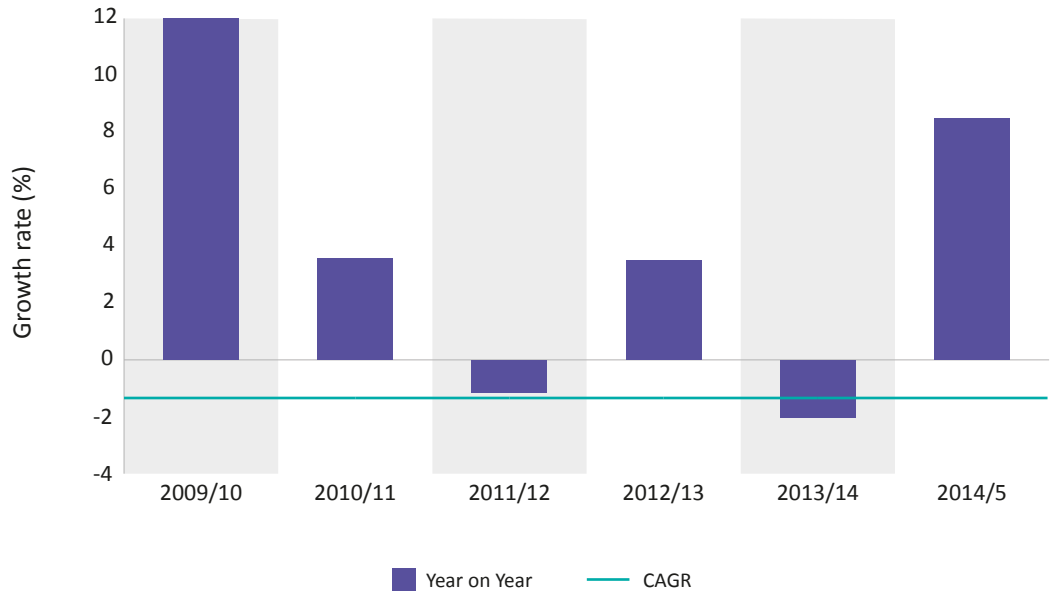
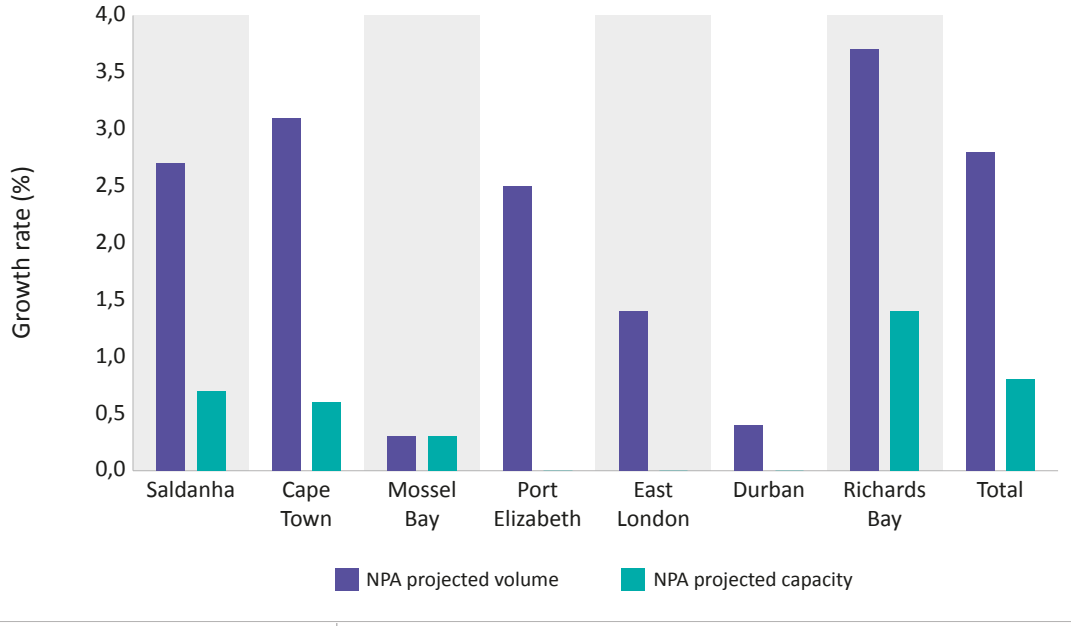


Figure 37: **Estimated 31 Year Break Bulk Volume Estimates and Capacity Growth Rates**



The NPA's national break bulk infrastructure development strategy has three key projects:

- Completion of Maydon Wharf Berth Reconstruction (R1,5b) – at execution stage already;
- Two new berths in Richards Bay by 2032 (R2,2b); and
- One new berth in Saldanha Bay by 2040.

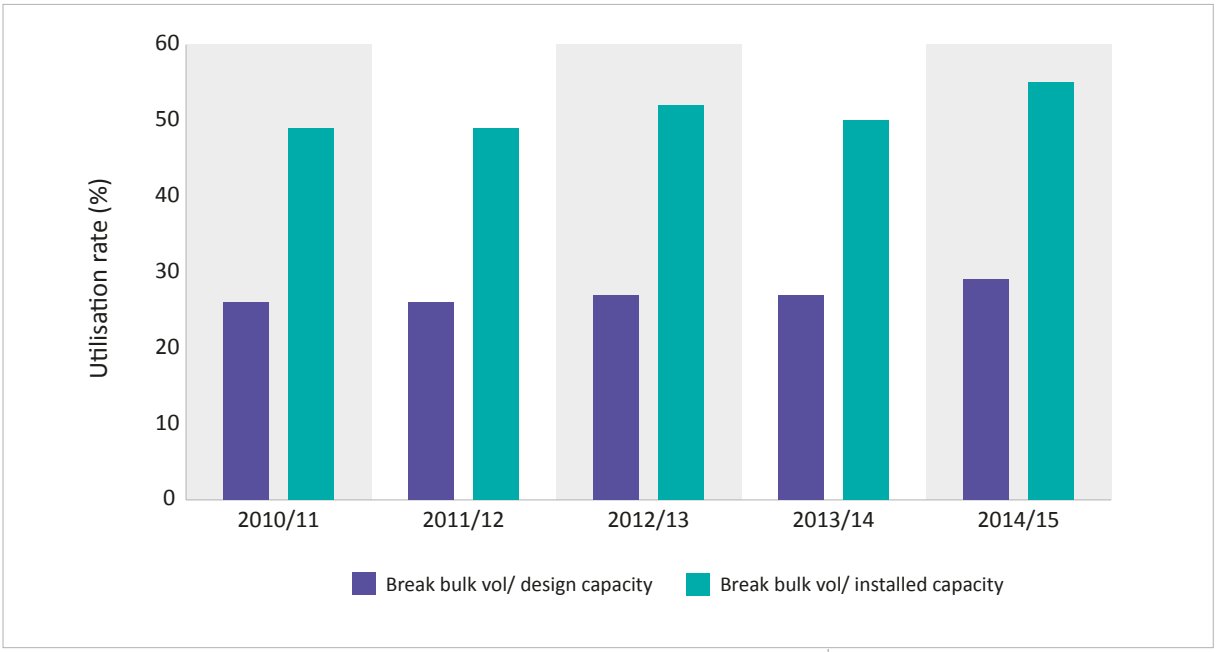
Due to break bulk being constituted by a range of commodities on the one hand and the effect that continued containerisation of commodities will have on the other, it is not easy to obtain market intelligence or aggregate volume growth estimates against which to assess the Authority's projections. Past performance, where there has been a decline of -5,7% in the compound break bulk volume growth rate between 2001/02 and 2013/14, suggests that the volume projections as a basis for expanding capacity of break bulk terminals should be handled with caution.

Table 12: **Historical Break Bulk Volume Growth**

Break bulk volumes	2001/2002	2013/2014	CAGR
Richards Bay	4 794 917	3 381 978	-2,87%
Durban	6 911 144	3 380 546	-5,79%
East London	158 352	93 719	-4,28%
Ngqura	-	80 031	-
Port Elizabeth	426 267	314 054	-2,51%
Mossel Bay	-	-	-
Cape Town	2 548 597	384 536	-14,58%
Saldanha	2 424 538	873 803	-8,15%
Total	17 263 815	8 508 667	-5,73%

In addition to the dwindling break bulk volumes, the terminal utilisation levels computed by looking at volumes against design and installed capacity, show very low utilisation levels and suggesting excess capacity.

Figure 38: **Break Bulk Terminals Capacity Utilisation Rates: Design vs. Installed Capacity**



With volumes handled over the past 5 years, less than a third of the design capacity and just about half of the design capacity is used, suggesting that excess capacity exists in break bulk to warrant no capacity expansions in the near future in an overall sense. However, given the varied nature of break bulk, more pointed analysis is required per cargo item as to whether capacity is becoming a limitation to demand for the cargo item being considered, or the locality concerned.

Summary

- Break bulk terminals, judged by the number of terminal operators, is the most competitive environment in the South African system, except that they tend to handle distinctly different commodities to allow for comparison and competition on a like to like basis, or in terms of increasing the choices that cargo owners would have in the system.

- In line with global trends towards containerisation, the projections for volume growth in the sector are conservative with projects also focused on the maintenance or rehabilitation of current handling capacity.

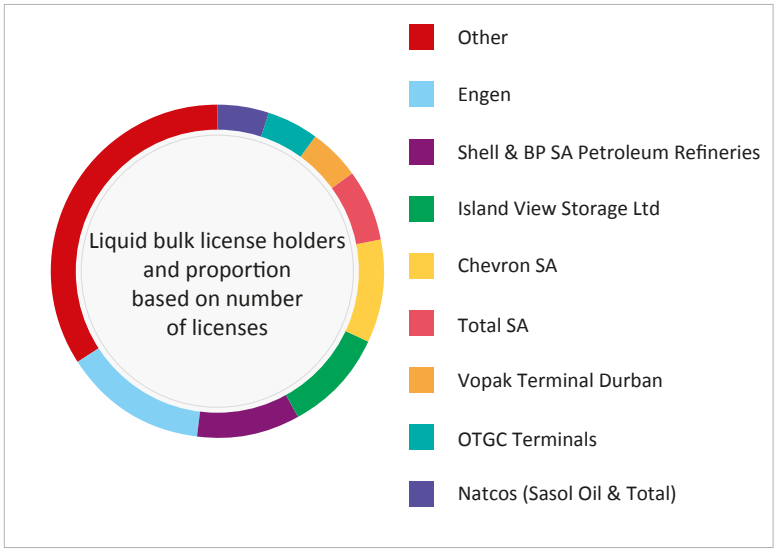
Liquid Bulk Terminals

The South African liquid bulk port sector comprises twenty two players who collectively hold thirty six licences. Of these, Engen South Africa has the most number of licences (six) across the system in the ports of Durban, Richards Bay, East London and Port Elizabeth. Engen is also part of Joint Bunkering Services which is an amalgamation of BP Southern Africa and Chevron SA.

The other players hold one licence each and account for 34% of licences in this sector. This category comprises: AECI Cape Chemicals, Blendcor (PTY) Ltd, BP Southern Africa, Cape Town Bulk Storage, Chemoleo, FFS Refineries, H&R South Africa, Hillside Aluminium Limited, Joint Bunkering Services (BP Southern Africa, Chevron SA, Engen Petroleum, Shell South Africa Marketing), Protank (Indian Ocean Terminals), Shell South Africa Marketing, Strategic Fuel Fund Association, Veetech, and Zenex Oil.

Port of Port Elizabeth tank farm.

Figure 39: **Liquid Bulk Licence Holders as Proportion of Licences**



The size of terminals held by terminal operators in the liquid bulk sector shows key players in the system in Figure 42.

Figure 40: **Liquid Bulk Terminal Operators and Extent of Terminal Area**

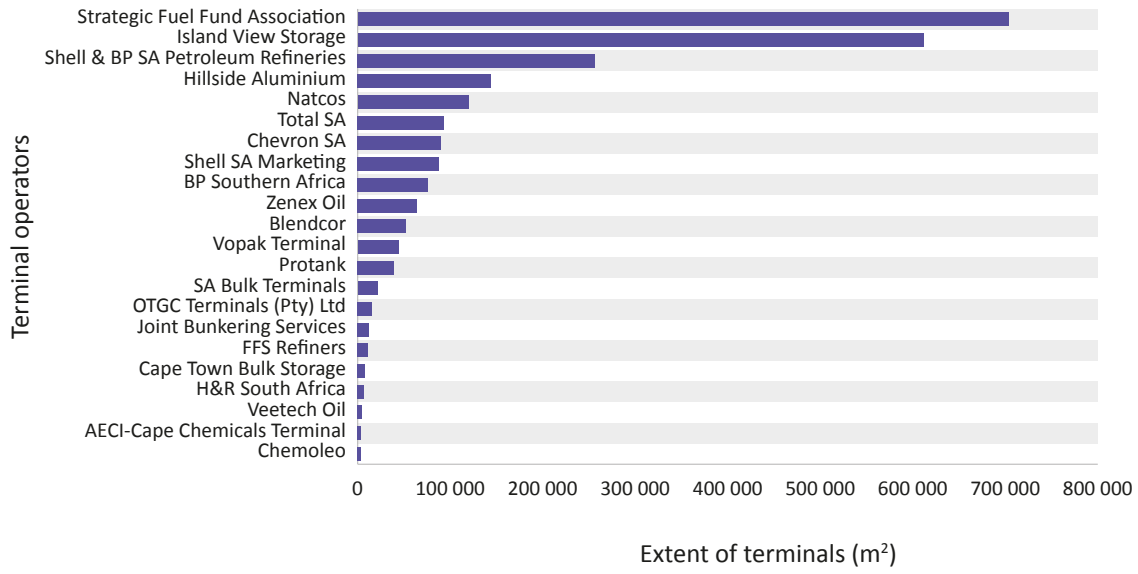


Table 13: **Liquid Bulk Terminal Licence Holder's Extent of Terminal Area**

Operator	Proportion of total liquid bulk terminal area	Operator	Proportion of total liquid bulk terminal area
Chemoleo	0,14%	Blendcor	2,12%
AECI- Cape Chemicals Terminal	0,15%	Zenex Oil	2,61%
Veetech Oil	0,19%	BP Southern Africa	3,08%
H & R South Africa	0,28%	Shell South Africa Marketing	3,55%
Cape Town Bulk Storage	0,32%	Chevron South Africa	3,65%
FFS Refiners	0,45%	Total South Africa	3,78%
Joint Bunkering Services	0,48%	Natcos	4,85%
OTGC Terminals (Pty) Ltd	0,62%	Hillside Aluminium	5,85%
South African Bulk Terminals	0,86%	Shell & BP South Africa Petroleum Refineries	10,39%
Protank	1,59%	Island View Storage	24,76%
Vopak Terminal	1,79%	Strategic Fuel Fund Association	28,49%

Key terminal operators, in terms of size of terminal area, are the Strategic Fuel Fund Association (SFF) which account more than a quarter (28%), followed by Island View Storage with a quarter (25%), and Shell and BP South Africa Petroleum Refineries' with 10% of the total liquid bulk terminal area. The remainder account for 6% or less of the terminal area. The size of the terminal, amongst other factors, would determine the rental from a terminal operator.

Table 14: **Extent and Capacity of Terminals Held By TOPS Liquid Bulk Operators**

Number of licences held	Total terminal extent (sqm)	Total design capacity (million tons per annum)
1 Licence	1 217 325	27 686 841*
2 Licences	179 257	1 970 139
3 Licences	93 358	4 652 242
4 Licences	958 258	958 258**
6 Licences	196 190	0***
	2 644 388	35 267 480

* excl. unavailable capacity figures for 3 "one-licence" holder

** excl. unavailable capacity figures for 1 "four-licences" holder

***excl. unavailable capacity figures for the 1 "six-licences" holder

Each terminal operator is licensed for loading, off-loading, storage, loading and off-loading of road tankers, transfer, transport of bulk liquid cargoes and all reasonably associated services. All are common user berths with road, and in some instances rail, links (17 terminals are common user with road only links; 13 are common user with both road and rail links; 3 are common user with no road or rail link; 4 are non-common user berths with no road and rail link; 4 are non-common user with road links; and 3 are non-common user with road and rail links).

The largest tanker to call during the 2013/14 period to a South African port was Boston*, a vessel with 166,093 registered tons that called once at Saldanha Bay port.*

The second largest tanker by GRT is LNG Taurus*, a vessel with 95,089 gross registered tons that also called once.*

Liquid Bulk Terminal Capacity

The port of Saldanha Bay liquid bulk terminal has the deepest draught, followed by Ngqura, Cape Town, and Richards Bay. Handling capacity at the port of Ngqura must still be installed. The ports of Mossel Bay and Durban handle liquid bulks through a loading buoy anchored offshore -Single Point Mooring Buoy (SBM) - which is capable of handling any size ship. The CBM/SBMs currently has capacity of about 32 million kilolitres per annum. The largest vessels measure more or less the same length at approximately 275m and based on berth length, these would not be calling in the ports of Port Elizabeth, East London or Durban's Island View.

Table 15: Liquid Bulk Terminal Capacity							
Port	Terminal	Total Berths	Usable berths	Design Capacity (klpa)	Installed Terminal Capacity (klpa)	Berth Length (m)	Berth Draft
Richards Bay	Bulk Liquid	2	2	3 152 778	1 011 432	600	14m
Durban	Island View	9	8	21 000 000	11 000 000	1 765	9,1m to 12,2m
East London	Tanker Berth	1	1	3 000 000	918 688	259	10,7 m
Port Elizabeth	Liquid Bulk	1	1	2 926 829	972 208	242	9,9m
Saldanha Bay	Liquid Bulk	1	1	25 000 000	6 946 229	360	23m
Cape Town	Liquid Bulk	2	2	3 400 000	3 400 000	489	13,7m to 15,2m
Durban	CBM/SPM	-	-	-	24 000 000	-	-
Mossel Bay	CBM/SPM	2	2	7 971 600	1 893 127	-	-
Total		18	17	66 451 207	24 248 557	3 715	
Total CBM/ SPM					31 971 600		

Liquid Bulk Capacity and Volume

Total liquid bulk capacity is based on the combined capacities of the ports of Saldanha, Cape Town, Port Elizabeth, Ngqura, East London, Durban and Richards Bay. Historical growth rates for liquid bulk are 2.77% with a decline in the ports of Richards bay and Cape Town. The ports of East London and Port Elizabeth account for a significant proportion of the growth rate, at 41% and 24% respectively. The third port with high growth rates is the port of Saldanha Bay, achieving a cumulative average growth of 18% over the period.

Table 16: Historical Liquid Bulk Volume Growth Rates			
Liquid bulk	2001/2002 (klpa)	2013/2014 (klpa)	CAGR
Richards Bay	1 547 576	1 491 481	-0,31%
Durban	19 830 331	25 132 543	1,99%
East London	2122	130 241	40,93%
Port Elizabeth	15 009	197 129	23,94%
Mossel Bay	490 363	1 381 951	9,02%
Cape Town	2 034 165	1 448 213	-2,79%
Saldanha	601 229	4260761	17,73%
Total	24 520 795	34 042 319	2,77%

Future volumes and capacity planning by the Authority is informed by assumptions about the Mthombo project at Ngqura, whether it materialises, and if so, if there will be a pipeline to Gauteng or not. In projections of future volumes and capacity in Figure 43, the Authority expects the same historical trend to follow, with only 2,8% volume growth planned for. Where the port of East London drove the earlier growth, it is expected to register a 7,1% decline in the handling of liquid bulk by 2042. It is not clear what will be driving this decline.

Figure 41: **NPA 31 Year Forward Liquid Bulk Volume Estimates & Capacity Projections**

The Authority's three options for future provision of liquid bulk capacity are dependent on scenarios around the Ngqura Mthombo refinery and pipeline construction as captured below:

- Option 1 is based on a scenario where there is no refinery capacity at the Port of Ngqura.
  - By end 2032: The port of Durban - 4 Berths must be commissioned, another 4 berths commissioned by end of 2038.
  - By end of 2015: The port of Ngqura – Construction of 1 Berth (A100).
  - End of 2017: At the ports of Port Elizabeth/ Ngqura liquid bulk terminates in Port Elizabeth and moves over to Ngqura.
  - By end 2034: 1 Berth commissioned at the port of Richards Bay.
- Option 2 assumes that Ngqura Mthombo refinery will be constructed, however without a pipeline to Gauteng. The scenario remains the same as Option 1.
  - Port of Durban - 4 Berths commissioned end 2032, 4 berths commissioned end 2038.
  - Port of Ngqura - Construction phasing: 1 Berths (A100) at end 2015; 4 berths at end 2017.
  - Ports of Port Elizabeth/ Ngqura - End 2017 Liquid Bulk terminates in Port Elizabeth and moves over to Ngqura.
  - Port of Richards Bay - Construction phasing: 1 Berth commissioned end 2034.

- Option 3: Ngqura Mthombo refinery with pipeline to Gauteng.
  - Port of Durban: 4 berths to be commissioned by end 2037.
  - Port of Ngqura - Construction phasing: 1 Berth (A100) at end 2015; 2 berths at end 2017 (same as option 1 and 2).
  - Ports of Port Elizabeth/ Ngqura - End 2017 Liquid Bulk terminates in Port Elizabeth and moves over to Ngqura (same as option 1 and 2).
  - Port of Richards Bay - Construction phasing: 1 berth commissioned end 2034 (Same as option 1 and 2).

Figure 42: **NPAs Liquid Bulk Capacity, Shortfall/Surplus and Projected Volumes (2010/11 - 2041/42) Option 1.**

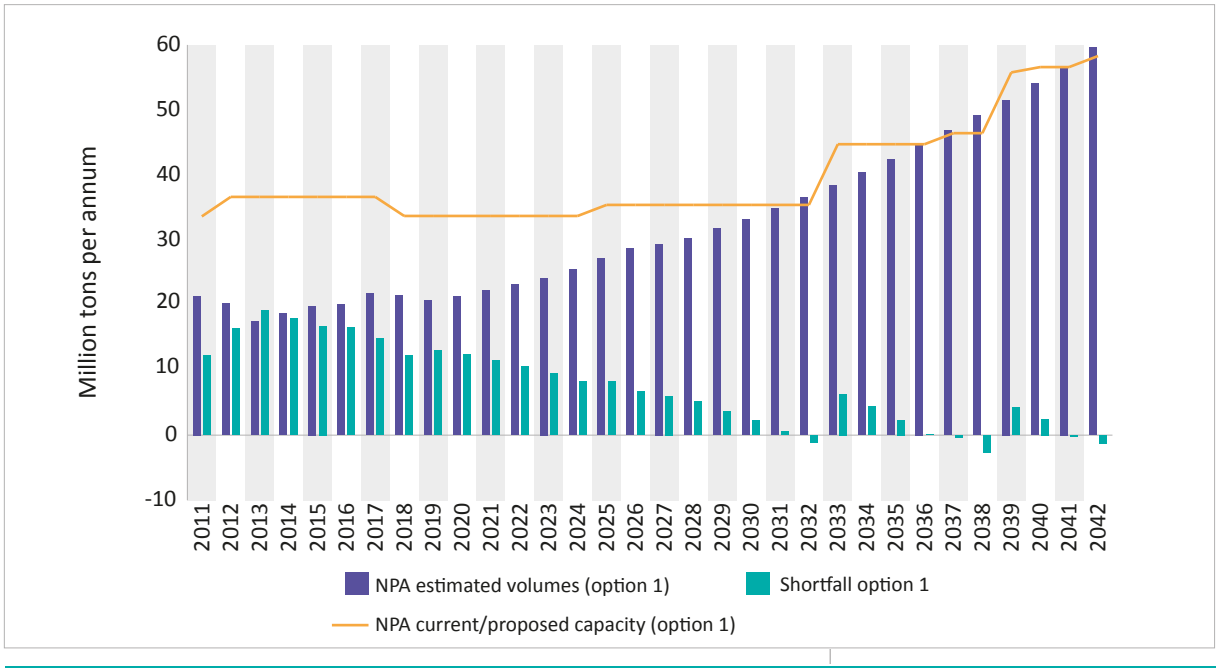


Figure 43: **NPAs Liquid Bulk Capacity, Shortfall/Surplus and Projected Volumes (2010/11 - 2041/42) Option 2.**

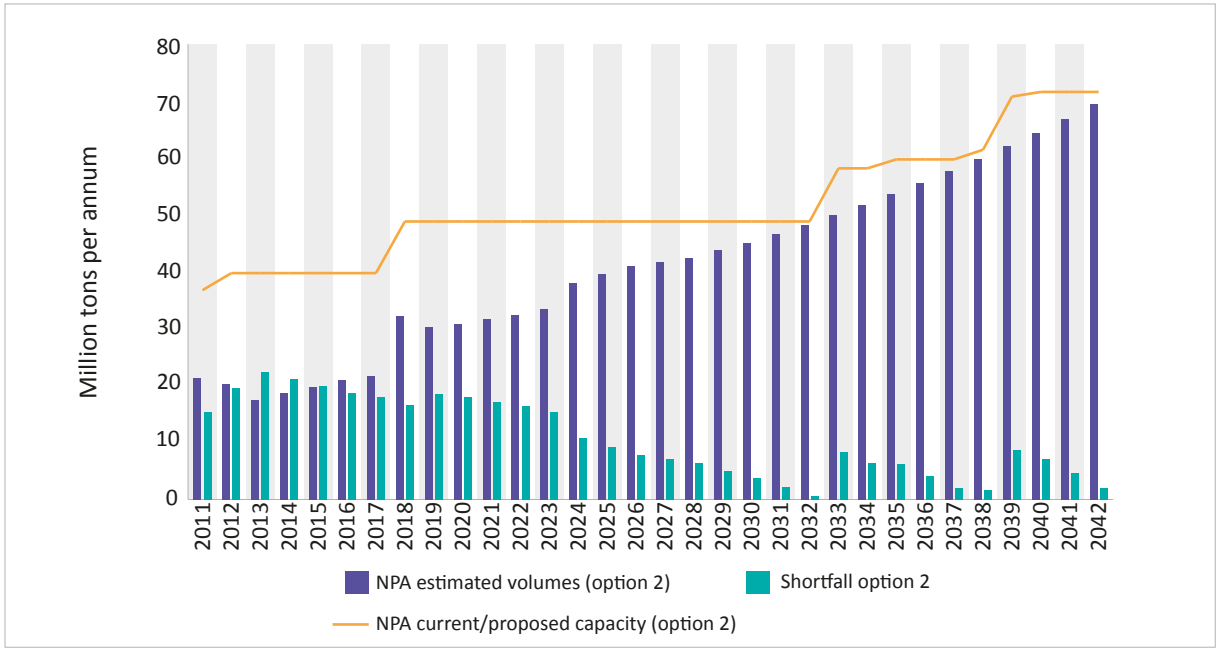
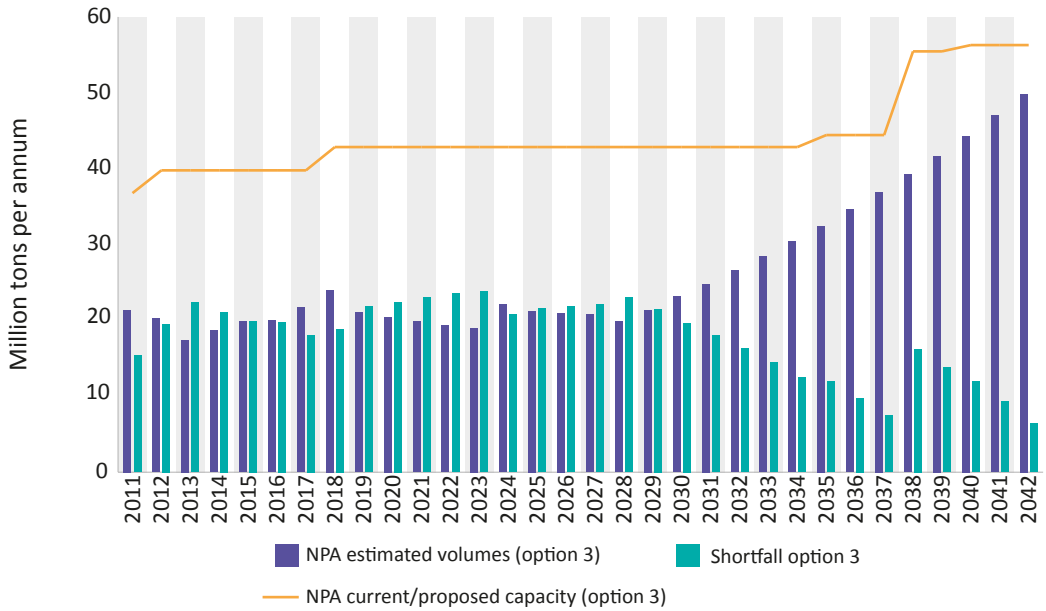


Figure 44: **NPAs Liquid Bulk Capacity, Shortfall/Surplus and Projected Volumes (2010/11 - 2041/42) Option 3.**

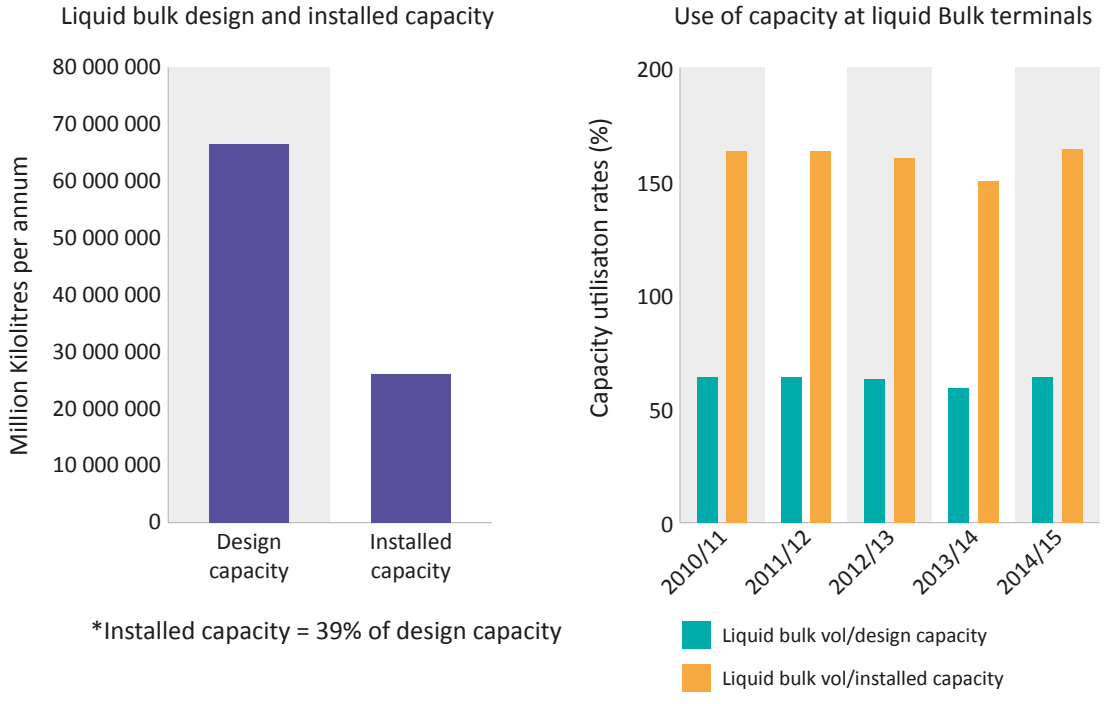


In addition to these capacities are the SBM and CBM and SPM at the ports of Mossel Bay and Durban which amounts to about 32 mtpa. The Authority does not plan to increase capacity of the SPM/CBM into the future and they will continue to provide additional capacity.

Liquid Bulk Terminal Capacity Utilisation

Installed capacity is only 39% of the design capacity in the liquid bulk sector, which makes the utilisation rates for installed capacity look significantly high, as seen in Figure 47. This is due to CBM/SPM volumes of 31 971 600 might be the effects of volumes that are handled through the CBM/SPM in Durban and Mossel Bay.

Figure 45: **Liquid Bulk Terminal Capacity and Utilisation**



Summary

- Almost the same players dominate the liquid bulk sector in the different ports.
- Historical growth rates for liquid bulk have only been 2,77% with the bulk of growth driven by volumes at ports of East London. However, East London's volumes are projected to reduce by 7,1% over the longer term with Durban and Richards Bay driving future growth.
- The utilisation rates at liquid bulk facilities are significantly low when looked at from a design capacity perspective and abnormally high in relation to installed capacity due to CBM/SPM volumes, which means that there is still excess capacity in the conventional liquid bulk sector.
- Capacity expansion is prioritised in the port of Ngqura and linked to the Mthombo project with the main decision and dependency being on the building of a pipeline to link Ngqura with Gauteng.

Conclusion

The information provided in this capacity and utilisation report should empower port users to further engage with the plans of the Authority to meet current and future demands. The value of the information may become even more pronounced as the Regulator's tariff methodology review process starts, with necessary linkages between port performance (volumes and operations) and port tariffs in the near future.

The report is intended to engender robust discussions with port users, and the Authority on a wide range of issues including but not confined to:

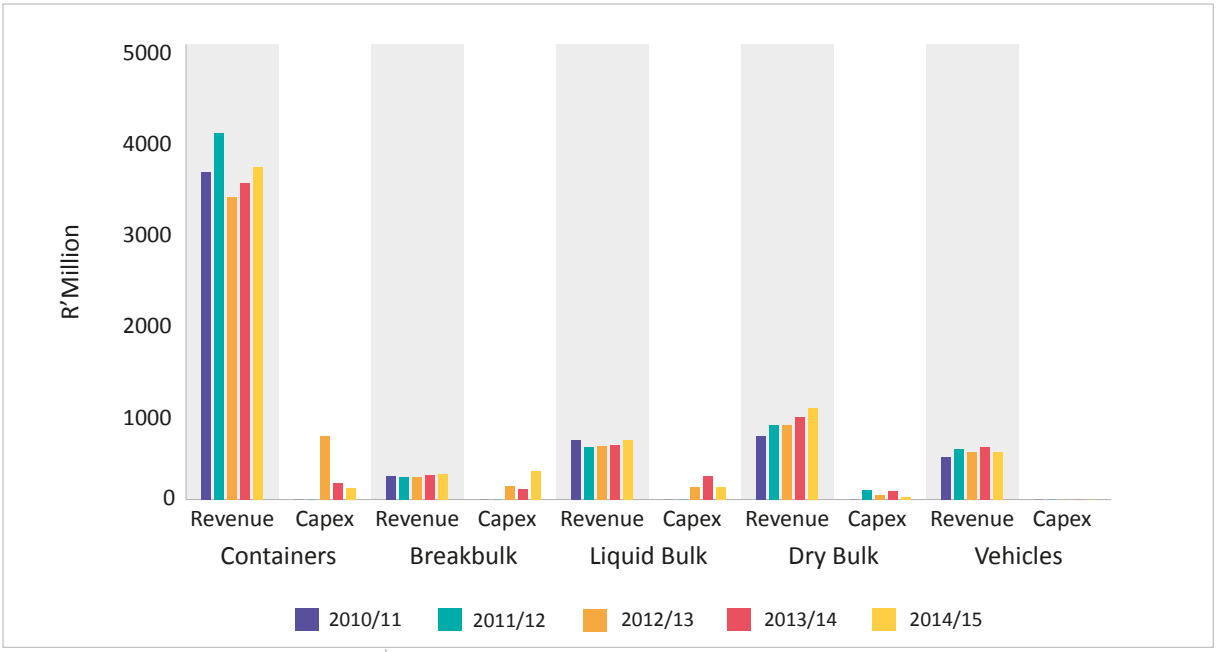
- Setting of performance norms for terminals in relation to terminal design and installed capacity.
- Volume and market considerations that determines what happens in the South African system to better plan for future capacity and port performance
- Deciding which indicators performance norms must be set against, given that there will always be excess capacity in the system due to the policy and pragmatic approach of providing infrastructure or capacity ahead of demand.
- The Regulatory treatment of "excess" capacity in the RAB and efficiency levels expected/required of the infrastructure in the intervening years.

This report, and an assessment of the Capex component of the application are collective measures that will allow the Regulator, to systematically unpack the Capex plan of the Authority and monitor port infrastructure development in line with its mandate in the National Ports Act.

Another view of an oil rig berthed at A berth in Cape Town (see cover Photo).

Figure 48 captures the Authority's Capex and investment trends in relation to the five main cargo handling types, reflecting category revenue as well as actual Capex expenditure per category over five years.

Figure 46: **NPA Revenue and Capex Expenditure by Cargo Handling Type 2010/11 - 2014/15**

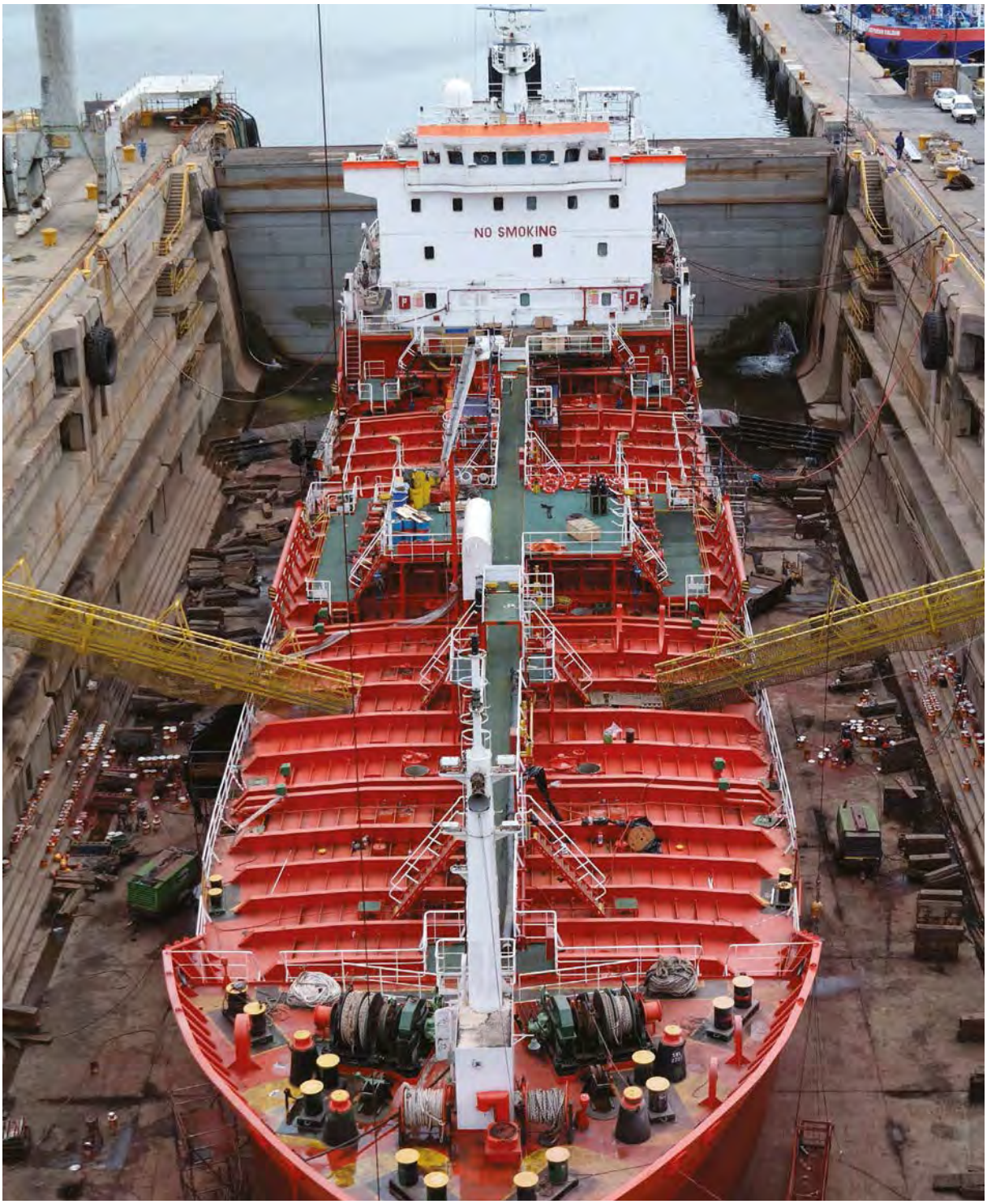


Overall, the trends show more revenue generated than expended capital across the sectors. Taking Capex expenditure as a proxy for sustaining and expanding capacity for cargo handling, the figure shows capacity creation efforts across the sectors. Containers do account for slightly more Capex expenditure than the other cargo handling with no new Capex on RORO's over the past five years.

The proposed expansions as reflected in this document will require the Authority to execute its plans in a timely and cost effective manner. Overall, the immediate past expenditure trends on Capex, although improving, places a serious responsibility on the Authority to carry out the major Capex investment as highlighted in their plans. The Regulator and port users, primarily through the submissions and in the consultation process, the Port Consultative Committee and National Port Consultative Committee must continue to improve the rigor in analysing and monitoring the Authority's continued and relevant development of South Africa's port system.

section 3

Ports Sector Review 2015/16



Vessel being repaired in the Sturrock Dry Dock at the Port of Cape Town.

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The Port of Mossel Bay.

Introduction:

The South African ports system has evolved, showing both rapid growth in specific areas and maturity in others. It has also seen the democratisation of the ports system, with port level committees being formed (PCC's) and the inception of regulation in the ports sector, with the promulgation of the National Ports Act, 12 of 2005 and the subsequent establishment of the Ports Regulator of South (the Regulator). The South African ports system has progressed during the democratic era, showing rapid growth in specific areas and maturity in others. Some of these developments occurred on physical infrastructure, such as the establishment and expansion of the Port of Ngqura, the acquisition of a number of marine service vessels, especially the acquisition of nine tug boats; dredging equipment and the start of a move towards efficiency monitoring through the establishment of operational centres to administrate the Terminal Operators Performance System (TOPS) and the Marine Operators Performance System (MOPS). This review serves to provide a snapshot of the infrastructure and capacity in the South African Port system as well as an analysis of the recent performance (operational and financial) and efficiency standards over the 5 year review period.

The review uses mainly existing research previously conducted and published by the Regulator since its inception, supplemented by other sources, to give a holistic picture of the ports system, with, a focus on the Regulated entity, the National Ports Authority. The first section focuses on the capacity and performance, and also provides a financial overview of the ports system. This is followed by a more detailed snapshot of the capacity and performance of each of the eight commercial ports that form a part of this review.

Overview

Major shipping lanes serviced by the world's largest shipping lines pass along the South African coastline in the South Atlantic and Indian Oceans. Approximately 96% of South Africa's exports are conveyed by sea, and the eight commercial ports are the conduits for trade between South Africa and its Southern African partners, as well as catering for traffic to and from Europe, Asia, the Americas and the east and west coasts of Africa.

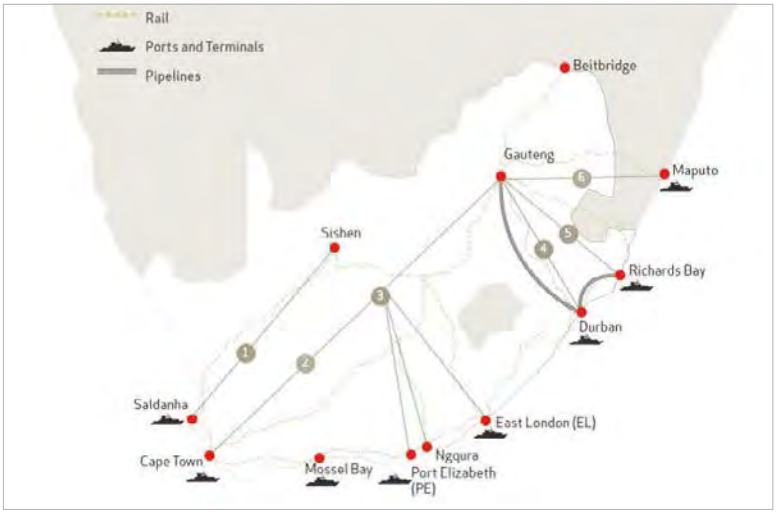
Figure 1: Global Shipping Routes

Source: www.divergingmarkets.com

South Africa has eight commercial ports. The ports of Richards Bay and Durban in KwaZulu-Natal; the ports of East London, Port Elizabeth and the Port of Ngqura in the Eastern Cape; and the ports of Mossel Bay, Cape Town and Saldanha in the Western Cape.

The South African state-owned National Ports Authority (NPA) manages the ports as a landlord, while Transnet Port Terminals (TPT) also South African state-owned, is the largest operator and has a presence throughout the ports system. All of the container and RORO terminals are managed and run by TPT, whilst the private sector are mostly involved in the running of multipurpose terminals with the exception of the Richards Bay Coal Terminal (RBCT) situated in the Port of Richards Bay. The newest port in South Africa, the Port of Ngqura, was completed in 2006 and was developed off the coast from Port Elizabeth in the Eastern Cape. The port features a draft of 16m making it the deepest container port in the port system. In addition, Durban is the continent's busiest port and has the largest container capacity in southern Africa, while Richard's Bay is one of the world's largest bulk coal terminals.

Figure 2: **South African Port System**



Source: Transnet Port Terminals.

Both the Richards Bay Port and Durban Port are situated on the coast of KwaZulu-Natal with strategic rail and pipeline links to the province of Gauteng, making it the main point of entry and exit for South African goods destined for the industrial hub of the South African economy, or due for world markets. More competition from the relatively close Port of Maputo is expected in future, however the increase in competition on a regional level is expected to benefit port users and drive innovation and improve efficiencies amongst the region's ports. The Ports of East London (South Africa's only river port), Port Elizabeth and Ngqura adequately service the Eastern Cape and the adjacent hinterland, especially the established motor vehicle manufacturing industries in these regions. The optimum use of port capacity remains a problem however, with the economies of the Eastern Cape arguably not yet able to fully utilise the three ports on its coast, whilst the prohibitive distance to Gauteng and no rail tariff equalisation mechanism in place, is likely to continue to result in an under utilisation of these ports unless this is addressed. This is despite attempts to refocus the port of Ngqura on transhipment, a traditionally fickle and unpredictable market, with much international competition.

The Western Cape has three ports with the Port of Mossel Bay on the south coast servicing the gas industry in the region; the port of Cape Town the largest regional port handling mostly container and high value products and the Port of Saldanha's dedicated bulk facility with a focus on Iron Ore exports from the mining activities in the Northern Cape province of South Africa. The economy of the Western Cape is focused around the city of Cape Town and surrounding hinterland with agriculture playing a dominant role. As such, the export of fruit and other agricultural commodities are an important section of the port that also features a large container terminal with a one million TEU capacity as well as multipurpose and liquid bulk facilities.

A renewed focus on ship repair in the system has also seen both Cape Town and Saldanha attracting users of ship repair facilities to these ports. New projects aiming at establishing new ship repair facilities servicing mainly the oil and gas industries of the west coast of Africa is also being mooted as part of the initiatives around Operation Phakisa.

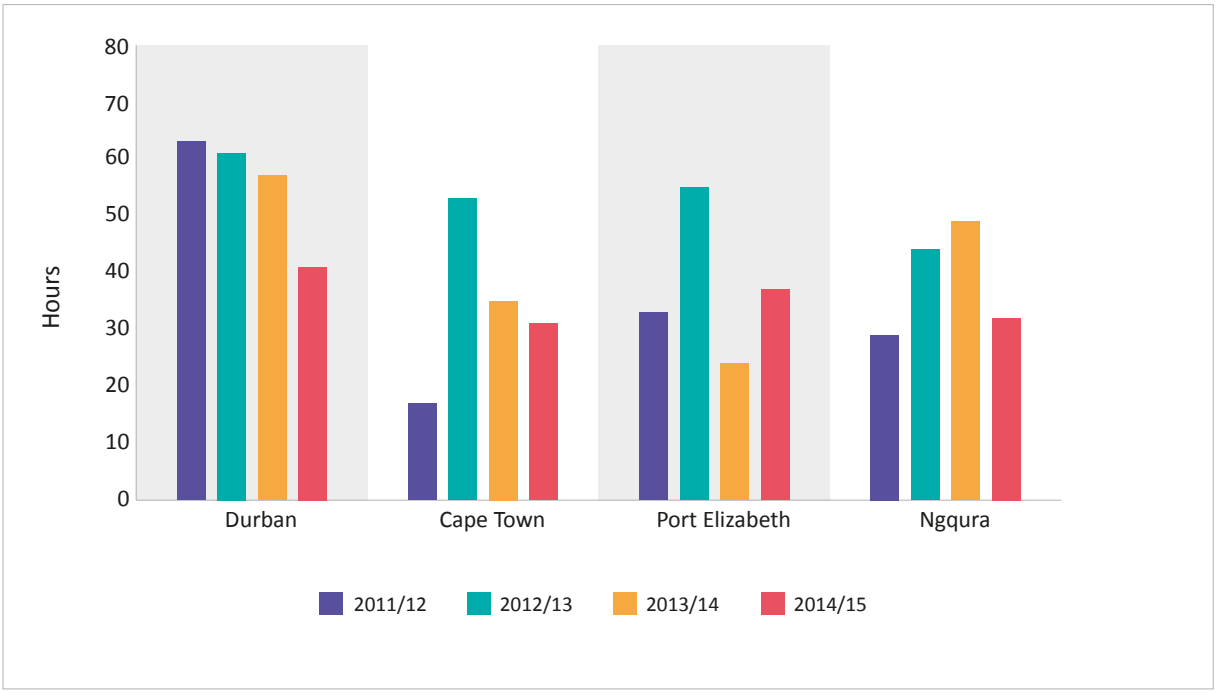
Figure 3: **Ship Repair Facilities in South Africa**

Source: National Ports Authority.

The complimentary nature of the South African port system, with specific cargo handled at dedicated ports and little or no competition between ports in existence (with the possible exception of the ports of Ngqura and Port Elizabeth) allows an analysis of the overall spread of volumes between ports and the underlying drivers thereof. With total capacity not changing much throughout the port system during the period under review, the different roles of the ports have not changed significantly, with the possible exception of the Port of Ngqura that had refocused its strategy towards attracting transhipment cargo.

Overall, many indicators are used to measure operational efficiency in a port system. The introduction of the TOPS process and other efficiency measures should become evident through the increased efficiencies as monitored through the system. This will be an area of particular focus over the next five years. Whilst the report touches on internal measures throughout like "TEUs per metre of berth per annum", the public mainly sees the ships waiting outside for a chance to get into the ports. This is in a sense the "public view of port efficiency" and figure 4 above provides an overview of average anchorage times for a number of ports. Anchorage time measures the amount of time a vessel waits outside a port before it is allowed to come into a port to commence work. The Port of Durban has consistently experienced the highest anchorage time out of all the ports, meaning that a vessel on average waits the longest in Durban

Figure 4: **Anchorage Waiting Time**



Source National ports Authority.

before it is serviced. Although the Port of Durban has the highest anchorage time, it has shown a vast improvement since 2011/12, with a 35% reduction over the review period. It is worth noting that a busier port will likely experience longer anchorage times than a less busy port, but that is only part of the story. There are many variables influencing the period a ship is waiting and the data may be distorted by something like "slow steaming" (reducing the ship's speed to minimise waiting time and save fuel) for example. We therefore focus rather on more robust data, like throughput etc., but would "keep an eye" on anchorage times over the next five years to see what the impact of the introduction of performance monitoring will have in years to come. This should not only increase the performance of the port from an operational point of view, but should also see significant financial efficiencies reflecting in lower unit costs over the medium to long term making the South African port system more competitive from a global perspective.

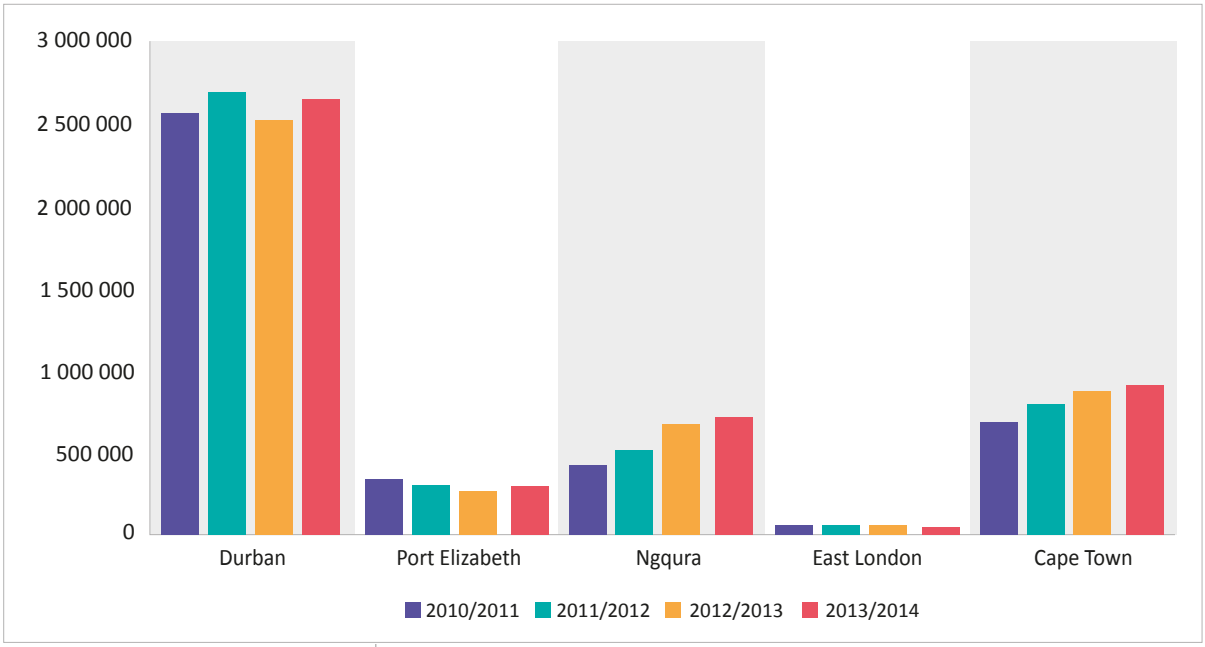
Volumes and Capacity Utilisation: An Overview by Cargo Type

Container Volumes: The Largest Revenue Generator for the Port System

It is clear from data between 2010 and 2014 that the overall allocation of container infrastructure and capacity in the ports system has changed little, with the Port of Durban (servicing Gauteng) by far the most dominant port in the handling of container cargo.

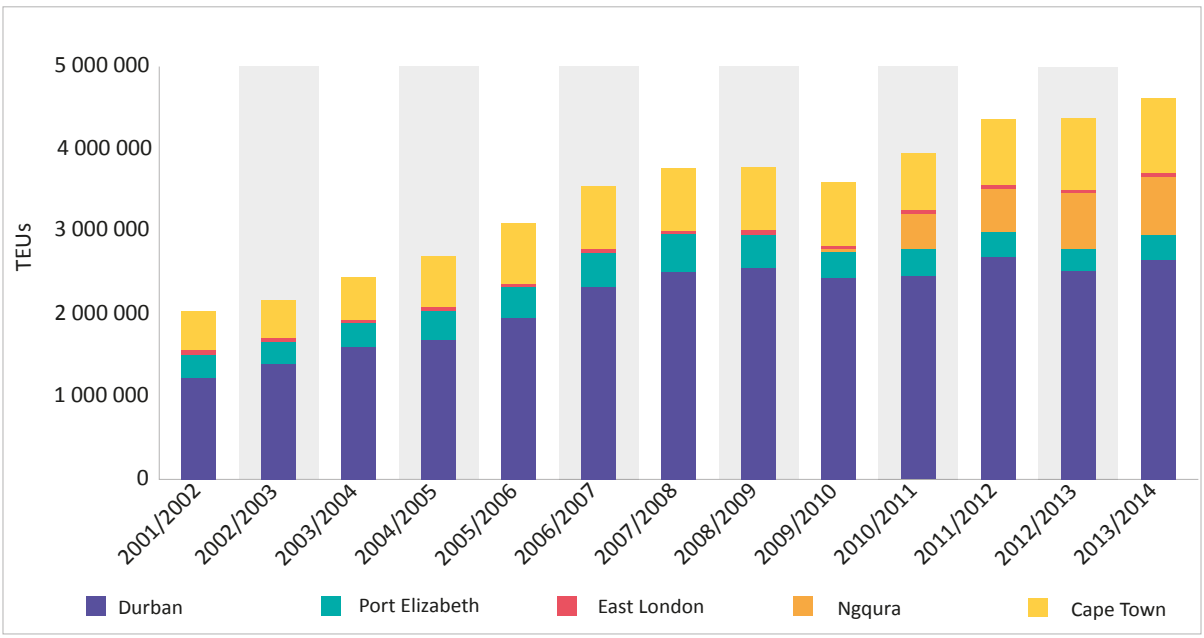
The Port of Durban by far accounted for the highest container volumes amongst all of South Africa's ports with 57% of all container traffic in the ports system. Over the period it is interesting to note that both container exports and imports have increased over the past five years by 17% and has exceeded economic growth. The overall ratio of container imports to exports has been close to 1, with exports being higher in one year and imports being higher in others as evident in figure 7 as rebalancing of empty container stock levels takes place.

Figure 5: Container Volumes



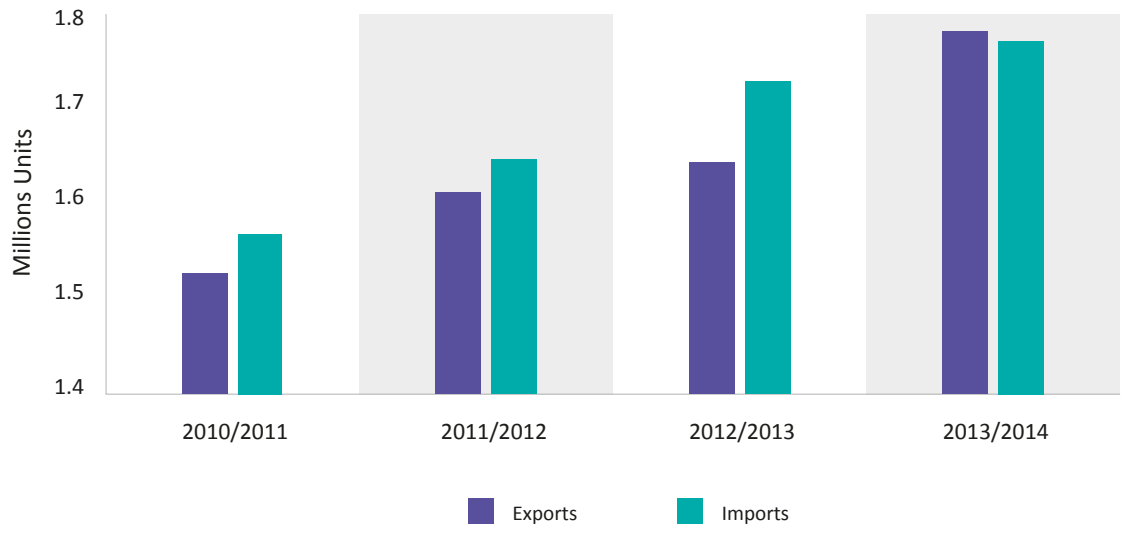
The container sector has experienced a steady rise in volumes over the last twelve years, slowing down only during the period of the global financial crisis. The increased container volume contribution of the Port of Ngqura has resulted in the Port of Port Elizabeth and East London contributing less towards container volumes of the overall ports system.

Figure 6: Container Volume Contribution by Port



As cargo dues are based on a unit based charge, very little data is collected from a port perspective as to the contents of a container (customs is handled separately by the South African Revenue Service). Looking at the import export ratio of around one, whilst taking into account that for bulk commodities South Africa has large export surpluses, a conclusion may be drawn that the contents of South African exports in mainly containers are on average of lower value than

Figure 7: **Total Container Imports and Exports**



imports. Contributing to this phenomenon may be the existence of the exporting of low value-by-volume bulk commodities via containers due to the recent relative reduction in container cargo dues as well as existing dry bulk bottlenecks in the supply chain and the export of empty containers to balance the movement thereof.

Container traffic is handled through installed capacity of about 4,8 million TEUs in the system and dedicated terminals in the Ports of Durban, Ngqura, and Cape Town. The Port of East London does not have a dedicated terminal, and containers are handled at the break-bulk terminal and berths instead. Container traffic that is also handled at the Port of Richards Bay and the Port of Saldanha break-bulk terminals is not included in the analysis and is negligibly small.

Table 1: **Container Capacity**

Container Terminals	Installed Capacity (TEUs pa)	Design Capacity (TEUs pa)	Installed Capacity as a Percent of Design Capacity
Durban	3 020 000	3 020 000	0%
Port Elizabeth	325 211	600 000	54%
Ngqura	491 442	2 800 000	18%
East London	53 390	93 000	57%
Cape Town	900 000	1 500 000	60%
Total	4 790 043	8 013 000	60%

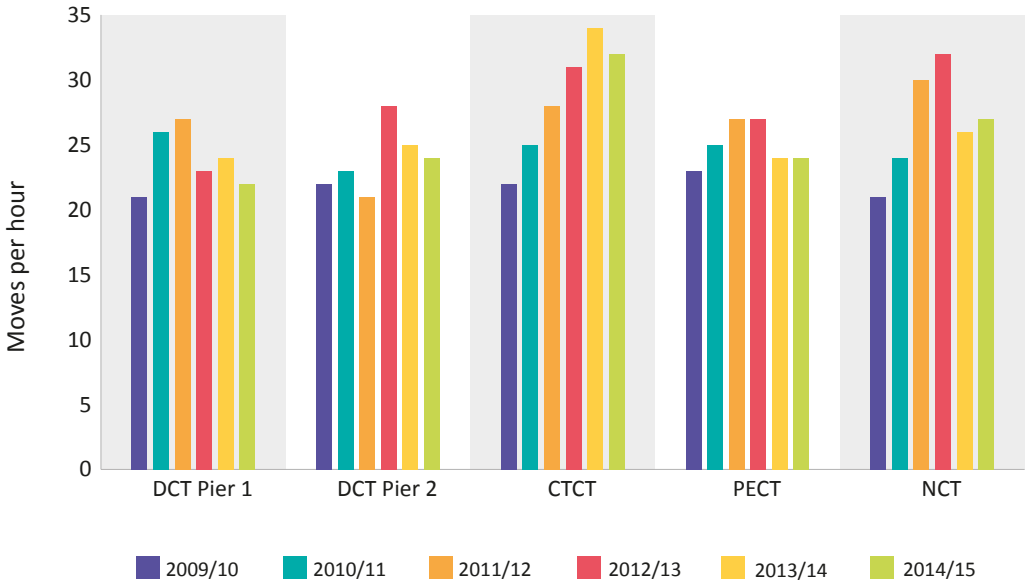
Source: PRSA data/NPA.

Table 1 shows that overall installed capacity at South Africa's container terminal stands at 60% of design capacity. Reportedly, only in the Port of Durban's container terminals does the installed capacity match the design capacity, which shows full enablement of the design capacity for utilisation. The Port of Ngqura, on the other hand, has design capacity of 2,8m TEUs per annum with installed capacity for only 491 442 TEUs meaning that only 18% of its design capacity is enabled. The Ports of East London and Port Elizabeth are capacitated for operations

at just above half their design capacity at 57% and 54% respectively, with the container terminal at the Port of Cape Town at 60% of the terminal's design capacity.

A common way to measure efficiency of the installed capacity existing at container terminals is GCH or gross crane moves per hour.

Figure 8: **Gross Crane Moves per Hour**



Source: National ports Authority TOPS Data.

Gross crane moves per hour indicates how many boxes are moved per hour by an average crane at a respective terminal. The number of crane moves per hour can be used as a composite for productive and efficient port operations. Looking at Figure 8, most of the terminals have not changed significantly in terms of gross crane moves per hour. At the country's busiest container port, the Port of Durban which is almost at full capacity, gross cranes moves per hour have been static over the review period. Solving the underlying operational challenges would go a long way towards unlocking capacity at the Port of Durban which may allow a delay in the introduction of expensive new infrastructure by utilising existing capacity more efficiently.

As such, container throughput in the system in 2013 is summarized in the second column of Table 2. Based on 2013 throughput levels, with throughput of 4,6 million TEUs through the system, overall container terminals are operating at 58% of their design capacity which suggests sufficient capacity in the terminal. This contrasts with the same throughput measured against installed capacity where the terminals are operating at 96% of installed capacity. Rather than an indicator of new terminals, this high figure reflects the extent to which urgent improvements need to be made in installed capacity at some ports to handle more throughput in the system, further providing an opportunity to delay expensive infrastructure in favour of using what we have now better.

In addition, the averages mask the situation in the individual ports. The Durban Container Terminal, based on 2013 throughput against

Table 2: **Container Terminal Performance**

Container Terminals	13/14 Total TEUs	Throughput Against Design (%)	Throughput Against Installed Capacity (%)
Durban	2 660 144	88%	88%
Cape Town	907 796	61%	101%
Ngqura	713 306	25%	145%
Port Elizabeth	291 233	49%	90%
East London	41 080	44%	77%
Total	4 613 559	58%	96%

Source: capacity utilisation Report 2014/15 PRSA.

design capacity, is operating at 88% of its design capacity. The least used container terminal when considering throughput against design capacity is the Port of Ngqura with only a quarter (25%) of its design capacity reportedly being used. Because the terminal is designed as a four berth operation, but in 2013 was operating with installed capacity of a two berth terminal, this registers the Port of Ngqura's container terminal as using 145% of its installed capacity. The same trend applies with the Port of Port Elizabeth which is only utilizing 49% of its design capacity but throughput against installed capacity reflects a higher rate of 90%. This points to the need for further analysis of all the factors around installed capacities in the terminals to determine the extent to which use of the design capacity can be optimised before terminals are said to have run out of capacity as suggested by these reported figures. The next five year period will see greater focus on this area, including the prudence of projects and how the licence terms of terminal operators impact on the utilisation of existing capacity. A further measure of utilisation and productivity is "berth productivity" that indicates how productively a berth is used by dividing the number of units over the metre of berth length per annum only for vessels that are able to call a port. It is calculated as throughput per berth length.

Figure 9: **Berth Throughput**

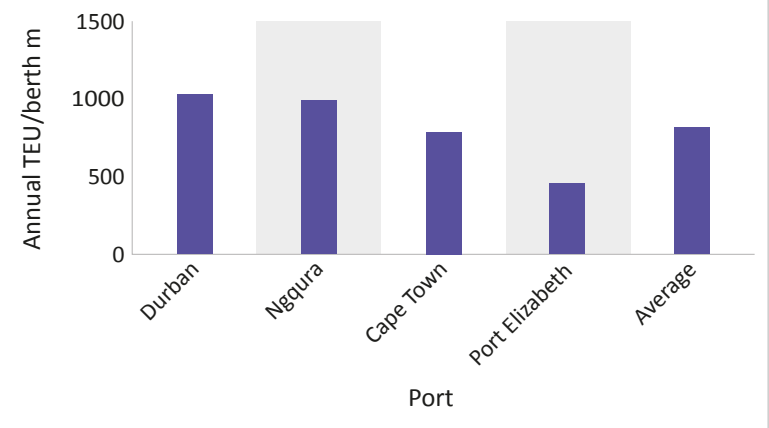
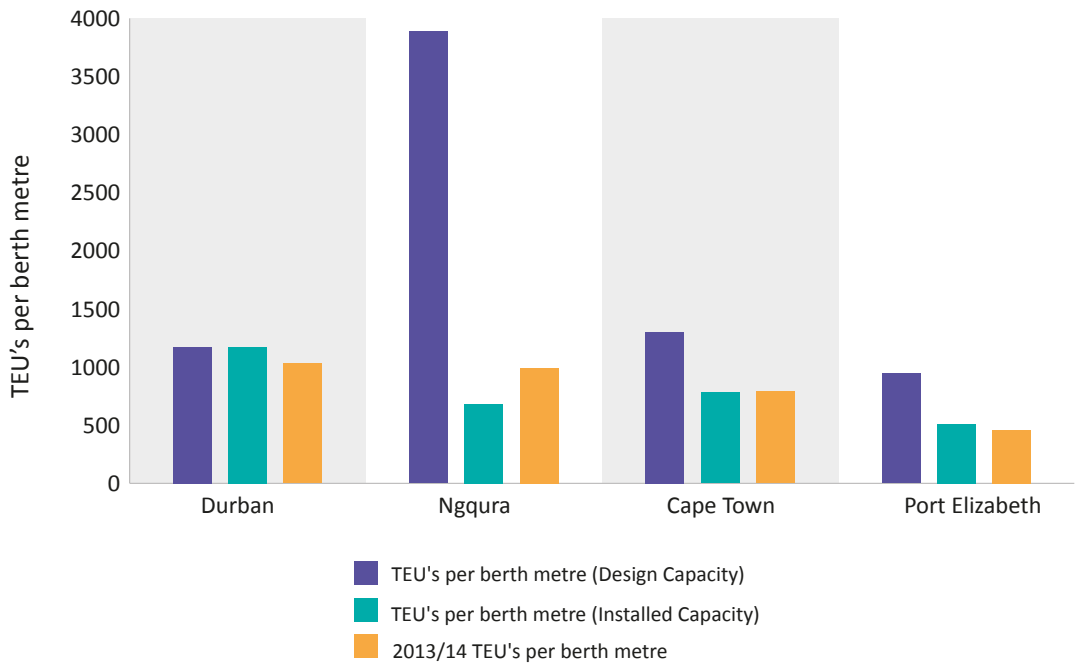


Figure 9 shows the number of containers moved per metre of berth in each of the terminals. The average performance across the system was 818 TEUs per metre of berth. With 1032 TEU/m the Port of Durban moves the highest number of TEUs per metre of berth. This is followed by the Port of Ngqura at 991 TEUs per metre of berth. Both the Ports of Cape Town and Port Elizabeth performed below average. Although the averages allow for comparisons to be done per

terminal, as done in international studies (see Drewry: 2014), in the South African case, the measure of how the terminals are performing in relation to their design capacity – an indicator of what is possible based on infrastructure already provided – as well as the installed capacity – an indicator of what is possible based on superstructure provided and operational standards for the terminals provides a more comprehensive picture of the South African port system and the opportunities for utilising latent capacity. As a result, Figure 10 provides a more comprehensive picture of berth productivity based on design capacity, installed capacity and 2013/14 throughput for each of the terminals. The difference between current throughput and maximum throughput based on design and installed capacity highlights where additional throughput is possible by addressing installed capacity issues. It is assumed that design and installed capacity account for the effects of terminal layout, the alongside depth and vessels sizes accommodated at each port, as well as superstructure and port operating systems in each of the terminals.

Figure 10: **Berth Throughput Installed vs Design Capacity**



The Port of Durban's container terminals, which handled 1032 TEUs per metre of berth, were only 39 TEUs short of the full design and full installed capacity. The challenge is with the Port of Ngqura, which based on design capacity, has the potential to handle 3 889 TEUs per metre of berth against the 991 TEUs per metre of berth that the port achieved in 2013/14. The productivity of its installed capacity is 683 TEUs per metre of berth which is 17,5% of overall design capacity. In simple terms this points to significant latent capacity in the Port of Ngqura (away from the large supply chains feeding the economy of Gauteng) and raises questions and presents challenges about installed capacity as well as total volumes and projected growth of containers handled by the Port.

The provision of container capacity is crucial to the future economic growth of South Africa and will greatly impact on the future structure and expansion of the port system. Much can certainly and are being be done to better utilize existing assets and push out expensive

capex. Productivity needs to improve drastically and the NPA's implementation of the TOPS system should see benefits feeding through to users over the next few years. In addition, with the current capacity structure, a major concern arises with the geographic location of the bulk of the additional spare capacity in the South African port system in the form of Ngqura that requires some lateral thinking in using that capacity (or bringing it into the broader South African supply chain) outside of just depending on transhipment cargo.

The Automotive Trade: A Cornerstone of the South African Economy

South Africa's automotive industry plays a large role in the South African port sector through the manufacture and export of vehicles and components as well as the volume demand driven by domestic requirements through imports. A number of major multinational firms use South Africa to source components and assemble vehicles for their local and international markets with a very Africa focused strategy evolving in many OEMs over the last five years as an area of growth. The sector contributes at least 6% to the country's GDP and accounts for approximately 12% of South Africa's manufacturing exports. In 2014/15, 391 000 vehicles were imported, whilst 265 000 units were exported.

The automotive and components industry is well placed for investment opportunities. A growing number of vehicle manufacturers such as BMW, Ford, General Motors, Mercedes Benz, Nissan, Renault, Toyota and Volkswagen have production plants in South Africa, while many component manufacturers have also established production bases.

Automotive trade volumes are based mainly on the geographic location of the automotive manufacturing sector in South Africa with manufacturing largely located in three provinces, the Eastern Cape and KZN (coastal) and Gauteng (inland) with VW and GM utilising the port of Port Elizabeth and Daimler Chrysler, the port of East London. Most other manufacturers (including Toyota that has a manufacturing plant in Durban) and importers use the Port of Durban as can be seen in the volume distribution table: Table 3

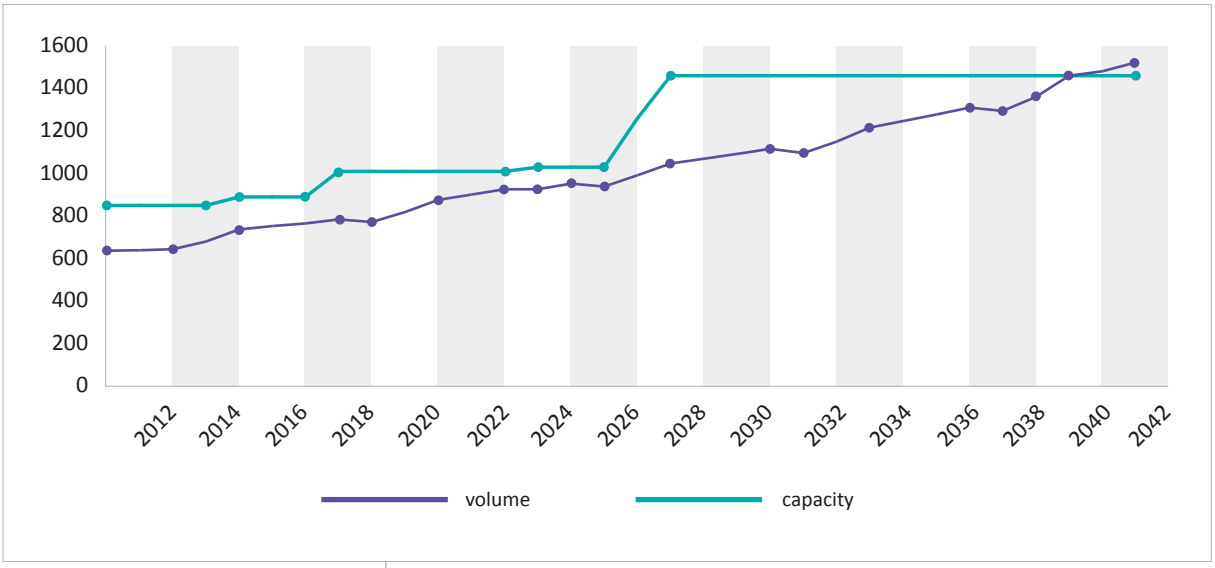
Table 3: **RORO Volumes**

RORO	2001/2002	2013/2014	CAGR
Durban	89 407	501 456	15,45%
Port Elizabeth	13 215	133 194	21,23%
East London	51 361	56 193	0,75%
Total	153 983	690 843	13,32%

Automotive terminals account for 681 022 m^2 of terminal area in the system. As with containers, automotive operations are licensed exclusively to TPT in the Ports of Durban, East London and Port Elizabeth. Although at full capacity the RORO terminals can handle 810 000 units per annum, the available or installed capacity is 681 041 unit per annum. Since 2008/09, growth in RORO volumes has seen a 2,04% increase at an annual rate, a slow recovery from the financial turmoil of 2008 when global vehicle sales dropped by 5,3%. However, over a longer period since the turn of the century, growth in the import and export of South Africa's automotive industry has been impressive, as can be seen in Table 3.

The infrastructure required to handle the volumes remained fairly constant over the review period and is not expected to change significantly in the near future see Figure 11, which illustrates the NPA's future proposed RORO capacity projections.

Figure 11: **RORO Volume vs Capacity**



Whilst Durban is seeing increasing competition from other ports, including Maputo in the RORO market, the capacity available should ensure that it will remain the port of choice for vehicle imports and exports in the foreseeable future.

Table 4: **RORO Capacity**

Port	Terminal	Berths	Usable Berths	Installed Terminal Capacity	Berth Length (m)	Berth Draft
Port Elizabeth	Motor Vehicle	100,101	1	133 552	342	12,2m
East London	West Quay	P,R	1	67 489	559	9m
Durban	Cato Creek	F,G,M,R and Q	3	480 000	1149	10,1m —10,6m

The smallest RORO draught in the ports system is at the Port of East London with a 9m draught and the deepest draught is found at the Port of Port Elizabeth at 12,2m. The Port of Port Elizabeth's berth length is the shortest of the three and given the size of vessels below, it can only work one vessel at a time, yet, it has more installed capacity than the Port of East London. All three South African RORO terminals are able to accommodate the largest RORO vessels based on the terminal capacity and vessel dimension. Since October 2015 the Port of Durban's RORO terminal has been berthing the largest car carrier in the world (Hoegh Target).

Table 5: **Frequent Large RORO Vessels**

Name	GRT	Profile of vessel
Figaro	74,258	Length 228m Width 32m Draught 7,5m – 10,7m
Tiger, Titania	74,255	Length 228m Width 32m Draught 9,3m current
Tulane	72,295	Length 230m Width 32m Draught 10,25m
Aniara	71,673	Length 232m Width 33 m Draught 11,3m
Faust, Fidelio	71,583	Length 228m Width 32m Draught 9,5m
Höegh Autoliners, Shanghai, Tokyo, Seoul, London and Detroit	68,871	Length 229m Width 32m Draught 9m – 10m

Taking a snapshot of the year 2013/14 the dominance of the Port of Durban remains evident. With imports totalling 326 000 units through Durban and exports of 161 000 making up approximately 70% of all RORO volumes clearly reflecting the port capacity and proximity to the vehicle manufacturing sector.

Figure 12: **2013/2014 Volume Snapshot**

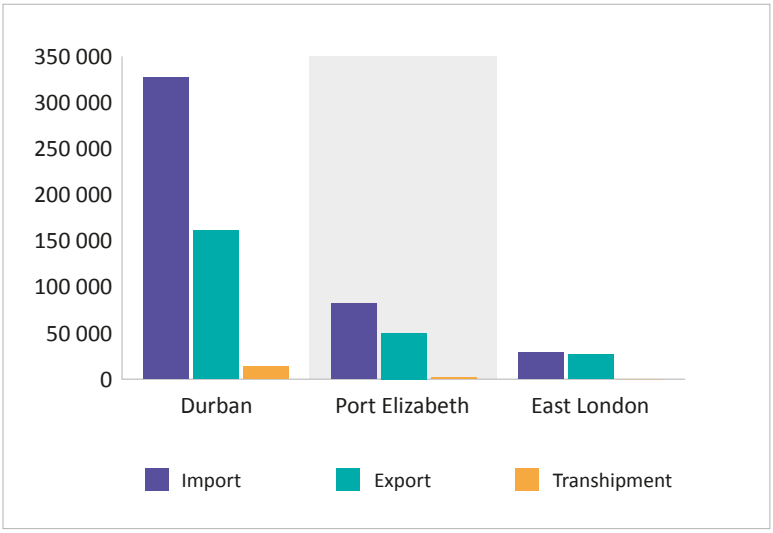
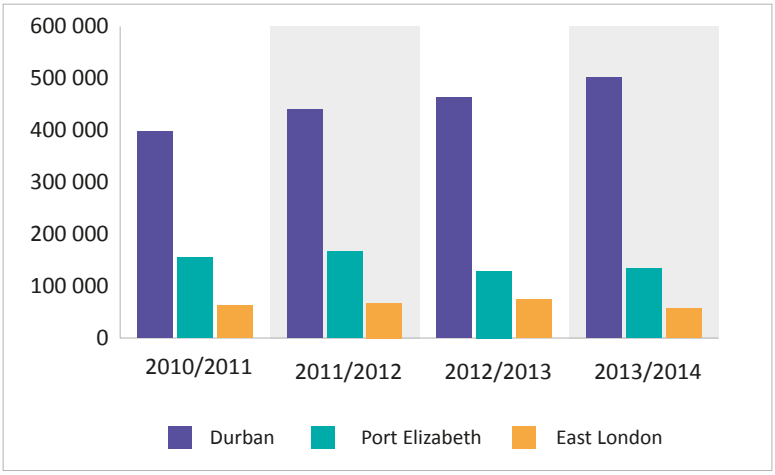
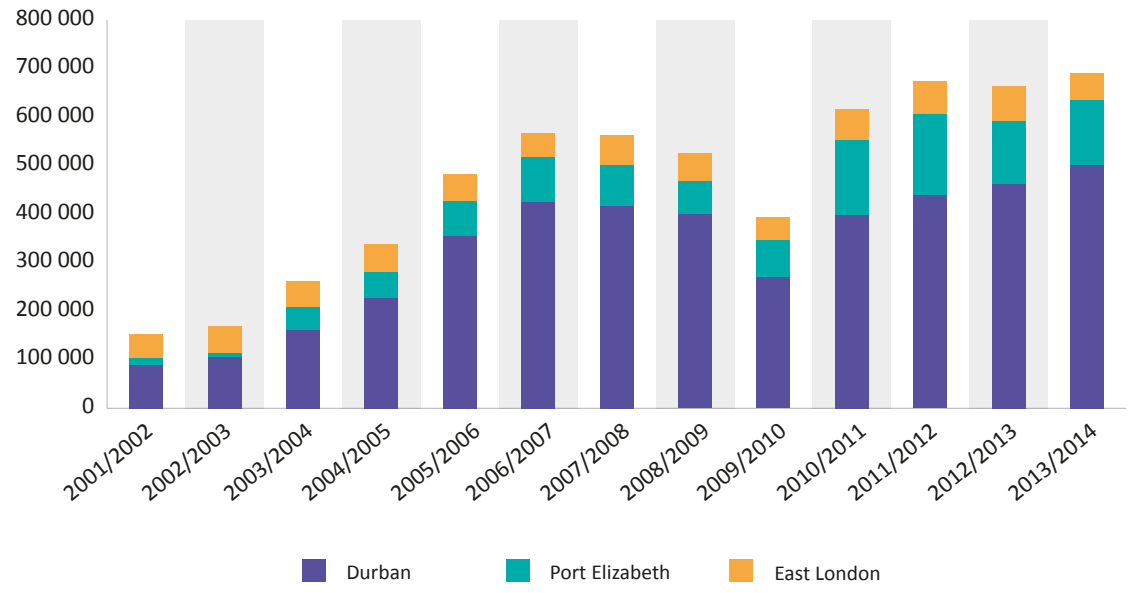


Figure 13: **By Port RORO Annual Returns**



RORO volumes over the past twelve 12 years have increased steadily, with the Ports of Durban and Port Elizabeth responsible for most of this growth. It was only in the years following the global financial crisis that a fall in RORO volumes was experienced.

Figure 14: **Historical RORO Volumes**

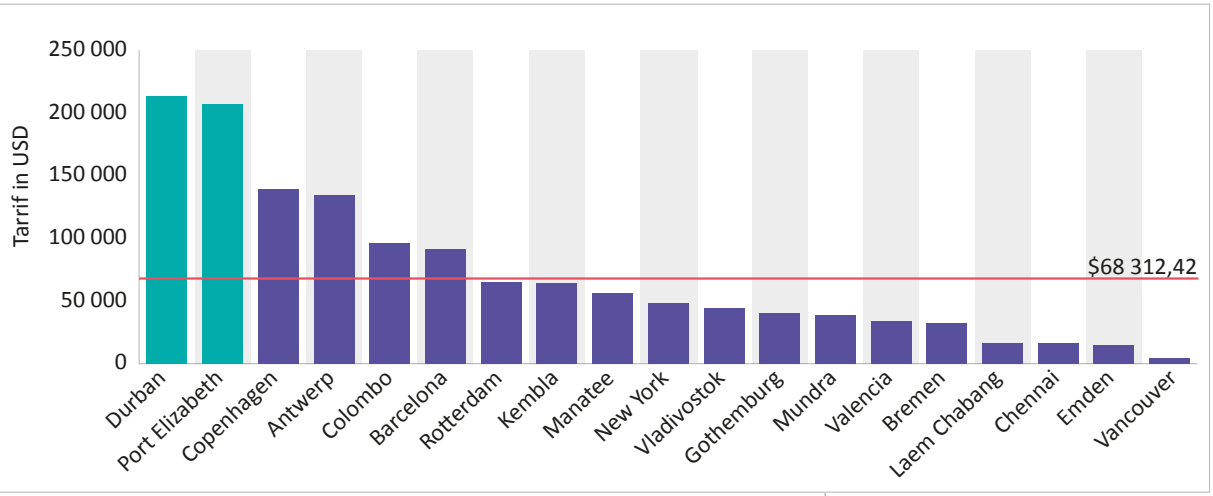


Of the three ports handling automotive cargo, the Port of Durban ranks in the top position with 73% of total automotive volumes. Overall automotive volumes have increased but there have been mixed results for the different ports. Imports of automotive cargo are higher than exports, at a ratio of 1,8:1 reflecting the growth in the demand for new vehicles in South Africa (in general second hand vehicles cannot be imported into South Africa for resale) as well as a high manufacturing rate for local consumption. Durban also serves as a main port of entry for vehicles destined for other Southern African countries, including second hand cars that move "in-bond" through the country to neighbouring states.

Installed capacity in RORO terminals is 80% of the published design capacity. Of the installed capacity, annual utilisation computed from

annual TEUs handled in the system shows that terminals are at full utilisation of installed capacity but not fully utilising design capacities with a little less than 20% of design capacity not used. As all of the RORO terminals in the South African port system are run by TPT and with no private sector competition, indications are that whilst utilisation of existing capacity is high, operational efficiency still remains a problem to consumers and this combined with traditionally high cargo dues on vehicle imports and exports as is evident in Figure 13 with South African ports in excess of 200% higher than a sample global average in 2014. Participation of other players through the establishment of new infrastructure does however not seem likely as existing capacity and planned expansion thereof will adequately service the capacity requirements by the industry up to 2042.

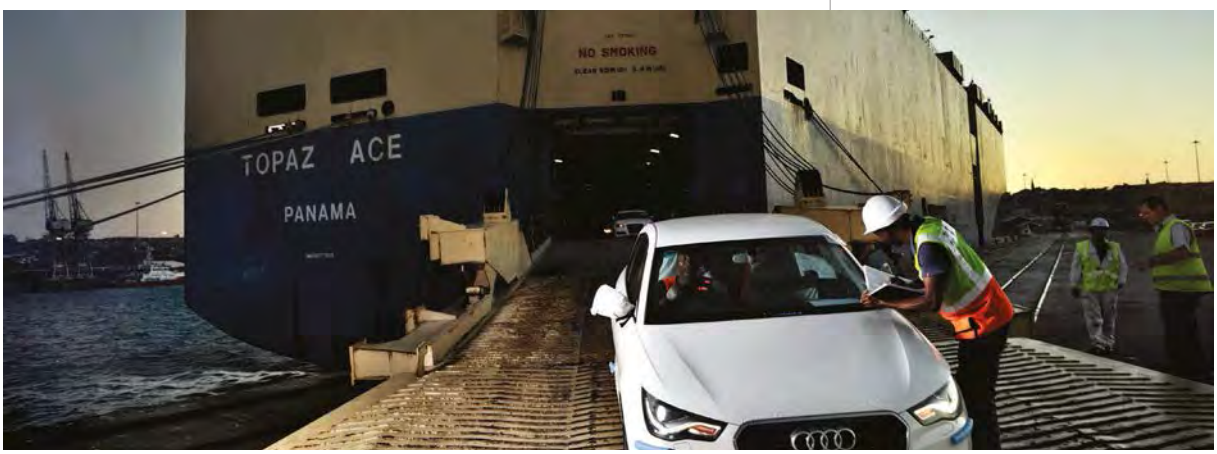
Figure 15: **RORO Cargo Dues Compared to Global Sample Average**



Source: GPPCS, 2015.

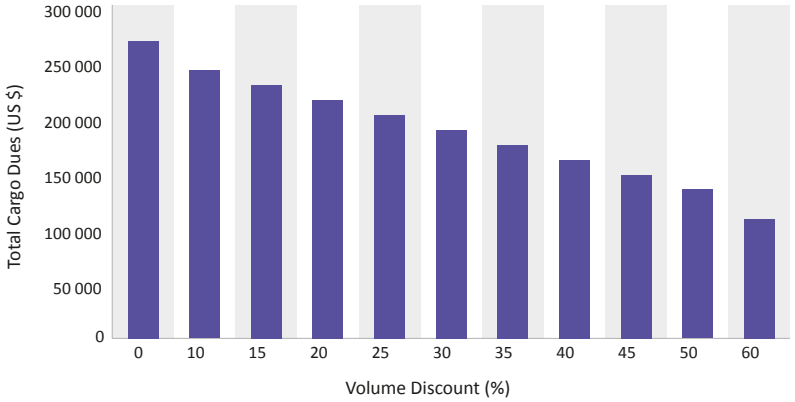
The Impact and Removal of the Automotive Volume Discount Scheme

In 2010 the NPA instituted an Automotive Industry Volume Discount (AIVD) which applies to importers and exporters of vehicles. However, the Ports Regulator of South Africa issued a Tariff Strategy in the July 2015 tariff that indicated the removal of the automotive volume discount scheme that was in place since the inception of regulation and significantly advantaged larger players in the market (See box on next Page)



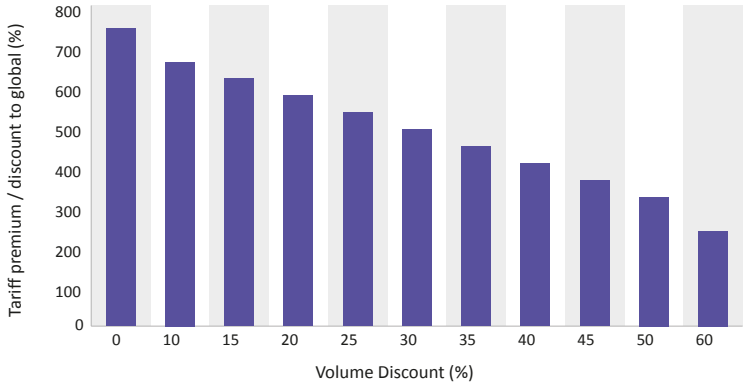
The details of import vehicles are recorded as they are rolled off a car carrying (RORO) ship.

Figure 16: **Impact of Volume Discount & Rebate on Cargo Dues: Automotive Study**



The figure above isolates the effect of the AIVD on the overall cargo dues faced by vehicle importers and exporters. The AIVD has volume discounts available at different levels depending on the total number of vehicles imported or exported, ranging from a minimum discount of 0% for 0-10 000 and a maximum discount for 60% for 80 001+ vehicles. In the figure above the impact of the AIVD on small manufacturers who received a smaller discount because they imported or exported fewer vehicles; and large manufacturers who received larger discounts with an extreme of 60% because they imported/exported more vehicles is apparent. It is clear that the cargo dues paid by smaller manufacturers that do not qualify for the AIVD are significantly higher than those paid by larger manufacturers that qualify for the maximum AIVD (60%).
In addition, it is clear that even after the AIVD at the 60% level, the cargo dues faced by South African exporters ($96 378) are still above the global average cargo due tariffs ($31 724). It is clear that AIVD and rebate programs provide more benefit to larger manufacturers of vehicles.

Figure 17: **NPA Port Tariff Deviation from the Global Average: Automotive Study**



The tariff premium to the global average paid by vehicle manufactures after receiving discounts are significant. The lower extreme where there is 0% AVID as a result of the manufacturer being too small shows a premium of 740% to the global average, while the opposite extreme where there is an AVID of 60% which is received by the largest manufacturers shows a premium of approx. 240% to the global average. A concerning conclusion is that South African cargo dues are significantly above the global average, it is smaller manufacturers who are the worst affected by this anomaly.

Industry impact of the discount structure

The structure as set out below provided a significant discount to importers and exporters based on volumes. The value of the impact differs as the tariff applicable on vehicles is calculated on a volume basis, i.e. the larger the exported or imported vehicle, the larger the cargo dues tariff applied. I.e. a small sedan will have a lower cargo dues tariff than a Double Cab Bakkie. More specifically, the tariff is calculated per ton where one metre is equal to two tons for purposes of calculating the applied tariff.
As per the published Tariff Strategy this will be removed and implemented along with the other changes to mirror the pricing by terminal operators. The categories will be defined in alignment with Transnet Port Terminal's definition as follows:

- Passenger vehicles (PV): weight < 3,5 tons and all dimensions must not exceed: length < 4,8 meters, width < 2,5 meters, height < 2,87 meters
- Commercial vehicles (CV): weight between 3,5 and 8,5 tons and all dimensions must not exceed, length between 4,8 and 12 meters, maximum width of 2,5 meters, maximum height of 2,87 meters
- Heavy commercial vehicles (HCV): weight above 8,5 tons or if any of the following dimensions is exceeded: length >12 meters, width > 2,5 meters, height > 2,87 meters

These changes, will not only provide a better indication of use of port assets, rather than some arbitrary weight length measure, but also simplifies the billing systems across the port.

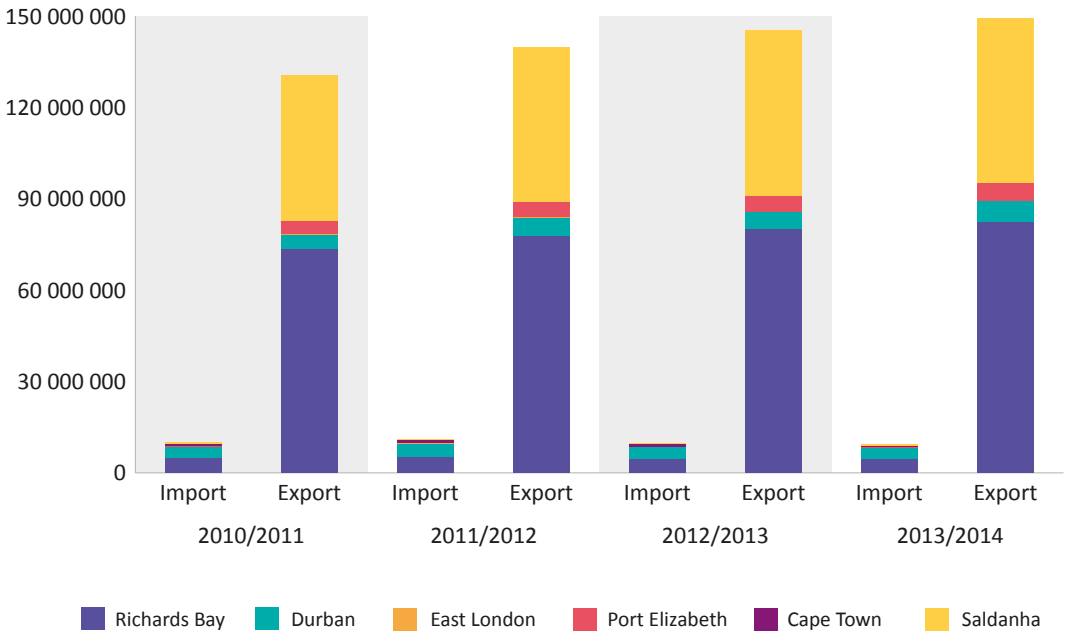
Together with the change in the way cargo dues will be priced, the removal of the discount scheme must also be implemented as part of the Tariff Strategy implementation plan.

Dry Bulk Remains of Strategic Importance to the South African Economy

The South African port system mainly handles three main dry bulk commodities i.e. iron ore (Port of Saldanha), coal (Port of Richards Bay) and Manganese (Ports of Port Elizabeth and Saldanha Bay) and in total, including all others are expected to handle in excess of 170 million tons per annum.

TPT holds the most number of port operator licences for handling dry bulk cargo (5), followed by SA Bulk Terminals. Included in the category "other" is Richards Bay Coal Terminal, Durban Coal Terminal, FPT Port Leasing, PBD Boeredienste, Profert, and Rocasync/ Proterminal (some licences have since expired). Included in TPT's land areas is the manganese terminal in the Port of Port Elizabeth with terminal capacity of 5,5 million tons per annum, the Richards Bay Dry Bulk Terminal handling the import of alumina, aluminium fluoride, coking coal, petcoke and sulphur as well as the export of anthracite, steam coal, discard coal, chrome, fertiliser, chloride, rutile, zircon, sulphate, magnetite, vermiculite, hematite/iron ore and woodchips and has design and installed capacities of 10,9 mtpa and 14,7 mtpa respectively. In addition, in the privately operated RBCT has a design and installed capacity of 91 mtpa.

Figure 18: **Total Dry Bulk Volumes**

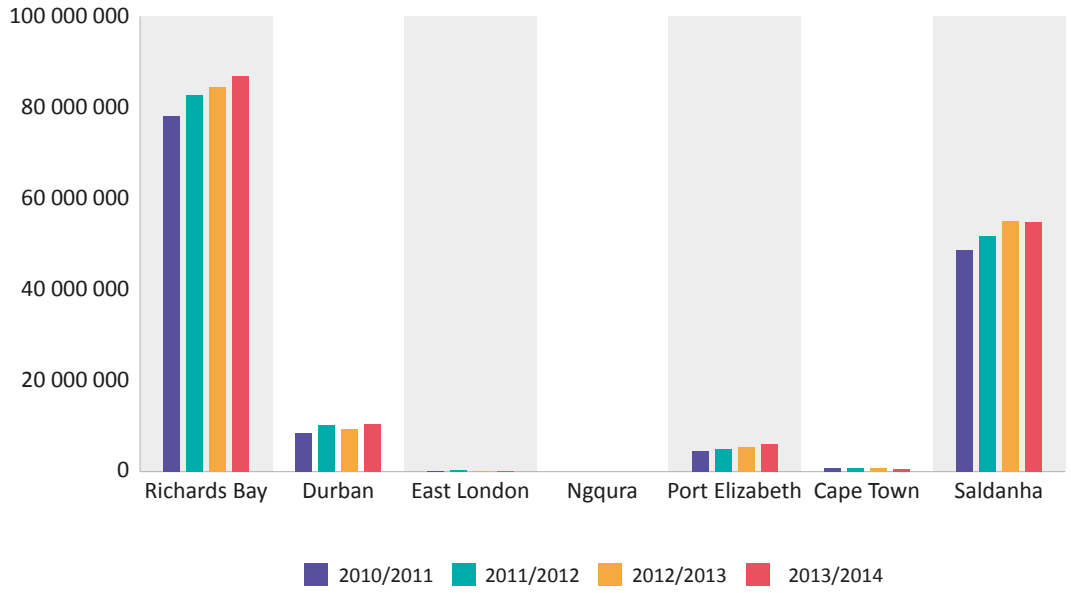


With dry bulk cargo requiring space, the size of a terminal as well as capacity gives a better picture of who the main role players are in the Dry Bulk sector. The Terminal Operators Performance System (TOPS) figures places TPT's total terminal area for dry bulk as 642 million square meters. The rest of the terminals occupy the following land area in the port with RBCT and Durban Coal Terminal as the second and third largest terminal areas.

Coal, manganese and iron ore remain the greater part of the dry-bulk commodity basket making up 85% of the tonnage over the period. The Port of Richard's Bay accounted for 55% of all dry bulk volumes the

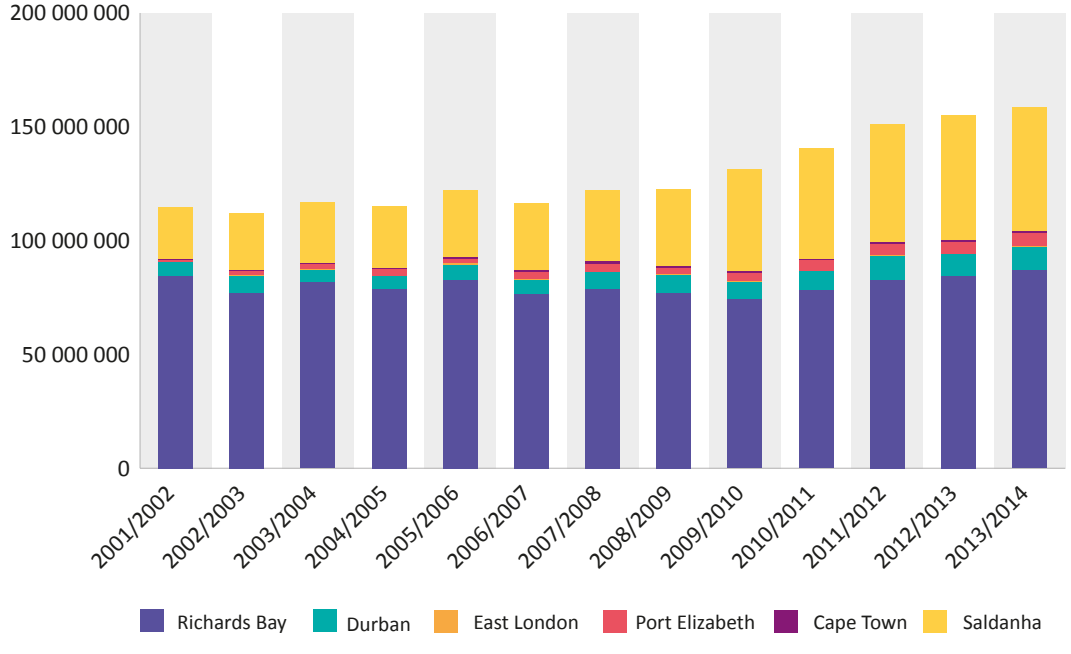
majority thereof coal (79 million tons annual average), with only the Port of Saldanha coming close with 35% of dry bulk volumes (mostly iron ore with an average annual 57 million tons). Both import and exports of dry bulk have increased over the past five years however, in line with South Africa's economic structure as a net exporter of commodities dry bulk exports still outnumber imports by fifteen times.

Figure 19: **Dry Bulk by Port (tons)**



Dry Bulk volumes have showed slow but steady growth over the last twelve years. The Port of Saldanha Bay and Richards Bay (more recently) were responsible for most of the growth which occurred as they increased their contribution of dry bulk volumes in the overall ports system.

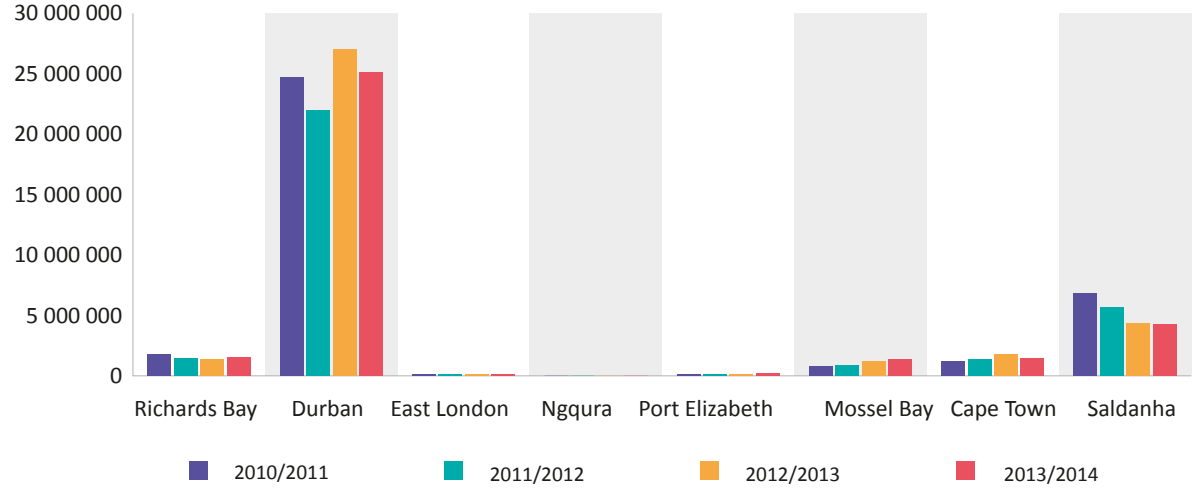
Figure 20: **Historical Dry Bulk Volumes**



Liquid Bulk Sector Fuels the South African Economy

The South African liquid bulk port sector comprises of twenty-two (mostly private sector) entities who collectively hold thirty-six port operator licences. Of these, Engen South Africa individually holds the most number of licences (six) across the system in the Ports of Durban, Richards Bay, East London and Port Elizabeth. Engen is also part of Joint Bunkering Services which is an amalgamation of BP Southern Africa and Chevron SA. The other players hold one licence each and account for 34% of licences in this sector. This category comprises: AECI Cape Chemicals, Blendcor (PTY) Ltd; BP Southern Africa; Cape Town Bulk Storage; Chemoleo; FFS Refineries; H&R South Africa; Hillside Aluminium Limited; Joint Bunkering Services (BP Southern Africa, Chevron SA, Engen Petroleum, Shell South Africa Marketing); Protank (Indian Ocean Terminals); Shell South Africa Marketing; Strategic Fuel Fund Association; Veetech and Zenex Oil.

Figure 21: **Liquid Bulk Volumes**



The Port of Durban accounted for 74% of all liquid bulk volumes. Liquid bulk volumes have decreased slightly overall. Total liquid bulk exports have been falling drastically over the past five years, while imports have increased slightly. Imports of liquid bulk cargo are far higher than exports, at a ratio of 11:1 with crude making up the bulk of all imports.

The Port of Saldanha's liquid bulk terminal has the deepest draught followed by the ports of Ngqura, Cape Town and Richards Bay. Handling capacity at the Port of Ngqura is still to be installed. The Port of Mossel Bay and Durban handle liquid bulk through a loading buoy anchored offshore -Single Point Mooring buoy- which is capable of handling any size ship. The CBM/SBMs currently has a capacity of about thirty two million kilolitres per annum. The largest vessels measure more or less the same length of around 275m and based on berth length, these would not be calling in the Ports of Port Elizabeth, East London or Durban's Island View.

Figure 22: **Liquid Bulk Volumes by Port**

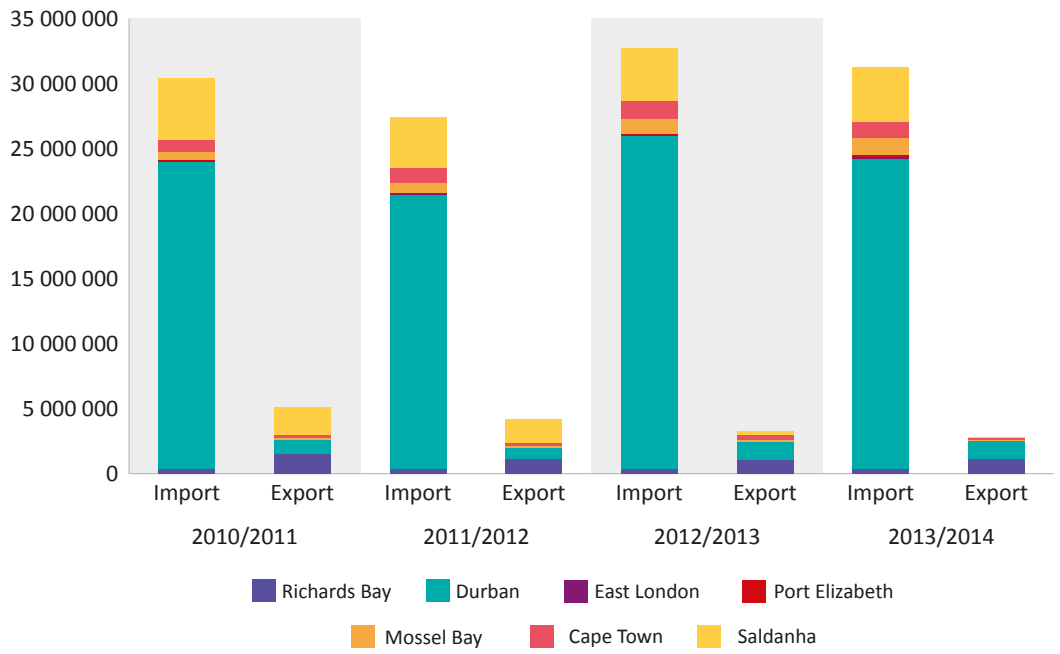


Table 6: **Liquid Bulk Capacity by Terminal**

Port	Terminal	Berths	Usable Berths	Terminal Capacity	Berth Length (m)	Berth Draft
Richards Bay	Liquid Bulk	209,208	2	2 720 000	600	14m
Durban	Island View	IV 7,8,9	3	12 000 000	705	11,9m —12,2m
Durban	Island View	IV 2,4,5	3	3 400 000	525	9,4m —10,6m
Durban	Island View	IV 1	1	1 700 000	230	12,5m
Durban	CBM/SBM	—	—	24 000 000	—	—
Durban	Maydon Wharf	MW 3 and 4	1	900 000	305	8,7 — 9,1m
East London	Tanker Berth	TB	1	2 400 000	259	10,7m
Ngqura	Liquid Bulk	B100	—	0	300	18m
Port Elizabeth	Liquid Bulk	15	1	1 300 000	242	9,9m
Saldanha	Liquid Bulk	103	1	25 000 000	360	23m
Mossel Bay	CBM/SBM	—	—	7 971 600	—	—
Cape Town	Liquid Bulk	TB1 & TB 2	2	3 400 000	489	13,7m —15,2m

Total liquid bulk capacity is based on combined capacities of the Ports of Saldanha, Cape Town, Port Elizabeth, Ngqura, East London, Durban and Richards Bay. Historical growth rates for liquid bulk are 2,77% per annum with a decline in the Port of Richards Bay and Port of Cape Town. The Ports of East London and Port Elizabeth account for a significant proportion of the growth rate at 41% and 24% respectively. The third port with a high growth rate is the Port of Saldanha achieving a cumulative average growth of 18% over the period.

Table 7: Historical Liquid Bulk Volume Growth Rates			
Liquid Bulk Port	**2001/2002 (klpa)**	**2013/2014 (klpa)**	**CAGR**
Richards Bay	1 547 576	1 491 481	-0,31%
Durban	19 830 331	25 132 543	1,99%
East London	2122	130 241	40,93%
Port Elizabeth	15 009	197 129	23,94%
Mossel Bay	490 363	1 381 951	9,02%
Cape Town	2 034 165	1 448 213	-2,79%
Saldanha	601 229	4 260 761	17,73%
Total	24 520 795	34 042 319	2,77%

Where the Port of East London drove the earlier growth, it is expected to register a 7,1% decline in the handling of liquid bulk by the year 2042 in terms of NPA planning projections. These growth rates are however very closely linked to the demand for energy in the domestic economy and future import patterns of fuel will be impacted through a number of factors, including the ability of local refineries to upgrade to higher standards for fuel production. Inability to comply with ever more stringent requirements might see more refined products being imported. The next five years will arguably see some restructuring in this area as energy requirements domestically undergo changes and economic growth cycles continue.

Break Bulk/Multipurpose Terminals

Break bulk cargo is handled in the ports of Durban, Richards Bay, Port Elizabeth, Ngqura and Cape Town at either dedicated break bulk terminals or berths or at multipurpose terminals. Five terminal operators run the dedicated break bulk terminals in the system with FPT Port Leasing (Pty) Ltd holding half (four) of the terminal licences and the other three operators accounting for the balance; Commercial Cold Storage (two); and one each for Cross Berth Cold Storage, Transnet Port Terminals and Navocare (Pty) Ltd. The two Commercial Cold Storage (Pty) Ltd in Maydon Wharf terminals have a combined terminal area of 28 552 m^2. Their main operations is in the intake, cold storage and dispatching of citrus and dry goods and the cold treatment of specialised products (Fruits, Break Bulk). NovaCare (Pty) Ltd holds a single terminal operator licence covering a 12 033 m^2 facility. NovaCare's main operations covers storing & loading consignment of break bulk cargoes; loading and discharging of vehicles and rail wagons; tailing and sorting of break bulk; handling of fertilizers, animal feed, agricultural products and equipment. With four licences, FPT Port Leasing (Pty) Ltd holds the most number of break bulk terminal licences covering a port area of 90 782 m^2. The licence allows for the handling of fresh produce and other commodities such as steel in the off-season period. TPT is licensed to operate 7 880 m^2 break bulk facility in Maydon Wharf for loading, off-loads and stowage of break bulk, transhipment/re-shipment, stacking or unstacking, temporary storage, collect and delivery, loading and discharging trucks and rail wagons, transfer, working break bulk on hold and all reasonably associated services. The main actual operations are: steel, overflow project cargo, and containers. In the Port of Cape Town, Cross Berth Cold Storage is licensed to operate a facility covering 5 359 m^2,

Bulk terminal at the Port of Durban.

where it handles the import and storage of fresh and frozen fish and fish products.

There are twenty multipurpose terminal licences in the system with a majority (thirteen) concentrated in Maydon Wharf Durban amongst five licence holders i.e. Bidfreight Port Operations (five licences), Grindrod Terminals (five licences), TPT (two licences) and Ensimbini Terminals, and Manuchar SA (Pty) Ltd each with one licence for the Maydon Wharf facility.

Break bulk volumes have declined over recent years as containerisation has increasingly made inroads into the traditional break bulk cargo volumes. A striking example is the impact that the container export rebate that was announced in 2012 had on break bulk volumes in Cape Town. The rebate on export containers totalling R740 on a 6m container was enough to shift a sizable share of the export fruit volumes away from traditional pellet based cargo and into reefer containers. This trend has since established itself and the reduction of container cargo dues might see further shifts towards the containerisation of such cargo in the future.

Table 8: **Break Bulk Volume Growth**

Break Bulk Volumes	2001/2002	2013/2014	CAGR
Richards Bay	4 794 917	3 381 978	-2,87%
Durban	6 911 144	3 380 546	-5,79%
East London	158 352	93 719	-4,28%
Ngqura	—	80 031	0%
Port Elizabeth	426 267	314 054	-2,51%
Mossel Bay	—	—	0%
Cape Town	2 548 597	384 536	-14,58%
Saldanha	2 424 538	873 803	-8,15%

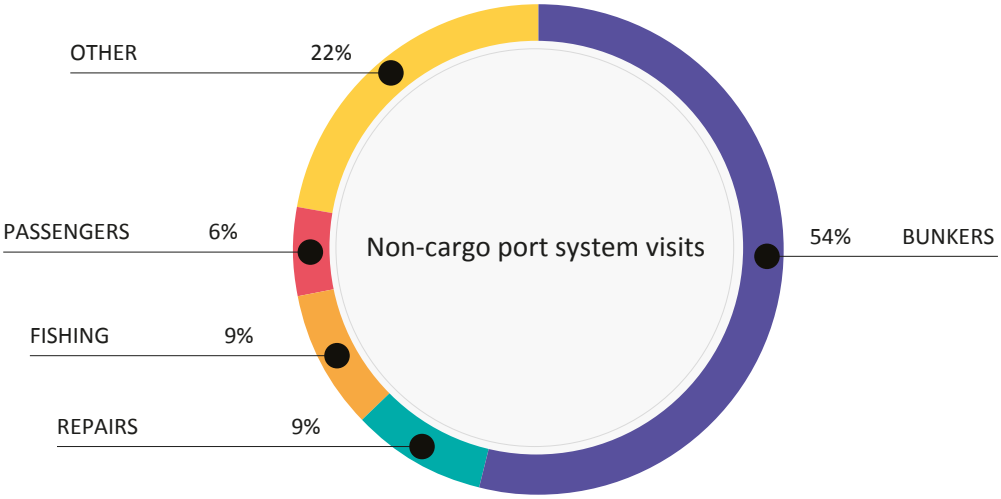
This presents an interesting problem to the port system. Not all cargo is suitable for containerisation and facilities that cater for the requirements of some bilateral trade agreements also necessitate the shipping of goods in break bulk formats. Lower volumes however mean that in terms of the principles embedded in the tariff strategy published by the Regulator, costs will increase over time as less vessels carrying break bulk cargo will call and the terminal handling charges will increase to recover the cost of the break bulk terminal infrastructure. As a result a consolidation in the multipurpose infrastructure will most probably become evident over time with a shift towards an increase in container handling becoming the norm. Economic growth does however strongly suggest an uptick in odd-sized cargo and a return of domestic growth will support this sector of the port system.

Non-Cargo Services

Bunkering activity made up the majority (54%) of non-cargo working vessel calls, averaged over the review period

Of the bunker related vessel calls, the Port of Durban made up 47% and Cape Town 48% of all bunker related vessel calls in the South African port system. Outside of bunkering ship repair related visits and

Figure 23: **Non-cargo Port System Visits**



Source: VTS data.

fishing both contributed 9% to the total non-cargo related vessel calls over the last five years.

Bunkering

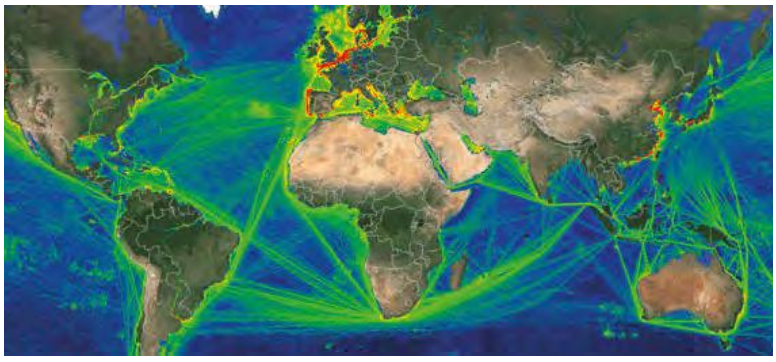
South Africa is well positioned geographically to take advantage of east-west trade as well as shipping activity from the Far East to the African west coast and South American west coast by those lines choosing not to take the Suez Channel. Bunker services are currently offered at the ports of Richards Bay, Durban, Port Elizabeth and Cape Town, with Durban and Cape Town recording by far the majority of visits for bunkering.

The Port of Durban has a dedicated berth for bunkering which is operated by SAPREF under the Joint Bunkering Services system and are also serviced by bunkering barges. In Cape Town, there are bunkering points at some berths supplying fuel oil, gas oil and blended fuels. Bunkers are also supplied by barge. In the main, bunkers are supplied by Joint Bunkering Services, a joint venture between BP South Africa, Caltex Oil, Shell SA and Engen Petroleum.

Ship Repair

South African ports have varying levels of infrastructure and service offerings to the fishing, oil and gas, and smaller cargo vessel sectors.

Figure 24: **Global Shipping Traffic**



Source:www.cargofromchina.com

Fishing vessels under repair at the Port of Cape Town.

With the sheer volume of marine traffic around the South African coastline providing an immense potential market for various levels of ship repair (see figure 24).

The NPA's plans to develop the Port of Saldanha Bay as part of operation Phakisa including the refurbishment of much neglected facilities across the port system together with the built-in tariff subsidy incorporated by the Ports Regulator in the Tariff Strategy for ship repair, are being viewed as potential catalysts which will assist South African companies to play a more significant role in the servicing of rigs and other offshore supply fleets. Amongst the South African ports, the Port of Cape Town has been the leading port for rig and vessel repairs due to its location, infrastructure and capacity with two dry docks; a repair quay and ship lift facilities.

The Port of Durban is equipped to handle ship repairs at the Prince Edward Graving Dock, two floating docks and a slipway. In the Eastern Cape, ship repairs are undertaken in the East London Graving Dock which has a docking length of 200 meters and a repair quay of 106 meters available adjacent to the dry-dock. In addition, available space within the Port of Ngqura is being utilized for maintenance and repair work, especially in the oil and gas sector.

In particular, over the review period, the only commercial dry-docks along South Africa's coastline capable of taking larger commercial ships (although still small by international standards and quickly becoming largely obsolete due to the cascading effect of ship sizes) are found in Durban and Cape Town.

The largest and oldest dry dock of its kind in the Southern Hemisphere, the Sturrock Dry-dock is located in the Port of Cape Town. It has an overall docking length of 360 m, a bottom length (dock floor) of 350.4 m, a width at the entrance top of 45,1 m, a width at bottom (dock floor) of a maximum 38,4 m and a depth over the entrance sill of 13,7 m. A docking length of 369,6m can be obtained by placing the caisson in the emergency stop at the entrance. The dock can be divided into two compartments of either 132,5m and 216,1m or 205,7m and 142,9m respectively.

A second dry-dock, the Robinson Graving Dock, has an overall docking length of 161,2m, a bottom length of 152m, a width at entrance of 20,7m and a depth over the entrance sill of 7,9m. A repair quay, with its 475 m length and allowable draft of 12m is equipped with two cranes, one of 15 tons and the other of 4 tons.

A synchrolift is also available. It has a lifting capacity of 1 778t, a maximum vessel length of 61m and a maximum vessel width of 15m.

In the Port of Durban, the Prince Edward Graving Dock can be separated into two separate compartments, one of 206,9m and the other 138,7m. The dock has five electric cranes ranging from 10t to 50t. The width at entrance top is 33,52m and the width at coping is 42,21m. The depth at entrance is 12,56 m and the depth on the inner sill is 13,17m.

The floating dock has an overall length of 100m and its length on keel blocks is 95m. It has an overall width of 21,6m and a width at entrance of 22m. The height on keel blocks is 1,4m and the draft on keel blocks

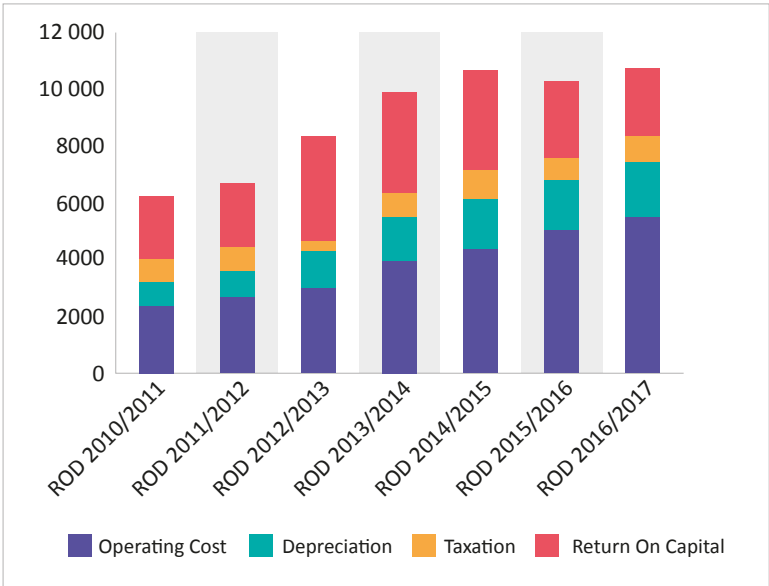
is 6m. The floating dock has a lifting capacity of 4 500t. It has two five ton electric cranes capable of traversing the dock's full length on the port and starboard sides.

Improvement is needed in South Africa's ship repair facilities in part due to a lack of maintenance as well as very limited infrastructure spending. This, combined with the size limitations of the existing facilities presents a number of challenges going forward. The implementation of the tariff strategy that introduces a cross subsidy aimed at making these facilities financially viable together with a focus on certain niche markets like recreational yachts, tug boats, ferries, naval vessels etc. may see the positive outcomes of renewed investment spending over the next five years.

Regulation, Financial Performance and Pricing of the South African Port Sector

The Ports Regulator of South Africa (the Regulator) was established in 2007 through the promulgation of the National Ports Act, 12 of 2005 (the Act). The NPA collects its money i.e. Revenue, through the tariffs/prices that are charged to users of the port i.e. ships, tenants, cargo owners etc. The tariffs/prices that are charged by the NPA are approved by the Regulator on an annual basis. In its decision to approve tariffs/prices, the Regulator uses a revenue collection methodology called the 'Revenue Required' methodology to ascertain a fair level of tariffs/prices that the NPA should charge the users of the ports. The process of price / tariff regulation subsequently commenced in the 2009/2010 tariff year. Since inception, the Regulator has utilised a version of the Revenue Required Methodology that suited an infrastructure price mechanism and best supported the funding of port infrastructure development. Regulation has seen a moderation in

Figure 25: **Revenue Requirement Building Blocks**



port tariffs, whilst the NPA as a subsidiary of the larger Transnet Group has remained very profitable allowing increased cash flow into other parts of the greater Transnet Group.

New slipway being constructed at the port of Port Elizabeth.

Figure 26: Revenue Contribution

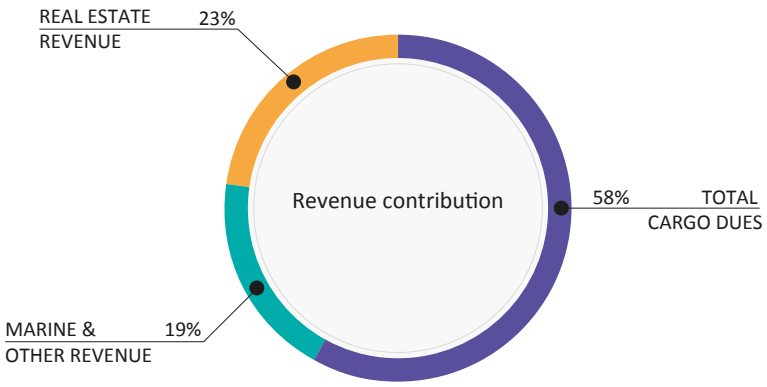
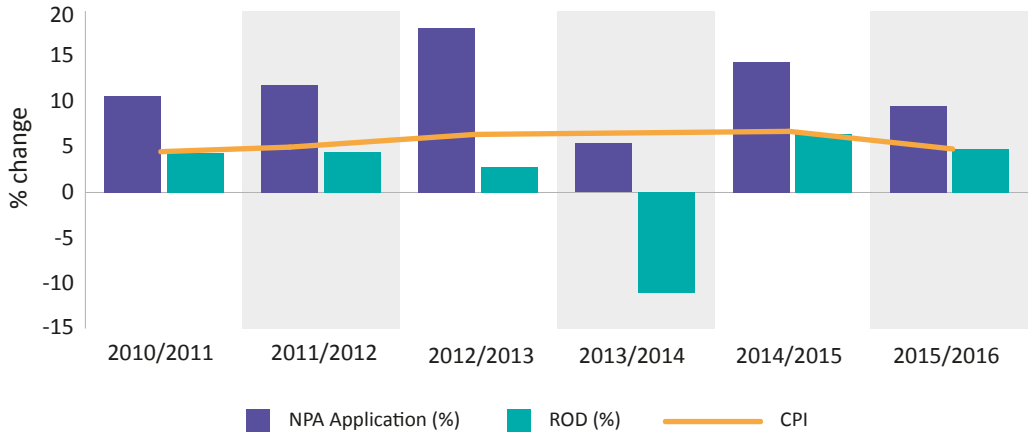


Figure 27: Tariff Determinations



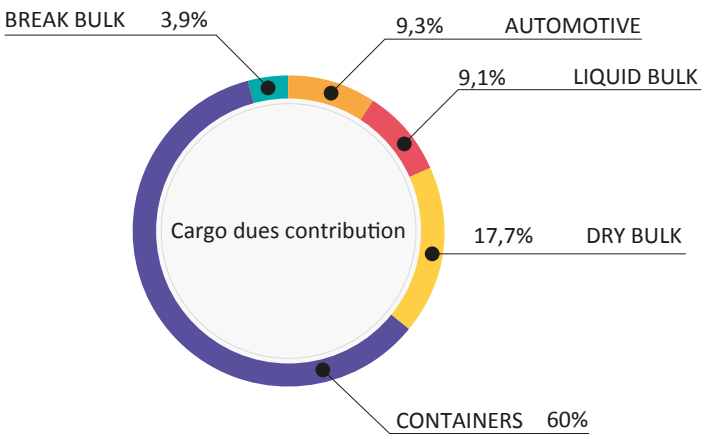
The approval of revenue through the RR approach ensures that the NPA will always be able to recover all its costs whilst also making a profit commensurate with their risk. As such operational expenditure allowances as well as depreciation has grown by 32% over the review period and returns on equity have generally been in excess of R2bn per annum.

Table 9: Detailed Tariff Determination

	NPA	REVENUE REQUIREMENT		Revenue Allowed Annual Growth Rate (ROD)	WACC		
		ROD	Difference		NPA	ROD	DIFF
Tariff Year	R Billion	R Billion	R Billion	%	%	%	%
9/10	5,63	5,63	0	—	—	—	0
10/11	6,87	6,02	0,85	7	6,02	5,15	-0,87
11/12	7,64	6,52	1,12	8	5,38	4,7	-0,68
12/13	9,65	7,79	1,86	19	8,97	6,13	-2,84
13/14	10,98	9,84	1,14	26	9,33	5,21	-3,12
14/15	10,95	10,67	0,28	8	5,82	5,47	-0,35
15/16	11,2	11,1	0,1	4	5,59	6,38	0,79

Overall the total revenue for the NPA increased from just over R5,5 billion in 2010/11 to R11,1 billion in 2015/16. The main contributor to the revenue of the ports landlord is cargo dues with approximately 60% whilst real estate and marine services contribute on average between 20 and 25% with marine services making up the rest.

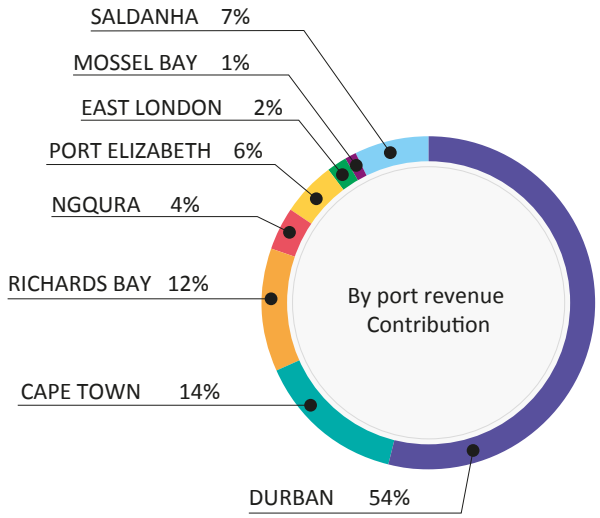
Figure 28: **Cargo Dues Contribution**



Within cargo dues, the main contributor remains containers with 60%, followed by dry bulk commodities (17%), mainly iron ore and manganese shipped mainly through the Port of Saldanha, coal through the Port of Richards Bay (and to a lesser extent through the other ports).

From a total revenue perspective the Port of Durban with 50% or R5,2 billion in 2015 is by far the largest contributor with the Port of Cape Town a distant second with 14% or R1,4 billion in 2015.

Figure 29: **By Port Revenue Contribution**



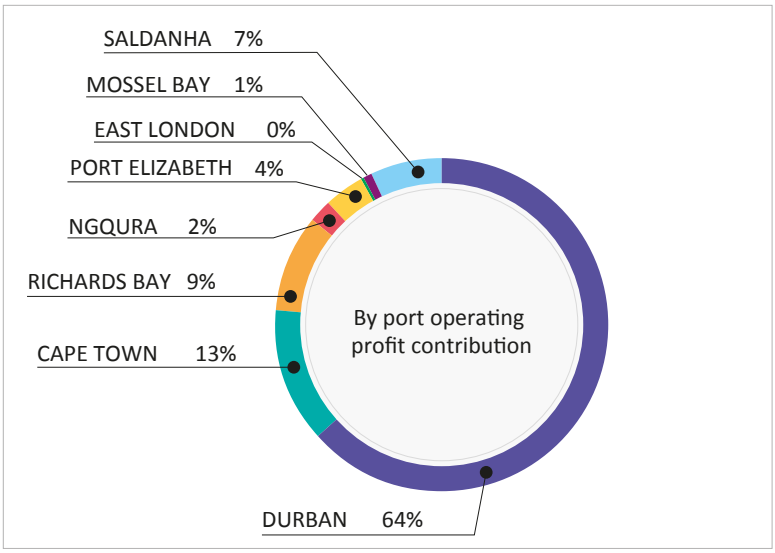
The Port of Durban is also responsible for the bulk of costs responsible for about 38% of total operational expenditure. Cape Town and Richards Bay both account for approximately 16% each.

Reefers - containers with refrigeration for transporting perishables.

Night operations at a container terminal at one of SA's ports.

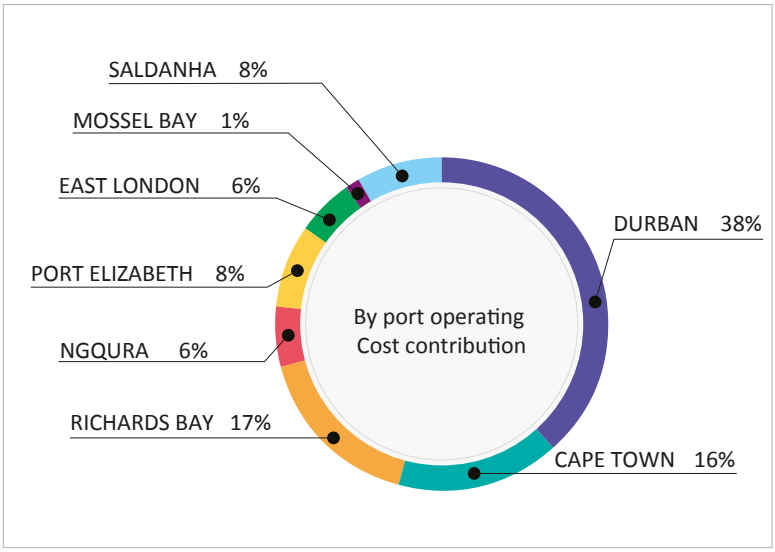
Whilst Durban and the larger ports account for the bulk of both revenue and the associated costs, a look at the net operating expenses as a share of revenue allows a comparison of financial efficiency or rather the ease of generating revenue by port. Whilst it will be difficult to compare a bulk commodity port like Saldanha with a multi cargo type port like Port Elizabeth the ratio is expected to remain similar however, other variables will impact this comparison including the efficiencies of economies of scale (i.e. larger ports can create revenue easier through a higher level of activities) or the type of commodity and whether a seasonality of cargo flows exist for example fruit or any other agricultural products).

Figure 30: **By Port Operating Profit Contribution**



It is thus interesting to note that over the review period, the Port of East London had the largest cost/revenue ratio (70%), whilst Durban, the largest port, has the lowest with 20%. An analysis of the underlying reasons for the difference may be found in the large volume of containers shipped through Durban as containers with its currently very high tariffs are very efficient in creating revenue. It is also worth noting that over the review period, the Port of Durban had the largest profit/revenue ratio (74%), meaning that for every R1 of revenue generated 74 cents of that is profit. The Port of East London has the lowest profit/revenue ratio (12%).

Figure 31: **By Port Operating Cost Contribution**



The ports of Cape Town, Richards Bay and Saldanha Bay all had profit/revenue ratios in the region of 50%.

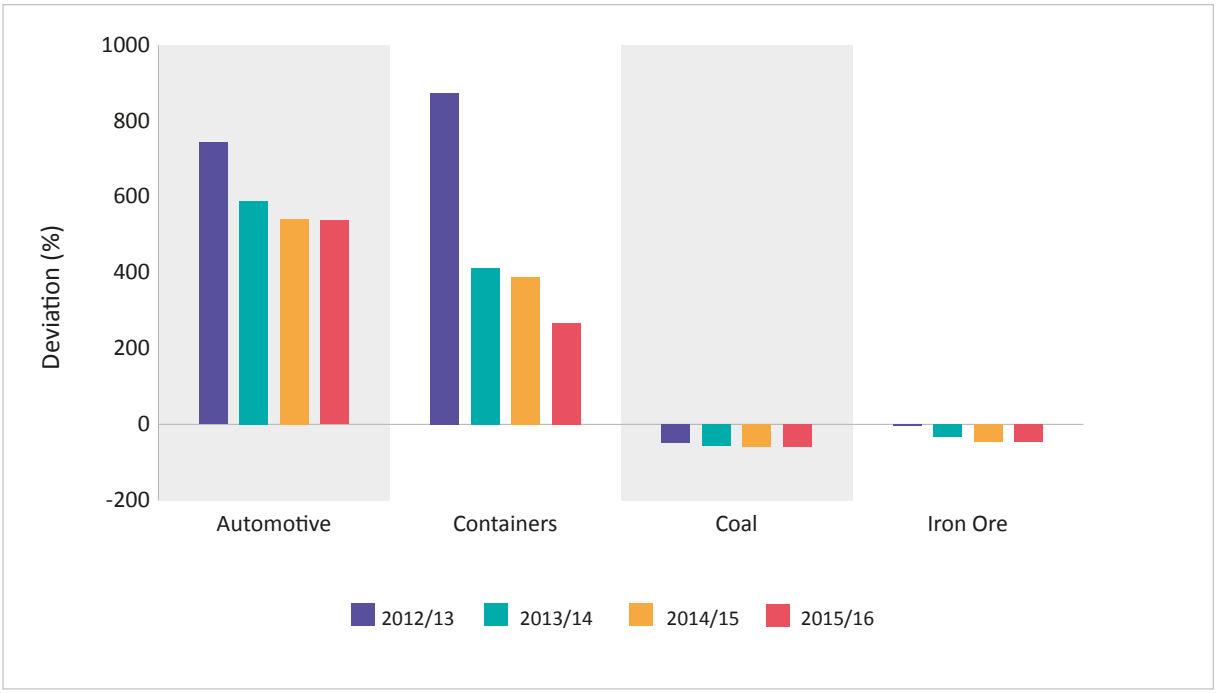
Whilst the ports in South Africa are managed on a system basis, the profit/cost differentials that exist between the ports creates an number of perverse incentives, the most obvious would be the impact on investment decision making as an investment in the Port of Durban would arguably create larger (or quicker) returns with the larger profit and lower cost ratios there. This could further entrench the status quo, creating capacity concerns over the longer term, negating the advantages of a system-wide approach to port management.

In addition, the determination of the individual tariffs in the tariff book have been based on historically differentiated tariff lines resulting in significant differences in tariffs and costs to port users. The anomalies that exist in the tariff book, explained below, also provide inefficient investment signals, with investment decisions based on common calculations/forecasts like NPV or IRR resulting potentially in investments following the high tariff areas, especially container cargo. This is further exacerbated by the geographic distribution of cargo types.

To analyse and assess the extent of pricing anomalies in the South African ports system, the Regulator has conducted a Global Port Pricing Comparator Study (GPPCS) over the period under review which sought to benchmark South African port prices against its global peers. The results were indicative of imbalances in the tariff book and showed how, over the years, the overall structure of the South African port pricing system has changed somewhat on a relative level. However, despite large decreases in container cargo dues and export automotives announced in the 2013/14 Record of Decision as well as relative changes in marine services and dry bulk commodities in the following years, the imbalances remain.

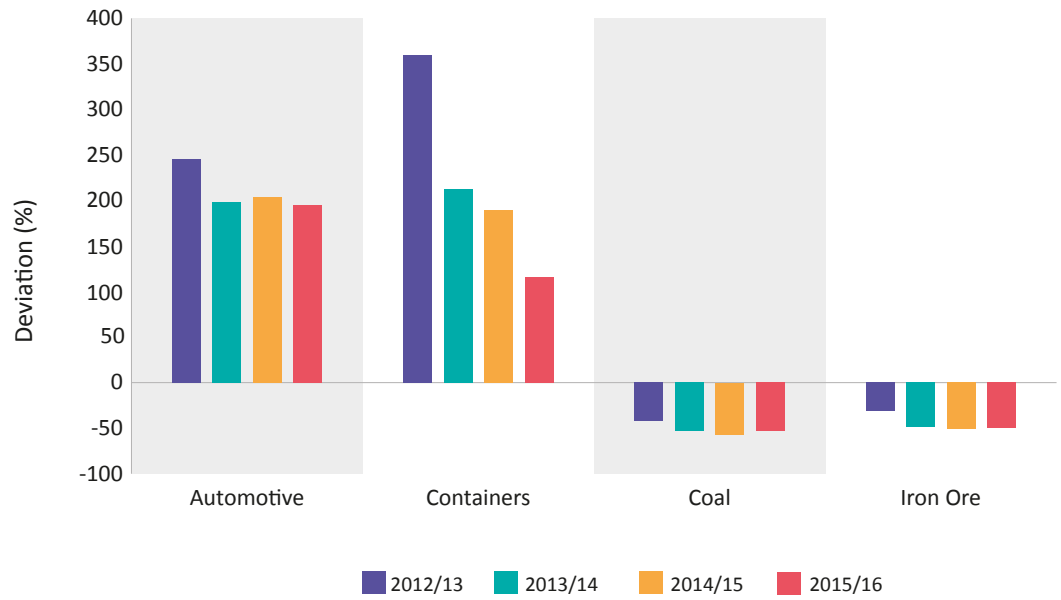
As evident in Figure 32, the results show that significant implied cross-subsidisation from cargo owners towards primary exporters and

Figure 32: **Cargo Dues Deviation from Global Sample Average**



vessel owners persist. Although this has improved over the period the study has been conducted, cargo owners still face a 388% premium in 2014/15, although down from a premium of 874% to the global sample average in 2012/13. While vessel owners face costs below the global sample average (-26% in 2012/13, -32% in 2013/14 and -42% in 2014/15), the total NPA costs to users in container ports comes at a still high premium of 125% above the global sample average (similar results for the automotive sector applies) whilst the report shows that bulk commodities are charged much lower total port costs than the global sample averages. This further implies that beneficiated exports from South Africa are facing much higher costs than their global peers as compared to exporters of un-beneficiated bulk commodities, whose tariffs are below the global sample used in the study.

Figure 33: **South African Total Port Costs Compared to A Global Sample Average**



As a result of these issues, the tariff structure (as at 2015) presented several imbalances in the determination of the various tariffs, including:

- Very high tariff levels for cargo dues resulting from the migration from the old wharfage charge, which was calculated on an ad-valorem basis depending on the value of the cargo
- Very high differentials in the levels of cargo dues for different cargo types and commodities with no clear motivation for the differences
- Relatively low tariff levels for maritime services, which are based on an activity-based costing exercise conducted during the tariff reform of 2002 and that has since not been updated, resulting in the subsidisation of most services
- Relatively low and unevenly distributed levels of revenue from the real estate business based on the asset value and benefits derived from being in the port system.

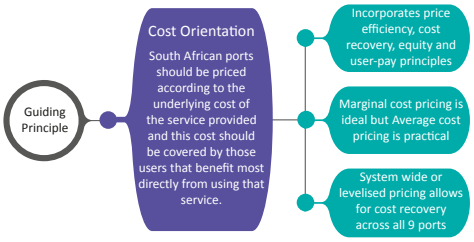
These pricing anomalies are addressed through the Regulator's Tariff Strategy (published 31 July 2015) that attempts to address these imbalances over the next 10 years, by moving away from value-based assessment towards an infrastructure-based charge, resulting in more efficient pricing which is in the public interest. (See Box)

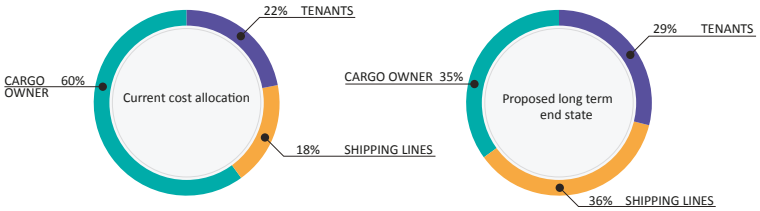
A Tariff Strategy for the South African Port System

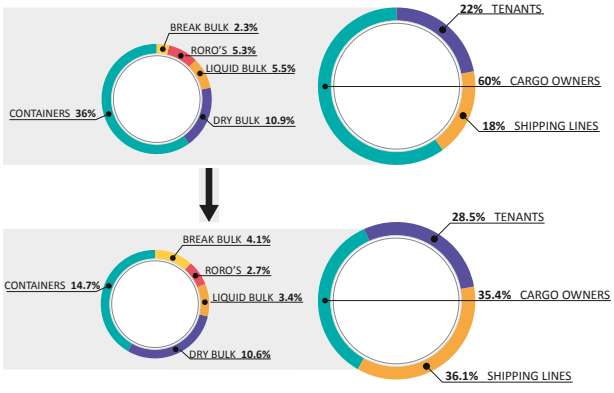
The current tariff structure presents several imbalances in the determination of the various tariffs, including:

- Very high tariff levels for cargo dues resulting from the migration from the old wharfage charge, which was calculated on an ad-valorem basis depending on the value of the cargo;
- Very high differentials in the levels of cargo dues for different cargo types and commodities;
- Relatively low tariff levels for maritime services; and
- Relatively low and unevenly distributed levels of revenue from the real estate business.

The Tariff Strategy sets out the principles and characteristics of the revised tariff book including the asset allocation, tariff structure reviews, a consolidation of tariff lines on tariff and port level as well, as review of marine service pricing methodology and will be implemented over a ten year period.







The Strategy sets out a process where tariffs will in future better reflect the use and benefit of assets by different users. As such a rebalancing of the tariff book is required with shifts of costs between users over time to better reflect these principles.
The rebalancing of the tariff book will see:

- Increasing share of revenue contributed by shipping lines and lease holders
- Reduced cargo dues with containers benefitting most

The Tariff Strategy will be implemented over a period of ten years with annual updates and will incrementally implement transparent tariffs based on sound regulatory economic principles

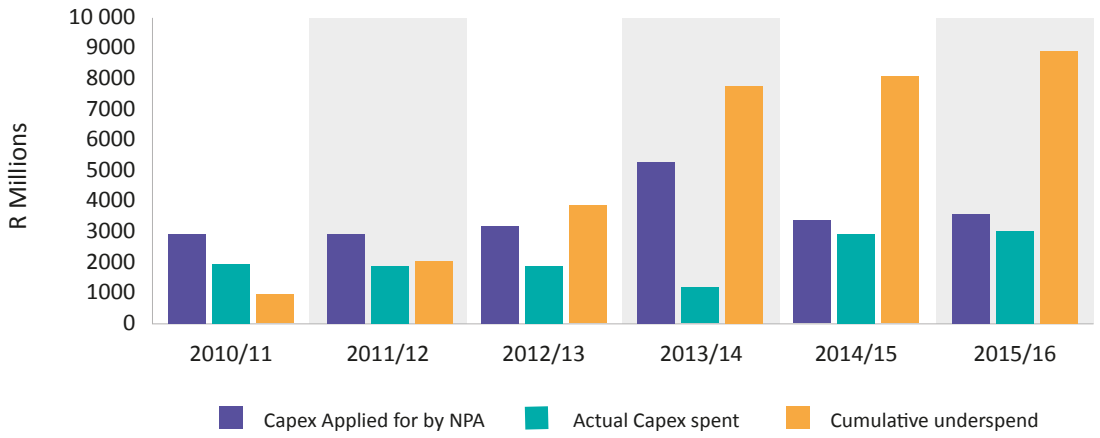
Concluding Remarks

On an overall basis, the port system in South Africa as managed by the NPA, and regulated by the Regulator, has been sustainable and experienced growth as well as movement towards the introduction of efficiency pricing with the development of performance measuring during the later parts of the period under review.

However, a number of challenges were experienced during the last five years. The introduction of regulation brought about a previously absent level of transparency in the tariff process. The relationship between the Regulator, port users, and the NPA has improved markedly over the period. Whilst the Regulator has not intervened in any operational matters other than the approval of revenue, and through tribunal decisions and mediation, a number of issues have been resolved.

Two main areas of concern remain however. The first is the persistent underspending of approved CAPEX. A cumulative underspending of R8,6 billion occurred over the period 2010/11-2015/16.

Figure 34: **Capex Underspent**



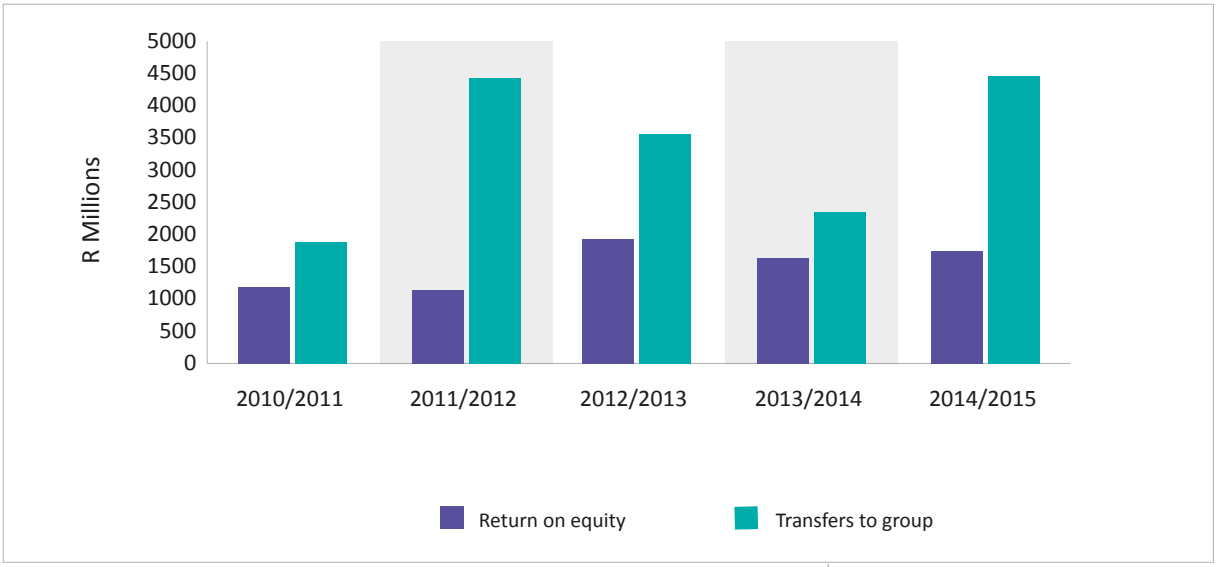
Over the five year review period, 27% of the total CAPEX in the South African port system was allocated to the Port of Durban in the period (2010/11-2014/15), whilst the largest allocation went to the Port of the Ngqura which accounted for 52% of the total value of CAPEX spent in the port system over the past five years. The majority of the port's CAPEX investment went towards the installation of facilities and new construction whilst in Durban (Ngqura and Durban received almost 80% of all capex spending over the period) the nature of the CAPEX investment was largely spent on the rehabilitation/renovation, upgrading/extension and new construction of port infrastructure. The port of Saldanha received approximately 7% of all CAPEX spend over the review period, but very limited infrastructure was added to the ports of Richards Bay, East London, Port Elizabeth, Mossel Bay and Cape Town.

The lack of CAPEX spending and the consistent underspending of allowed capital expenditure (see next chapter) may result in significant capacity problems in the future. That combined with the geographic

location of spare capacity (the Eastern Cape has port space to spare) emphasises the importance of utilising the existing port assets more efficiently. Differentials between design and installed capacity, low terminal efficiency resulting in low capacity utilisation are "low hanging fruit" that will, if addressed, result in a more efficient use of the current infrastructure. The introduction of the Terminal Operators Performance System and the Marine Operators Performance System should result in more clearly identifying problem areas where remedial action can be taken. The next review must see a significant improvement in port efficiency to ensure the sustainability of the port system.

Future years may see capacity constraints in future years or excessive tariff increases as a backlog of projects require catch-up and is an area of concern that the Regulator has identified for close monitoring. The underspending on approved CAPEX does raise a concern with regards to the ability of the NPA to implement the capital expenditure earmarked for the port system. The better performance by the NPA in the last two years of the review (representing only about 10% of total underspend) does seem to indicate improving implementation.

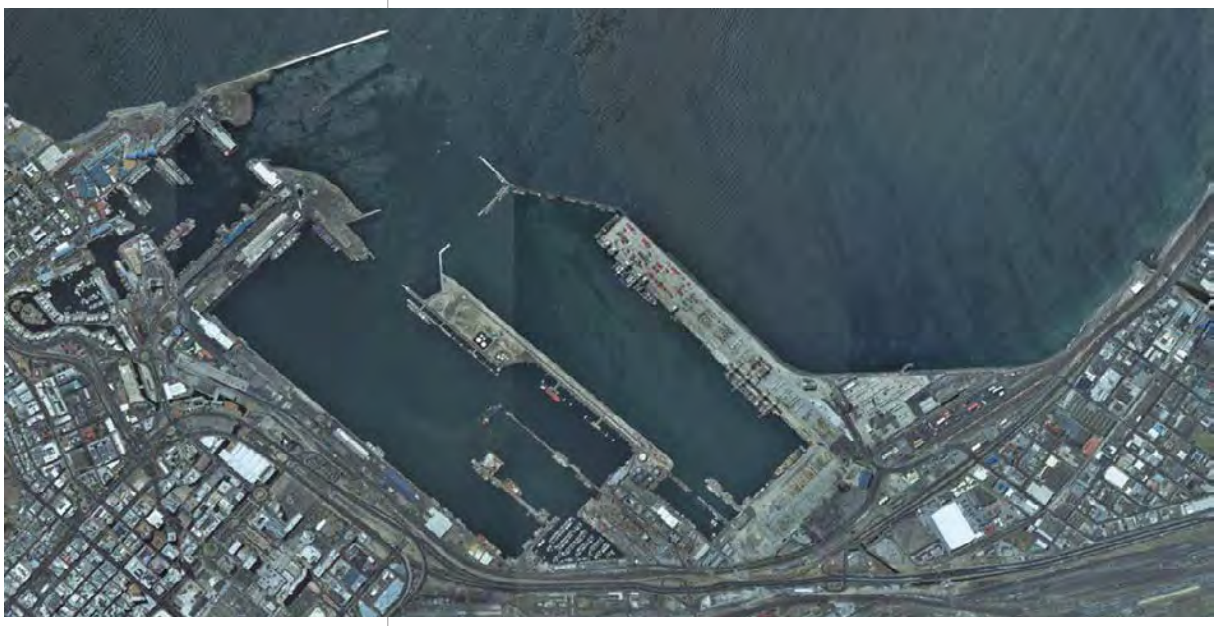
Figure 35: **Return on Equity and Estimated Transfers to Group**



Individual ports have performed well over the period under review from a financial perspective. In particular, the NPA cash flows amounted to profit transfers to the Transnet Group totalling more than R15 billion since 2010/11. It must be noted that the NPA does require some centralised services from the holding company, for example treasury services and capital project management, and an allowance for group costs are included in the required revenue allowed by the Regulator every year since regulation started. This, combined with the guaranteed profits as a result of being a regulated entity, has allowed significant cash flow to the Transnet Group from the ports system. Specifically over the period under review, each port was operated profitably by the NPA with none of the ports (in what is a complimentary port system) recording a loss over the period. Whilst not all the ports are equally profitable, costs have not exceeded revenue as can be seen from the 5 year average profit contributions provided in the Port-by-port snapshots that follow.

In conclusion, the expectation of increased competition regionally, a weak domestic and global economic outlook and increased costs of operations and capital will remain the main challenges facing the South African Port system over the next five years. This will on the one hand require careful consideration by both the Regulator in setting tariff levels that will both ensure the sustainability of the NPA but also support industry and port users in general in retaining stable tariff levels with the right incentives to support more productive ports in future and on the other hand require even higher levels of prudent financial management and increased efficiency over the next five years from the port landlord. The NPA has, despite the impact of regulation on their preferred levels of revenue and lower tariffs, continued to manage the port system profitably and if the expected gains in efficiencies can be reached over the next five years will see the South African port System go from strength to strength, in the national interest.

Port by Port Snapshot



Source: National Ports Authority.

Port of Cape Town

The Port of Cape Town, established in 1652 as a way station for ships of the Dutch East India Company, has evolved to consist of the Ben Schoeman Dock and Duncan Dock respectively housing container and the multipurpose, fruit terminal, dry dock, repair quay and tanker basin. [South African Port Capacity and Utilisation 2014-15]

"The port is situated on one of the world's busiest trade routes and will always retain strategic and economic importance for that reason alone. In addition, Cape Town is also a busy container port, second in South Africa only to Durban, and handles the largest amount of fresh fruit." - [ports.co.za]

The Port of Cape Town plays a small role in the handling of dry bulk volumes in the South African port system however, dry bulk volumes handled at the port have steadily decreased over the past 5 years with volumes dominated by imports. The Port of Cape Town's share in total dry bulk volumes in the port system has remained constant over

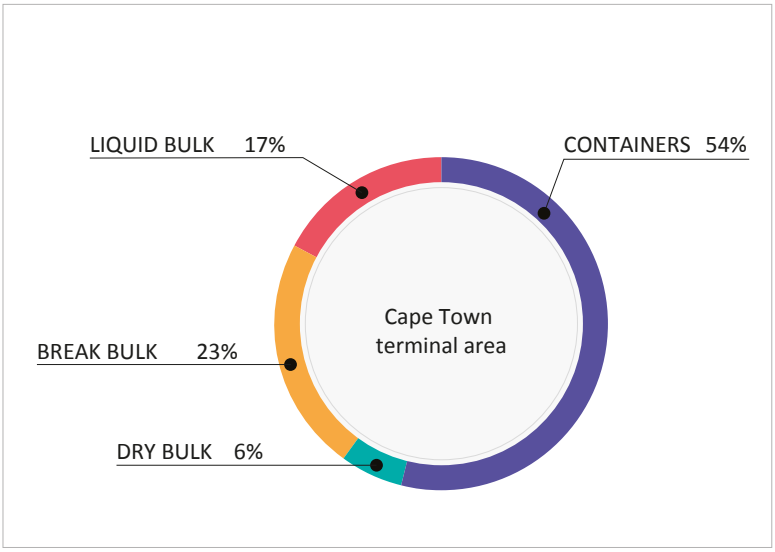
the period, albeit at very low levels compared to the rest of the port system, especially the dedicated bulk ports of Saldanha and Richards Bay.

Installed Capacity

Table 10: **Cape Town Installed Capacity**

Cargo Type	Terminal	Berths	Berth Draft
Containers	Container	601, 602, 603,604	12,8m – 15,5m
Dry Bulk	Dry bulk	G, H	12,2m – 12,8m
Break bulk	Multi-purpose	B, C, D, E, F, J	9,1m – 12,2m
Liquid bulk	Liquid bulk	TB1 & TB2	13,7m – 15,2m

Figure 36: **Cape Town Terminal Area**



The Port of Cape Town consists of fourteen berths. Containers are moved through four deep sea dedicated container berths of 1151 meters with installed capacity of 1 million TEUs and comprising of a berth draft of 12,8 to 15,5 meters deep.

The liquid bulk terminal plays a major role in the energy security of the Western Cape region and the terminal has an installed capacity of 3,4 million kilolitres and two dedicated berths with a draft of 13,7 -15,2 metres. It features two berths with a total berth length of 489 meters and a terminal area of 16ha which accounts for 17% of the total port area.

A dry bulk facility is housed at Duncan Dock with an installed terminal capacity of 1,4 mtpa and two dedicated berths with a draft of up to 12,8 metres deep.

The port's break-bulk terminal handles various commodities such as fruit, paper, steel, maize, wheat, rice, timber, coal, scrap, other general cargo and passenger cruise ships.

Cape Town Cruise Terminal at E-berth.

Figure 37: **Cape Town Capacity per Metre of Berth**

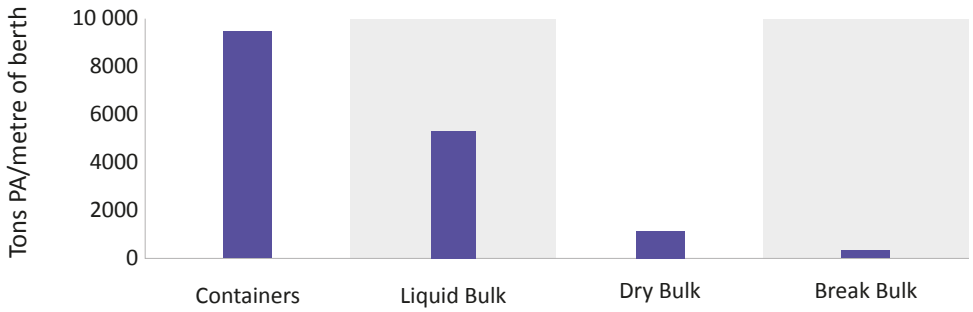
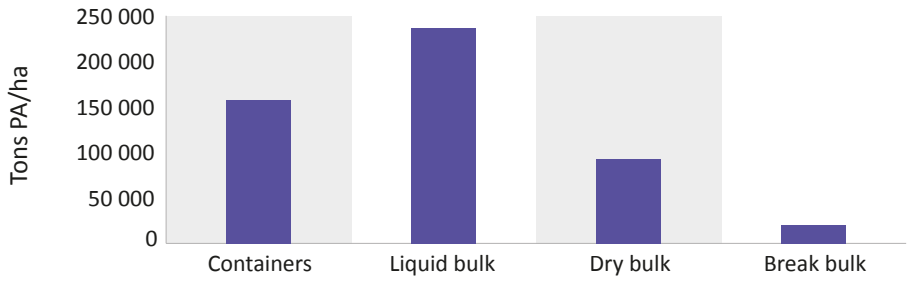


Figure 37b: **Cape Town Capacity**

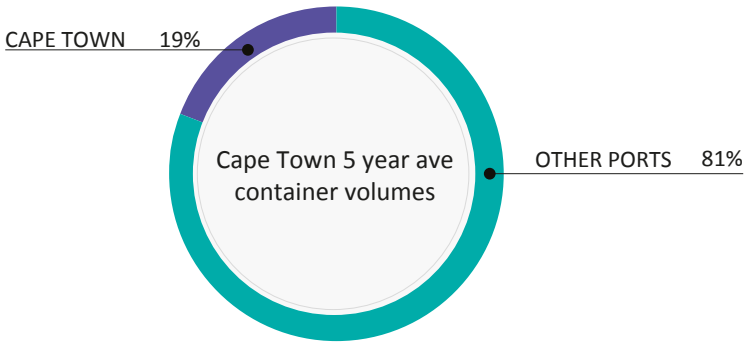


The terminal consists of six berths with a total length of 1368m and a capacity of 4,2 million tons. It has a terminal area of 22ha which accounts for 23% of the total port area.

The dry bulk terminal has two berths with a total berth length of 569 meters. The terminal has a terminal area of 6ha which accounts for approximately 6% of the total port area.

Container Cargo

Figure 38: **Cape Town 5 Year Ave Container Volumes**



The Port of Cape Town imports and exports experienced an average annual growth rate of 4% over the review period. Following the global economic downturn during 2008/9 the Port of Cape Town experienced

a significant growth in container volumes from 2010/11 up to 2012/13, with a slowdown in volumes experienced in the following financial year. Transhipment volumes have grown substantially at an average annual growth rate of 29%.

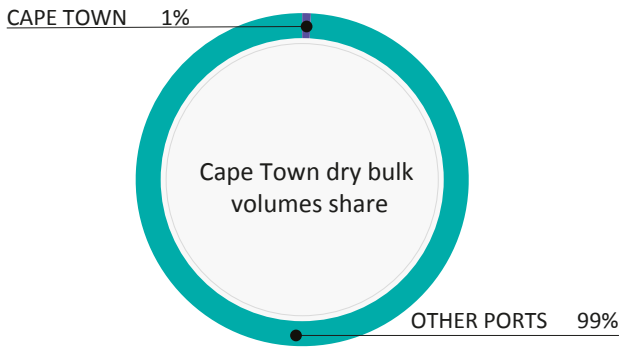
The Port of Cape Town has a 19% share of container volumes in the South African market. The Port of Cape Town's share in total container volumes in the port system has increased by 3% over the period.

Figure 39: **Cape Town Container Volumes**

From an operator efficiency perspective, the data and analysis by the Ports Regulator provides a mixed sense of the operations in the port. Berth metre per crane is similar to the global average calculated in the Regulators performance benchmarking report of 2014/15 at 144 meters per crane, however, TEU per running metre of berth is significantly below the average at 525 compared to the global sample average of 916. This results in a very low throughput per hectare and berth metre with 9952 per hectare compared to an average of 22 344.

Dry Bulk and Multipurpose Cargo

Figure 40: **Cape Town Dry Bulk Volumes Share**



The Port of Cape Town has experienced a gradual decrease in dry bulk and break bulk volumes over the review period, with volumes decreasing at an average annual growth rate of 7%.

The Port of Cape Town plays a small role in the handling of dry bulk volumes in the South African port system with a more dominant role

in the export of especially multipurpose cargo from the agricultural sector. Dry bulk volumes dominated by imports handled at the port have steadily decreased over the past five years however Cape Town's share in total dry bulk volumes in the port system has remained constant over the period.

Figure 41: **Cape Town Dry Bulk Volumes**

The containerisation of many traditionally break bulk commodities is especially prevalent in Cape Town and will require careful planning to ensure optimal utilisation of infrastructure whilst still providing key services to especially the Western Cape agricultural sector.

Liquid Bulk Cargo

The Port of Cape Town experienced a steady increase in liquid bulk imports, at an average annual growth rate of 8%. Liquid bulk exports fell at an average annual growth rate of 6% and a 4% share of total liquid bulk volumes in the South African port system. Liquid bulk volumes are, like the rest of the port system dominated by imports.

Figure 42: **Cape Town Liquid Bulk share**

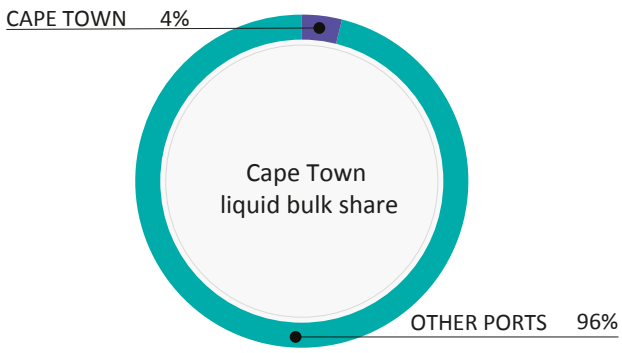


Figure 43: **Cape Town Liquid Bulk Volumes**

Non-Cargo Services

Over the five year period under review, the Port of Cape Town has had on average 2500 vessel calls with a spike experienced in 2011/12 (4000 calls).

Of the cargo related vessel calls, the majority were container and break-bulk cargo carrying vessels, correlated with the main business of the port.

Amongst the non-cargo related vessel calls, bunkers calls were the most frequent.

Figure 44: **Cape Town Vessel Call Reasons**

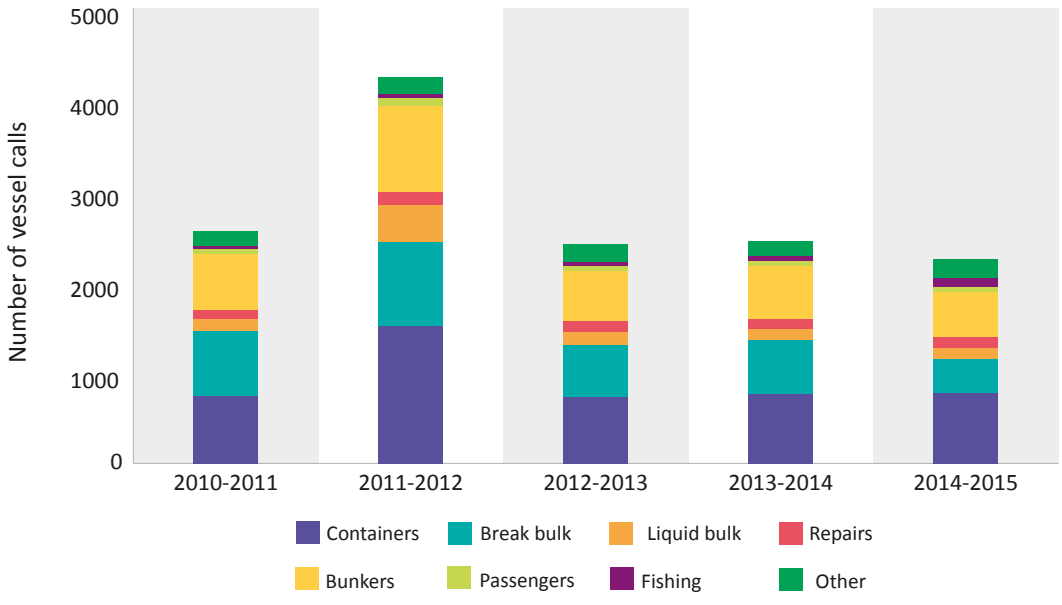
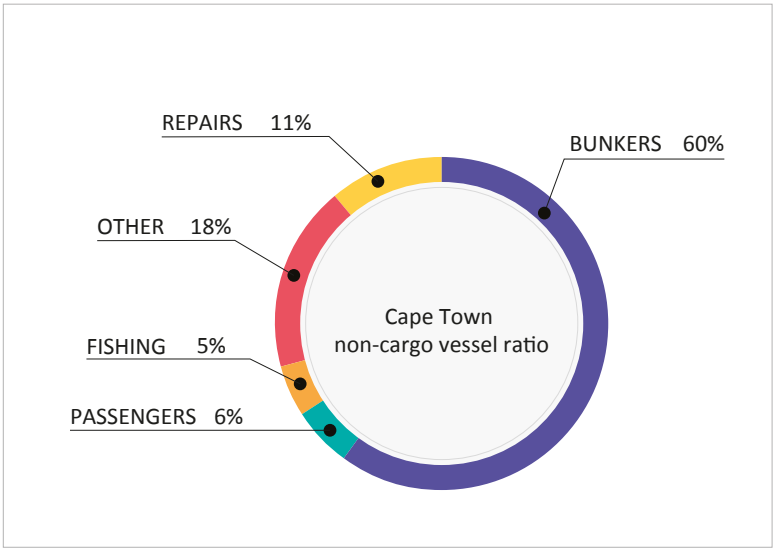


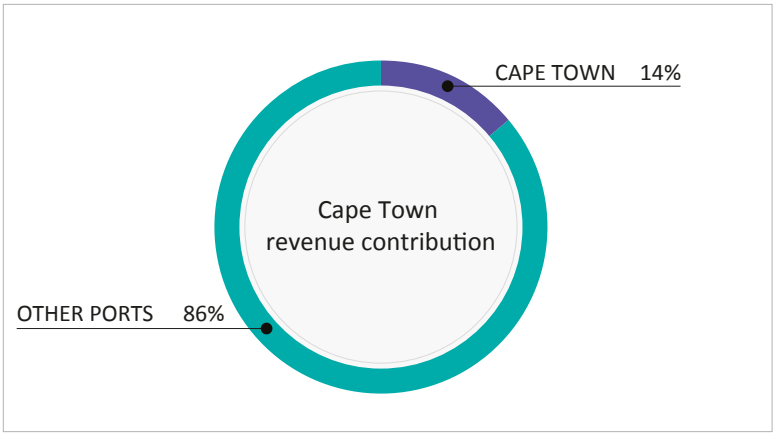
Figure 45: Cape Town Non-cargo Vessel Ratio



Port Financial Overview

Over the review period, the Port of Cape Town contributed approximately 13-14% to the National Port Authority's overall revenue totalling an average R1,3 billion over the period. With little structural change in the port system over the period, there has not been significant growth or decline in the Port of Cape Town's revenue contribution with revenues remaining largely stable and predictable.

Figure 46: Cape Town Revenue Contribution



In particular, profits averaged around 13% per annum over the review period.

Over the review period, the Port of Cape Town was responsible for 16% of the National Port Authority's operating costs.

Depreciation and Personnel Costs accounted for the majority of the port's expenses.

By the end of the review period, the Port employed 675 permanent employees, from 588 at the beginning resulting in an annual average growth rate of employment of about 3%. This is however expected to increase as more focus on the refurbishing and operating of ship

repair facilities, together with the establishment of a cruise terminal is expected to see more pronounced employment gains. Employment costs already make up almost half of NPA costs in the port and the expectation is that beyond the planned capex related costs over the next review period personnel costs will remain the largest contributor to port costs.

Figure 47: **Cape Town Profit Contribution**

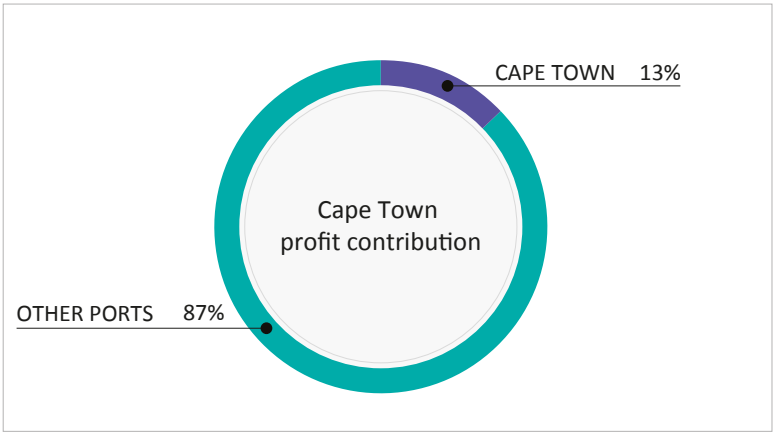
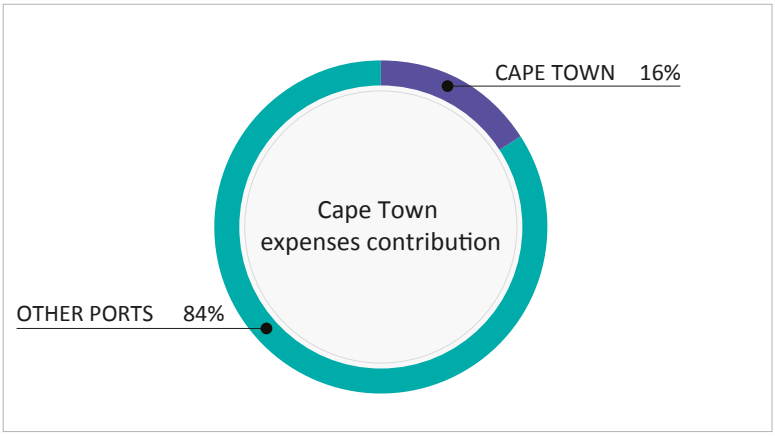
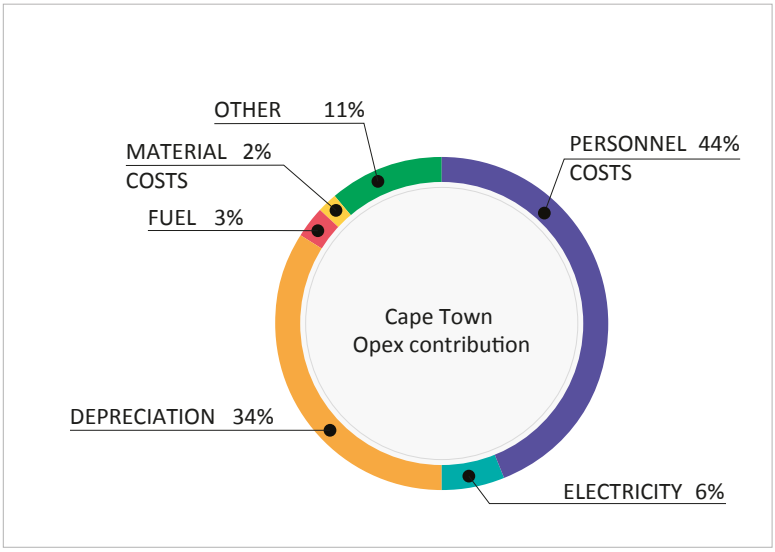


Figure 48: **Cape Town Expenses Contribution**



With regards to capital investment, over the last five years R176 million of the total Capex in the port system was allocated to the Port of Cape Town, which accounts for just 1% of the total value of Capex. The allocated Capex was largely spent on the expansion of the container terminal, the shift in focus to ship repair and the establishment of a cruise terminal, amongst others, will see a different picture over the next five years.

Figure 49: Cape Town Opex Contribution



The Future:

The Port of Cape Town's seven year development initiatives can be listed as:

- Establishment of a dedicated cruise liner facility;
- Expansion of the Cape Town Container Terminal;
- Fire Fighting Equipment at Tanker Basin;
- Burgan Cape Terminal, Liquid bulk;
- Refurbishment of ship repair facilities;
- Replacement of Marine Fleet.

The expansion of the container terminal project is anticipated to increase the current terminal capacity by 400 000 TEUs and further enhance logistical and storage services for the area's fruit harvest. The first phase of the project entails the configuration of landside activities to increase stacking capacity, the provision of new equipment, and the deepening of existing berths. The increasing of container berth depth will allow Cape Town's container terminals to accommodate bigger vessels making it the second deepest port after the Port of Ngqura. The second phase of the project will provide additional landside capacity, increasing the installed capacity from 1 million to 1,4m TEUs.

All seven quays at the port have been equipped with the latest developments in crane and mechanical lifting technology and the port is capable of handling all kinds of material handling challenges. The port's current upgrades also includes the replacement of mechanical equipment, refurbishment of ship repair facilities and the replacement of cranes for ship repair facilities. Of the total of twelve cranes, eight will be written off to enhance performance, efficiency and speed at the port.

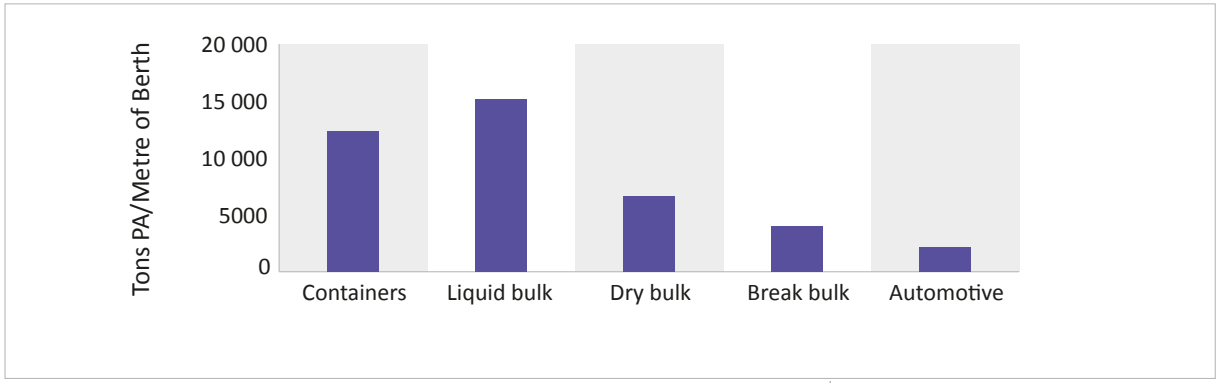
The Port of Durban

Source: National Ports Authority.

The Port of Durban developed from a natural inlet that formed a bay protected by a large sand dune (or bluff) to the south which provided shelter from winter storms. Durban quickly evolved into Africa's largest and busiest container port, and handles the most seagoing traffic in of all the ports in the South African Port system all types of cargo. The continual rise in container demand has raised concerns about the port's capacity and how soon its optimum capacity utilisation would be reached.

The Port of Durban consists of forty three berths with containers (operated by TPT) moved through ten (of 15) dedicated container berths of 2 578 meters long and a terminal area of 185ha. The liquid bulk terminal features nine berths with a berth length of 1 048 meters taking up 157ha of port land. The dry bulk terminal comprises nine berths with a total berth length of 1 615 meters taking up 59ha of port land and the break bulk terminal features 14 berths with a total quay length of 3 051 meters and takes up 81ha of port land.

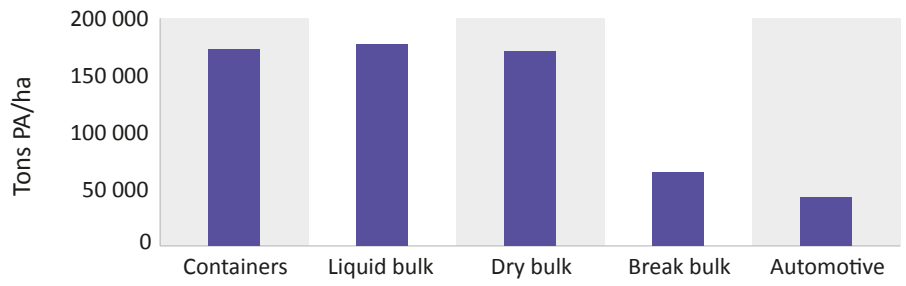
Figure 50: **Port of Durban Infrastructure Based Throughput per Metre of Berth**



The liquid bulk and break bulk or multi-purpose terminals are run by various private operators.

The automotive terminal run by TPT, comprises three berths with a total length of 1 048 meters and takes up 39ha of port land.

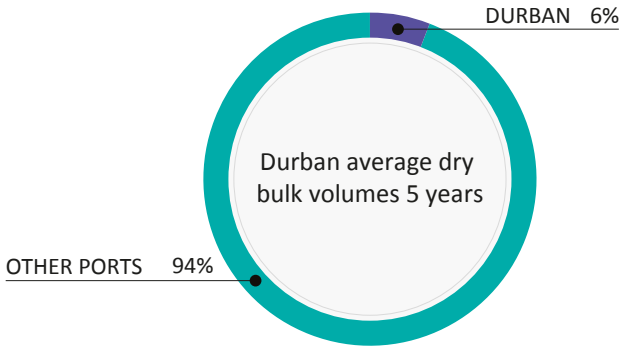
Figure 50b: **Port of Durban Infrastructure Based Throughput**



Dry Bulk Cargo

The port's dry bulk volumes produced a mixed set of results for imports and exports, where dry bulk imports experienced a slight annual average rate decrease of 1% over the review period, while export volumes (mostly coal) increased by 9% over the period.

Figure 51: **Durban Average Dry Bulk Volumes 5 Years**



For the Port of Durban, dry bulk cargo is secondary, lagging significantly behind the more dominant dedicated dry bulk ports of Richard's Bay and Saldanha Bay and contributes about 6% of total dry bulk volumes to the port system. Although the volume exports of dry bulk are higher than imports, this ratio is far lower than in the other ports where dry bulk imports are far lower than exports. The Port of Durban's share in total dry bulk volumes in the port system has remained constant over the period.

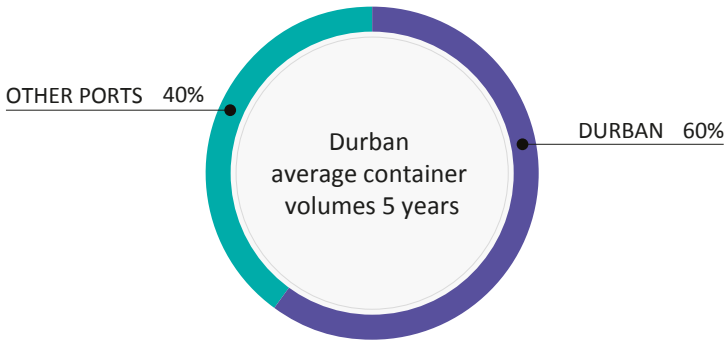
Figure 52: **Port of Durban Dry Bulk Volumes**

Container Cargo

The Port of Durban experienced slight growth in container volumes in the review period. Import and export containers showed an average annual growth rate of 2% and 3% respectively. Transhipment container volumes have fallen at an average annual rate of 9% over the period, with the largest fall experienced between 2011/12-2012/13.

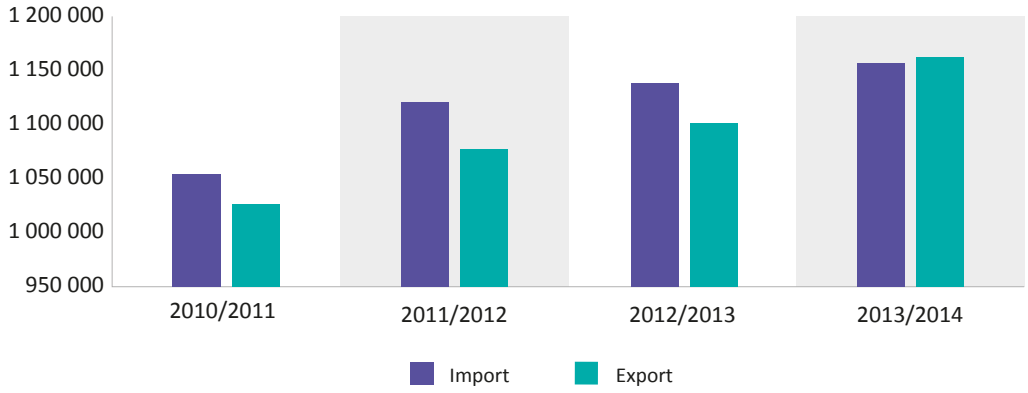
The Port of Durban continued its dominance of container cargo despite the 6% fall in Durban's share in total container volumes over the period.

Figure 53: **Durban Average Container Volumes 5 Years**



With 22 cranes covering 2,5km of berth length, and a terminal area of 186 ha, container throughput of about 14 million over the period Durban only experienced an average annual growth rate of about 2%. Operationally, evidence points to certain inefficiencies, including a below average TEU per hectare as benchmarked globally in the PRSA Port Benchmarking Report. Whilst Durban is below the global average it does compare favourably with port of similar sizes in the sample. Significantly, Durban is close to the average TEU throughput per running metre of berth (1034 compared to the average of 1071). TEU/crane/per working year is also close to the global sample average of 128 918.

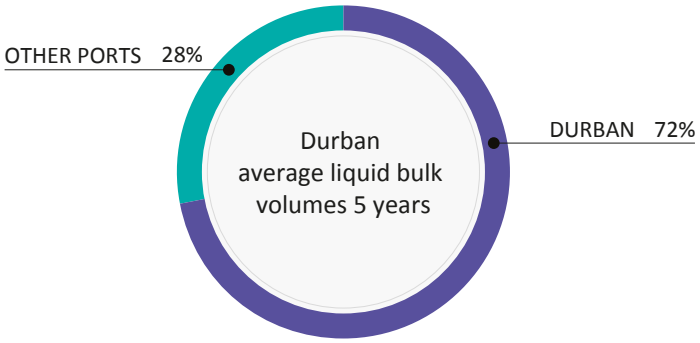
Figure 54: **Port of Durban Container Volumes**



Liquid Bulk Cargo

The growth in liquid bulk imports at the Port of Durban has remained flat over the review period, with only liquid bulk exports increasing at an average annual growth rate of 6% over the period.

Figure 55: **Durban Average Liquid Bulk Volumes 5 years**



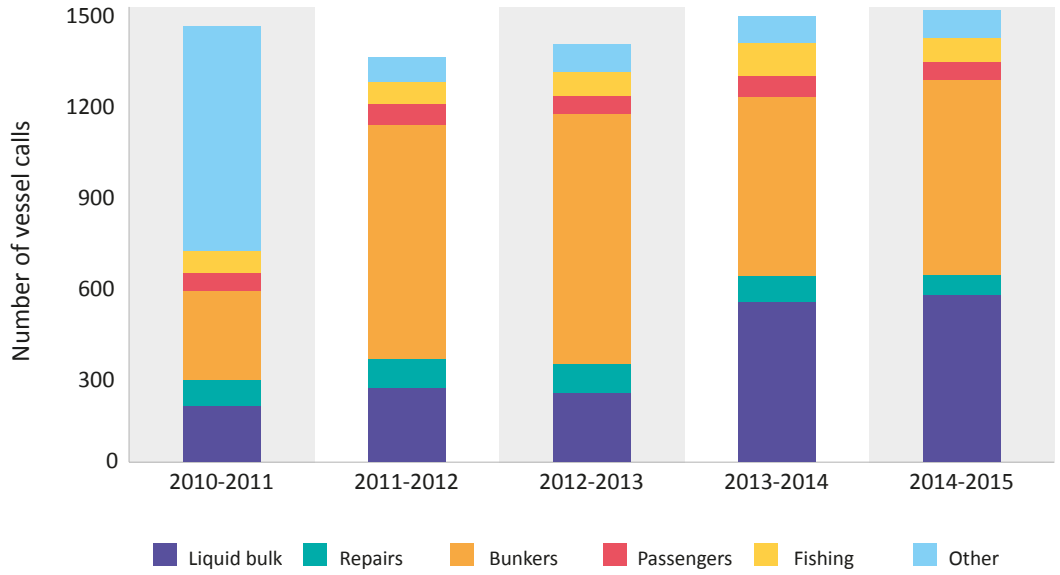
The Port of Durban cemented its position as the chief outlet for liquid bulk cargo mainly as a result of oil refining capacity in the region. Liquid bulk imports (mainly crude) dominated exports. The Port of Durban's share in total liquid bulk volumes in the port system has increased by 4% over the review period to make up approximately 72% of the total throughput in the system.

Figure 56: **Liquid Bulk Volumes Port of Durban**

Non-Cargo Services

Mainly due to increased ship sizes, the past five years show that the number of vessel calls have been decreasing since the 2010/11 period, where there were about 4500 calls, to recent figures of about 4000 calls. The majority of vessel calls at the Port of Durban were container and break-bulk cargo carrying vessels, as well as vessels arriving for bunkers.

Figure 57: **Durban Vessel Call Reasons**



Liquid bulk vessel calls have been increasing over the past five years while container and break-bulk vessel calls have been decreasing.

Amongst the non-cargo related vessel calls, bunkers calls were the most frequent.

Figure 58: **Durban Non-Cargo Call Distribution**

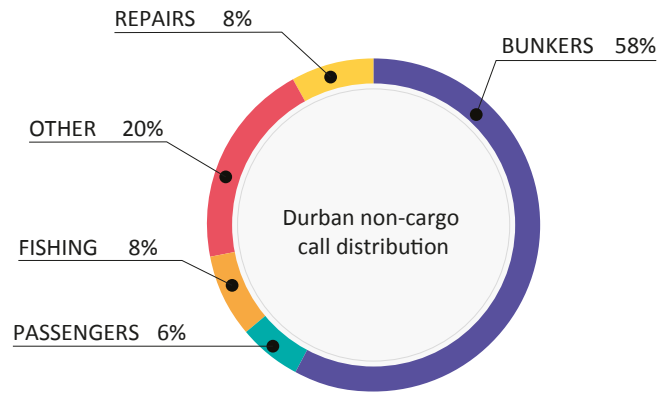
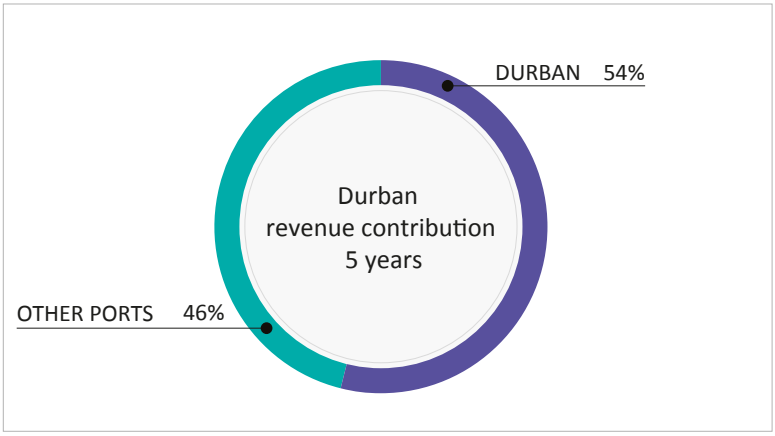
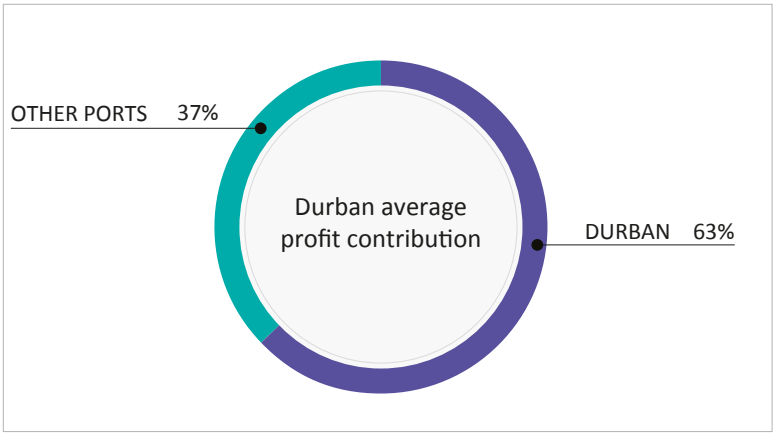


Figure 59: **Durban Revenue Contribution 5 years**



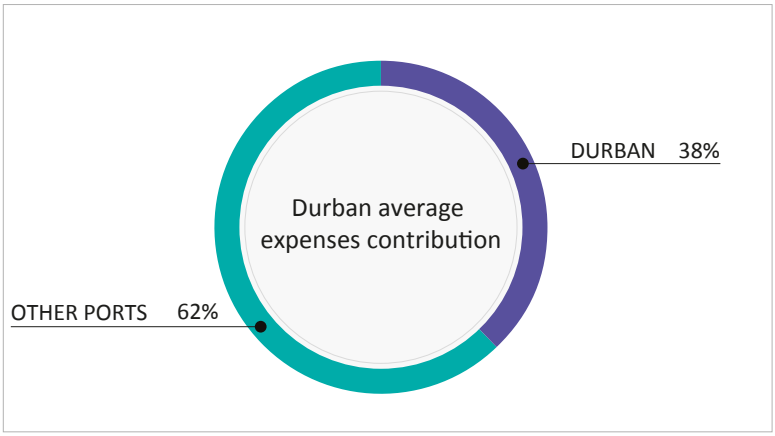
The Port of Durban, being the largest and specifically the largest handler of container traffic (containers being the largest revenue generator) contributed 54% to National Ports Authority's overall revenue over the review period or approximately R4,9 billion on average annually and remained largely stable over the period.

Figure 60: **Durban Average Profit Contribution**



Profit contribution averaged about 64% per annum over the review period.

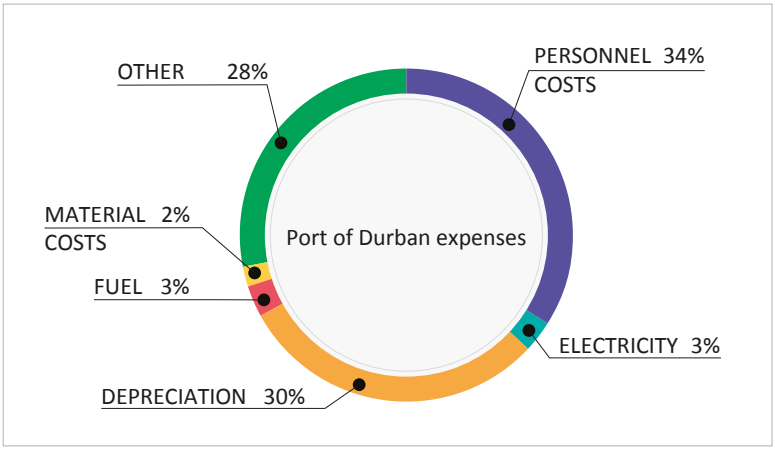
Figure 61: **Durban Average Expenses Contribution**



Whilst generating more than half of total revenue in the port system and 63% of NPA profits, Durban was responsible for only 38% of the NPA's operating costs with depreciation and Personnel costs accounting for the majority of the port's expenses.

In the port, the NPA employs 1175 permanent employees, from 1112 at the beginning of the review period with very little movement over the period. The establishment of control centres and the implementation of the TOPS program may see increased employment in the port.

Figure 62: **Port of Durban Expenses**



With regards to capital investment over the last five years, 27% of the total Capex in the port system was allocated to the Port of Durban. The allocated Capex was largely spent on the rehabilitation/renovation, upgrading/extension and new construction of port infrastructure.

The Future:

The seven year development initiative is envisaged to provide the following developments in the Port of Durban:

- Relocation of the cruise terminal from N berth to AB berth;
- Reconstruction of Maydon Wharf berths;
- Increase commercial and logistics footprint into Ambrose park area;
- Lengthening and deepening of North quay berths at Pier2; and
- Reconstruction of Island View berths.

Source: National Ports Authority.

Port of East London

The Port of East London is South Africa's only river port situated at the mouth of the Buffalo River. As a common user port, it boasts the largest grain elevator in South Africa, a car terminal on the west bank which includes a four story parking facility connect by dedicated road to Mercedes Benz factory. The port also has a multipurpose terminal on the East Bank which handles containers, a dry dock, a repair quay, pilot and fishing jetty, the Latimer's Landing Water frontage as well as bunkering with fuel oil and marine gas oil.

Installed Capacity

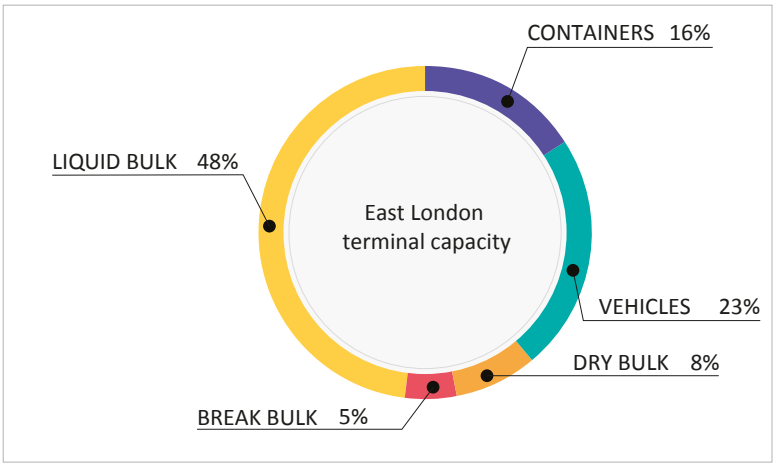
Table 11: East London Installed Capacity

Cargo Type	Terminal	Berths	Berth Draft
Containers	Quay 6	K, L	10,7m
Cars	West quay	P, R	9m
Dry bulk	Bulk berth	S, T	10,7m
Break bulk	Quay 3 and 4	G, I	11m
Liquid bulk	Tanker berth	TB	10,7m

The Port of East London consists of nine berths with the container terminal occupying two berths with a terminal area of 7,194 ha and an installed capacity of 93 000 metric tons.

The automotive terminal is operated by TPT, and has an installed capacity to handle 130 000 units using a total berth length of 559m. Currently there is limited investment planned for automotive cargo.

Figure 63: **East London Terminal Capacity**



The break bulk terminal has an installed capacity of 166 666 tons.

There are four privately operated liquid bulk terminals in East London namely, BPSA, Chevron, Engen and Total. The liquid bulk terminal in the port has an installed capacity of 3 million kilolitres and plays a key role in regional energy security.

The dry bulk terminal has two dedicated berths, with a total berth length of 388 meters. The terminal has a capacity of 984 000 tons and 3,369 ha.

Figure 64: **East London Capacity per Metre of Berth**

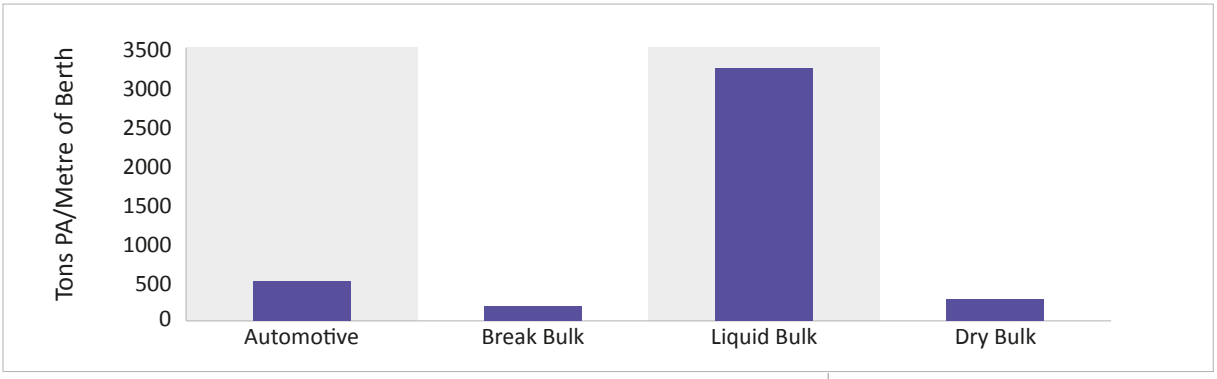
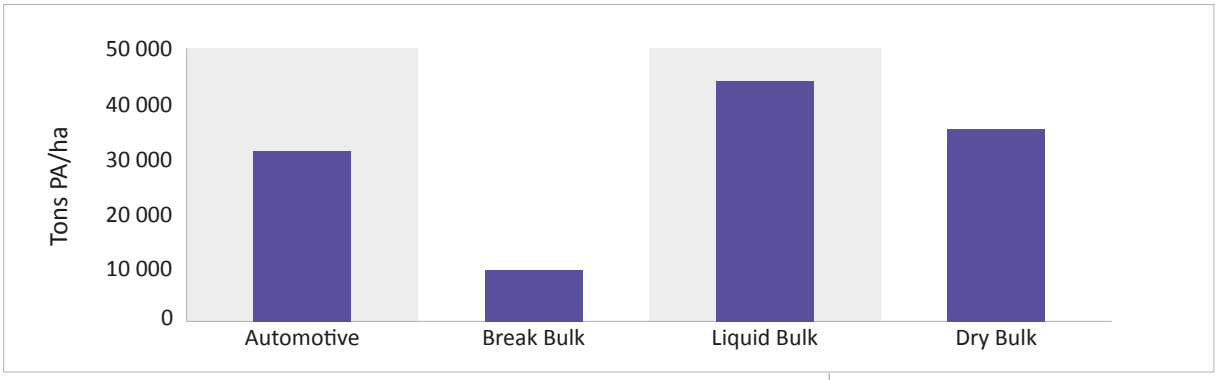


Figure 64b: **East London Capacity**



Liquid Bulk Cargo (KL)

The Port of East London has shown noticeable growth in liquid bulk imports, with an annual average growth rate of 85% over the review period.

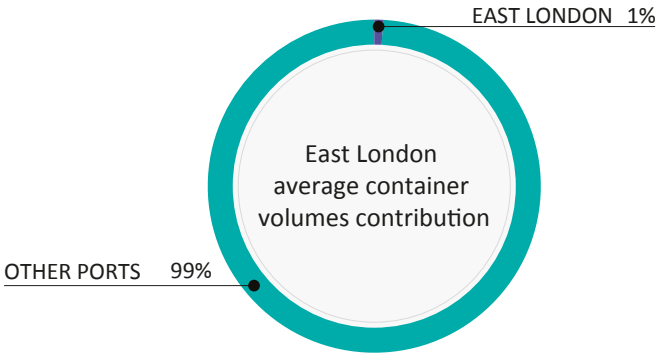
Figure 65: **Liquid Bulk Volumes East London**

The Port of East London's overall share in liquid bulk volumes remains small, but it has interestingly been on the ascent over the past five years, mainly fuelled by increased imports. The Port of East London's share in liquid bulk volumes in the ports system has remained constant over the review period.

Container Cargo

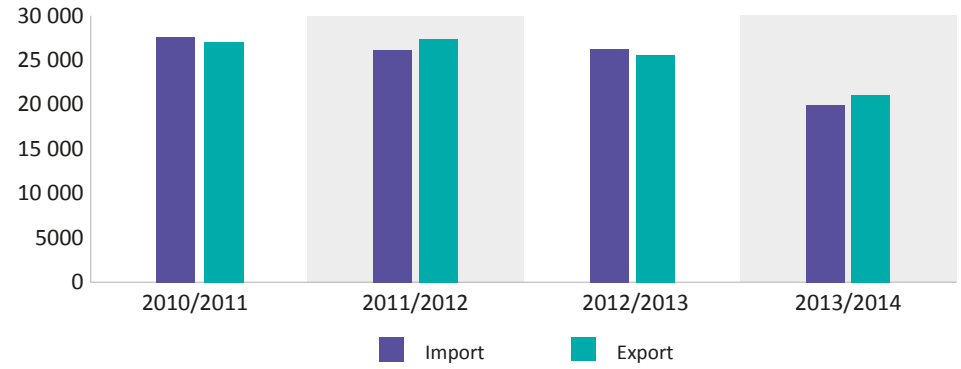
The Port of East London is not a significant player in the container sector with less than one percent of volumes. The port has experienced a dip in container volumes in each of the past five years and its share in total container volumes in the port system has remained constant.

Figure 66: **East London Container Volumes Contribution**



Container volumes at the Port of East London decreased over the review period, with imports decreasing at an average annual rate of 8% and exports at a rate of 6%.

Figure 67: **Port of East London Container Volumes**



Dry Bulk Cargo

The Port of East London experienced a fall in dry bulk imports at an average annual rate of 9%, while dry bulk exports were relatively outside of the spike experienced between 2010/11-2011/12.

The Port of East London is not a major player amongst the South Africa ports in the handling of dry bulk volumes. Its share of dry bulk volumes has dwindled over the last five years, with one notable spike in export volumes in 2011/12. The port's share in total dry bulk volumes in the port system has remained constant (between 0% and 1%) over the period.

Figure 68: **Port of East London Dry Bulk Volumes**

Automotive Cargo

The Port of East London has seen a shift in volumes over the period with automotive imports overtaking exports. Automotive volume imports at the port grew at an average annual growth rate of 11% over the review period, while exports decreased by 11% over the period.

The Port of East London is ranked third, handling 10% of automotive volumes in the South African ports system, behind the Port of Durban and Port Elizabeth. The Port of East London's share in total automotive volumes in the port system has fallen by 2% over the period.

Figure 69: **East London Automotive Volumes 5 Years**

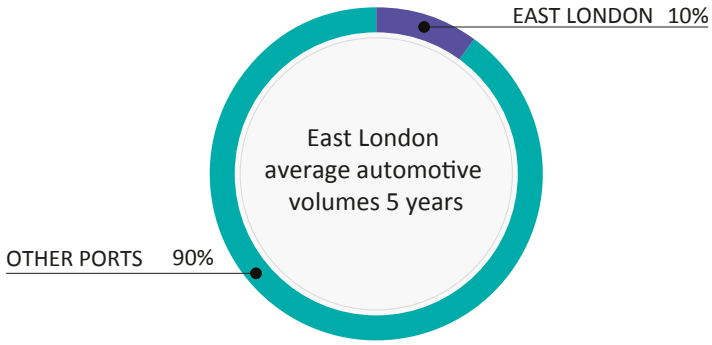
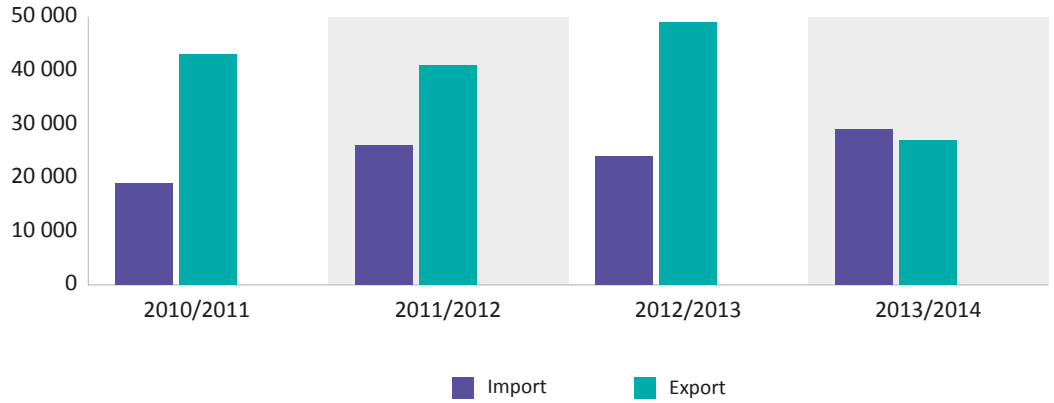


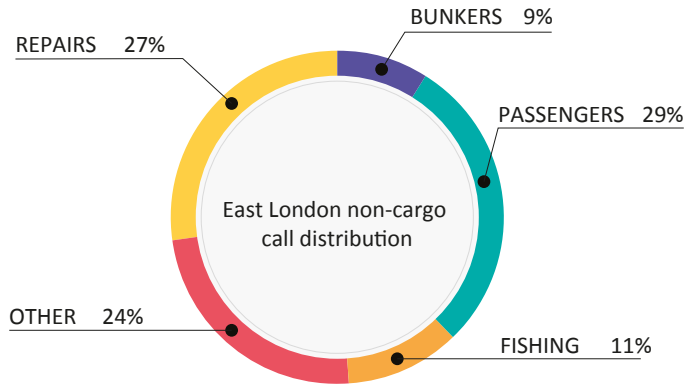
Figure 70: **Port of East London Automotive Volumes**



Non-Cargo Services

Very little no-cargo related activities are facilitated in the port of East London where over the five year period the Port of East London has had on average 300 vessel calls

Figure 71: **East London Non-Cargo Call Distribution**

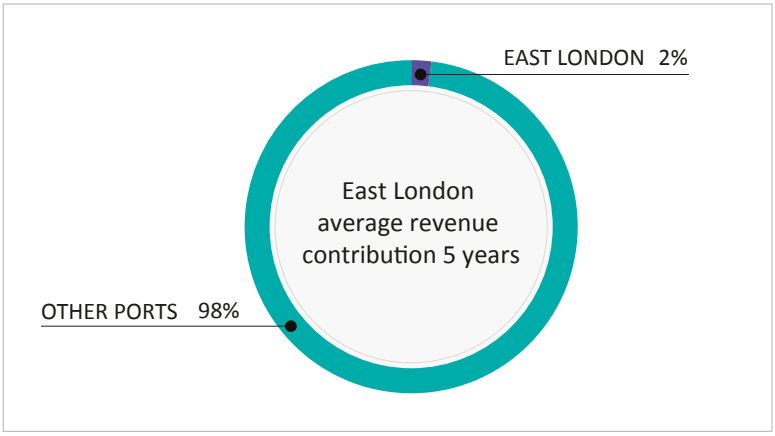


Of the cargo related vessel calls, the majority were container, liquid bulk and automotive related. Amongst the non-cargo related vessel calls, passenger vessel calls were the most frequent.

Financial overview

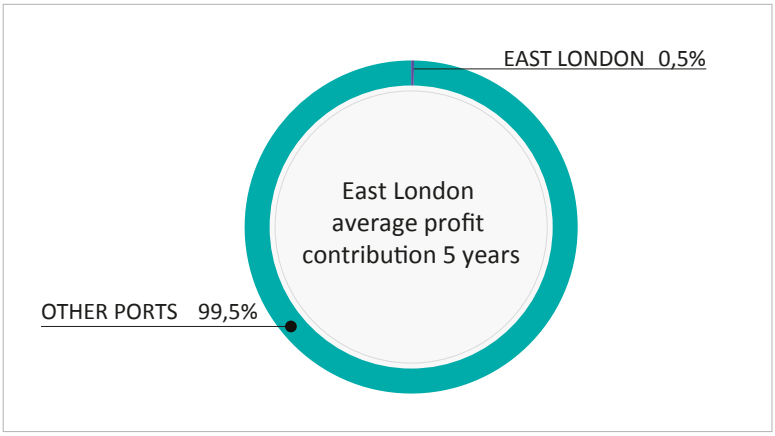
The Port of East London contributed 2% to the NPA's overall revenue over the review or approximately R187 on an annual basis.

Figure 72: **East London Revenue Contribution 5 Years**



On average the port of East London recorded annual profit contribution of 0,5% making it the smallest contributor, though still profitable of all the ports in the system.

Figure 73: **East London Profit Contribution 5 Years**



Over the review period, the Port of East London was responsible for 6% of the NPA's operating costs of which depreciation and personnel costs accounted for the majority of the port's expenses

In the Port of East London, the NPA employs 150 permanent employees, from 156 at the beginning of the review period.

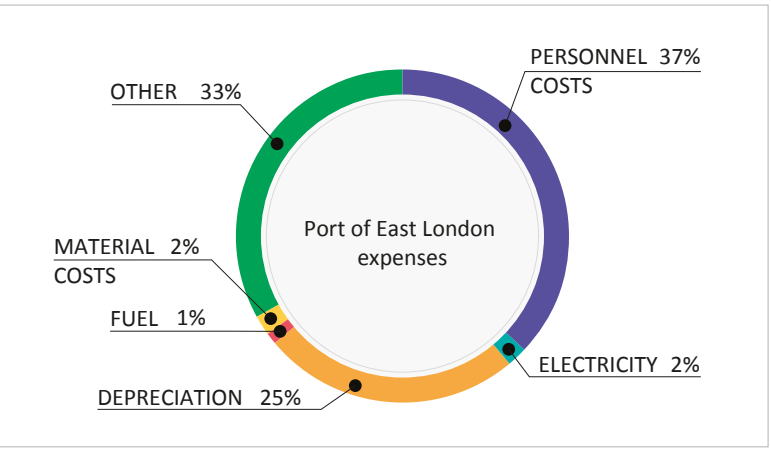
With regard to capital investment, only 1% of the total Capex in the port system was allocated to the Port of East London, with the allocated Capex largely spent on the expansion of the container terminal.

In the past five years, two major projects were planned for Port of East London. These projects, still under construction are, the West Bank Foreshore Protection (Feasibility and Execution) and a sheet pile wharf rehabilitation project.

Containers at the Port of East London.

Figure 74: **East London Expenses Contribution 5 Years**

Figure 75: **Port of East London Expenses Distribution**



The Future:

The port is sited at the mouth of the Buffalo River, and as a consequence is restricted in both width and depth, with limited opportunities for future expansion. Containers and break bulk cargoes are handled on the east bank, and bulk cargoes and vehicles handled on the west bank of the river. While East London will continue to provide general cargo handling services to its hinterland, the constraints to expansion, the limited hinterland, and the development of the new port at Ngqura suggest that East London will see limited growth in the thirty-year planning horizon

The port's seven year infrastructure plan consists of a limited number of projects in line with the view that limited growth is expected over the next thirty years. The seven year Port Development Framework Plan envisaged the following two development projects which directly or indirectly should provide for required capacity for every cargo type, namely: the land preparation for coal exports and the deepening and widening of the entrance channel. However it should be noted that the deepening and widening of the entrance channel is to ensure the safety of navigation at the port.

In past years, the container volumes in the port have remained fairly flat and as a result the port will continue to handle container throughput through their multi-purpose terminals until volumes justify dedicated facilities. The port handles various dry bulk commodities including coal, as highlighted above there are plans to develop a coal export terminal in the port.

Development plans for the port are limited to reconfiguration of existing infrastructure. Unless regional growth generates new cargo volumes, the Port of East London will continue to play an important but limited role in the port system. The challenges that face the Port of East London are the requirement to adapt existing port waterside capacity to meet new and larger vessel types, a challenge that commonly affects the older ports. East London is an example of a port that is not easily able to adapt due to the very restrictive river basin site of the port. East London also has limited opportunity to expand to new areas suited to the development of new waterside capacity.

Port of Richards Bay

Source: National Ports Authority.

Harbour bound industries at the Port of Richards Bay.

The Port of Richards Bay was developed between 1972 and 1976 in response to the demand for additional rail-linked port infrastructure to service export potential from the (now) KwaZulu-Natal and Mpumalanga coalfields. A deep water facility was needed because of the development internationally of very large bulk carriers. Richards Bay was chosen because of the large lagoon; the ease of dredging; direct links with the national rail network, an adjacent town, Empangeni, to stimulate initial development; and an ample supply of fresh water.

The port is now South Africa's premier dry bulk port, handling an increasing variety of bulk and neo-bulk commodities in addition to break-bulk. The coal terminal, single bulk liquids berth and bulk liquid storage and phosphoric acid loading facility are operated by private companies

Installed Capacity

The Port of Richards Bay consists of 21 berths. The current installed capacity reflects the economy of the region with an installed terminal capacity of 112 million dry bulks, 8,2 million break bulks and 3 million liquid bulks.

Figure 76: **Richards Bay Installed Capacity**

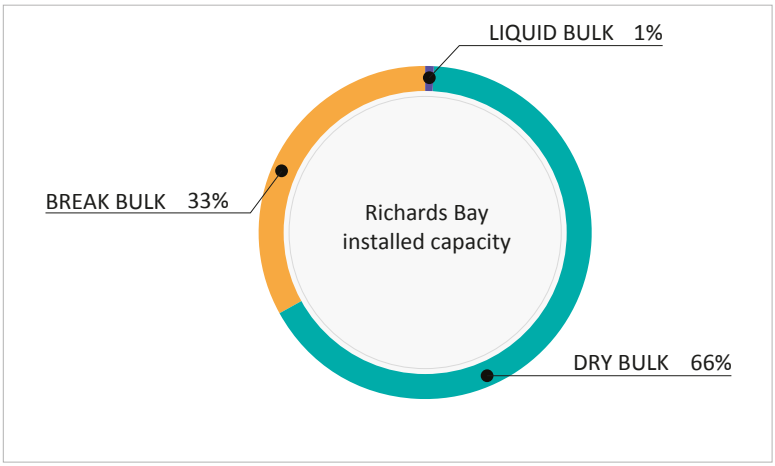


Table 12: **Richards Bay Installed Capacity**

Cargo Type	Terminal	Berths	Berth Draft
Coal	Coal	301, 302, 303, 304, 305, 306	19m
Woodchips	Dry Bulk Terminal	804	19m
Imports	Dry Bulk Terminal	607, 701, 702	14,5m – 19m
Exports	Dry Bulk Terminal	703, 704, 801	19m
Break bulk	Break bulk	606, 607, 608, 706, 707, 708	14,5m
Liquid bulk	Liquid Bulk	209 and 208	14m

The port currently has no installed capacity dedicated solely for containers, but handles a small number of containers at the multipurpose terminal.

Liquid bulk cargo serves the energy needs of the industries of the region. The liquid bulk terminal features two berths with a total berth length of 550 meters making up 4,6 hectares of the port land. The liquid bulk terminal has an installed capacity of 3 million kl and plays a key role in the energy security of the region.

The break bulk and multipurpose terminals handle various cargoes, and have an installed capacity of 8,2 million tons.

Dry bulk cargoes are moved through 13 dedicated dry bulk berths with a total berth length of 3 984 meters and a terminal area of 411,5 hectares.

Figure 77: **Richards Bay Capacity per Metre of Berth**

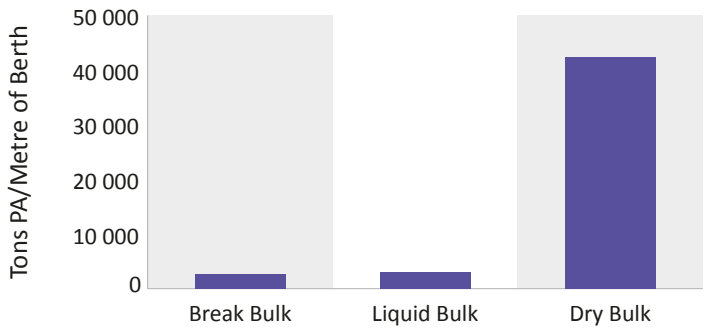
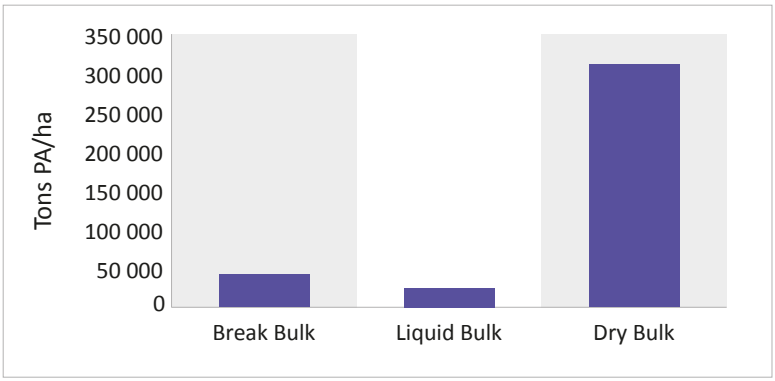


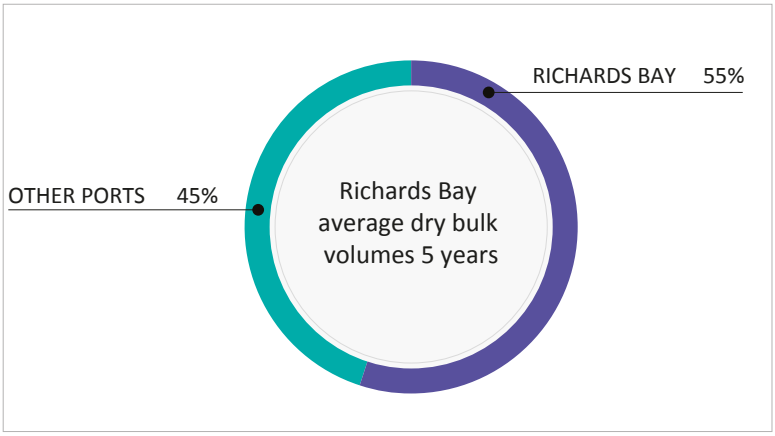
Figure 77b: **Richards Bay Capacity**



Dry Bulk Cargo

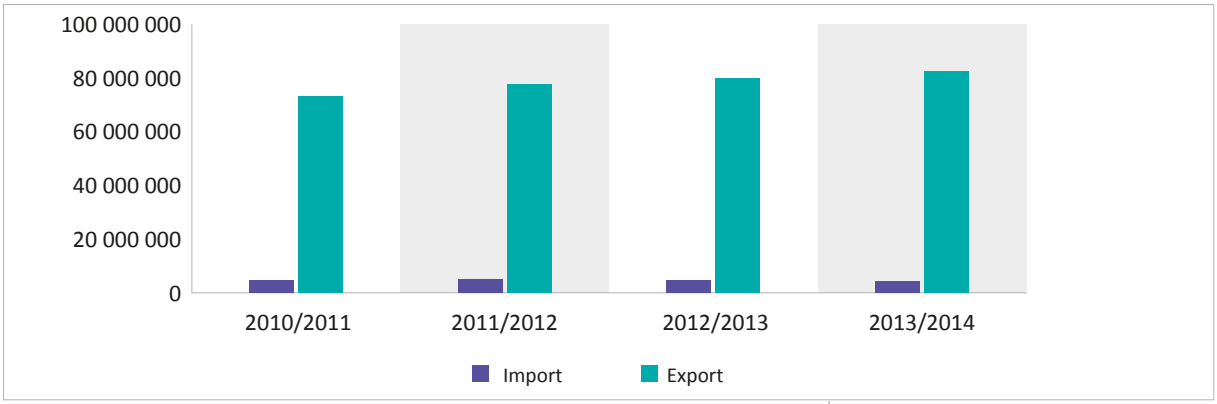
The Port of Richard's Bay showed only a slight growth in volumes over the review period, with dry bulk imports showing no growth and only dry bulk exports showing an average annual growth rate of 3%.

Figure 78: **Richards Bay Average Dry Bulk Volumes 5 Years**



The Port of Richard's Bay is mainly dedicated to the handling of dry bulk cargo. The Port of Richards Bay's share in total dry bulk volumes in the port system has remained constant over the period at about 55%.

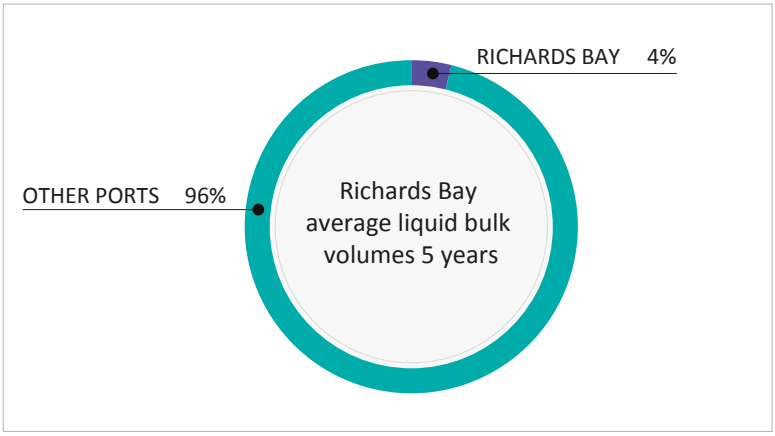
Figure 79: **Port of Richards Bay Dry Bulk Volumes**



Liquid Bulk Cargo

The Port of Richard's Bay experienced a mix set of results in the growth of liquid bulk volumes. Liquid bulk imports grew at an average annual growth rate of 4% over the period, whereas exports fell at an average annual rate of 7%.

Figure 80: **Richards Bay Liquid Bulk Volumes 5 Years**



Liquid bulk cargo is a secondary cargo for the Port of Richard's Bay, with volumes handled at the port having decreased over the past 5 years, mainly as a result of lower exports of liquid bulk cargo. The Port of Richard's Bay share in total liquid bulk volumes in the port system has remained constant over the period.

Figure 81: **Richards Bay Liquid Bulk Volumes**

Non-Cargo Services

Over the five year period the Port of Richards Bay has had on average 1800 vessel calls.

Of the cargo related vessel calls, the majority were dry bulk and break-bulk cargo carrying vessels.

Amongst the non-cargo related vessel calls, fishing vessel calls were the most frequent.

Figure 82: **Richards Bay Vessel Call Reasons**

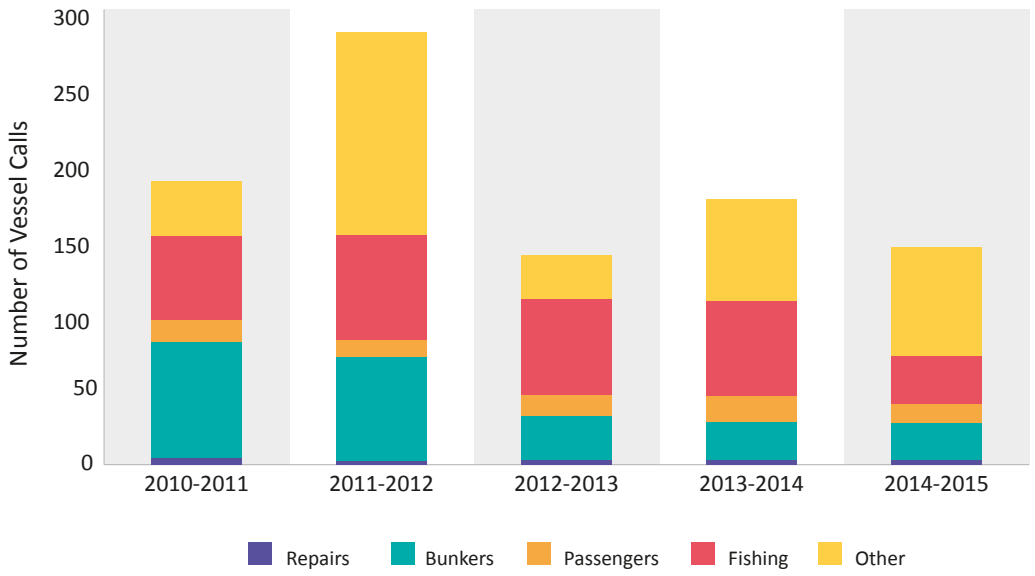
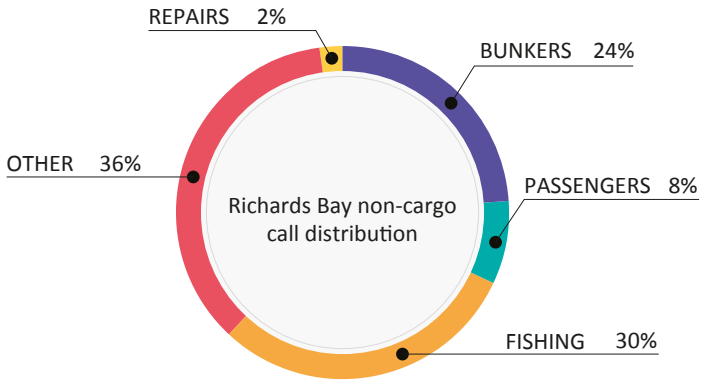


Figure 83: **Richards Bay Non-Cargo Call Distribution**



Financial Overview

The Port of Richards Bay contributed 12% to the NPA's overall revenue or on average about R1,1 billion per annum and contributed approximately 9% in profit over the review period.

Figure 84: **Richards Bay Average Profit Contribution 5 Years**

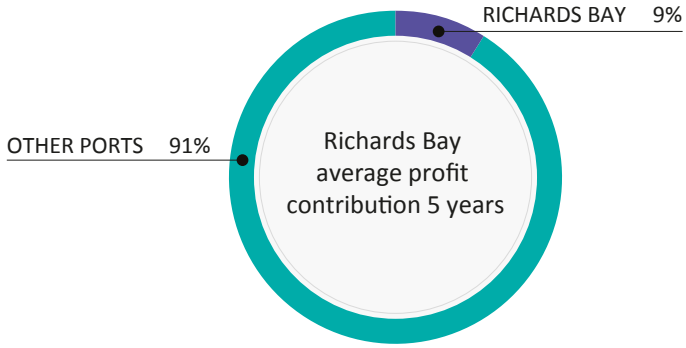
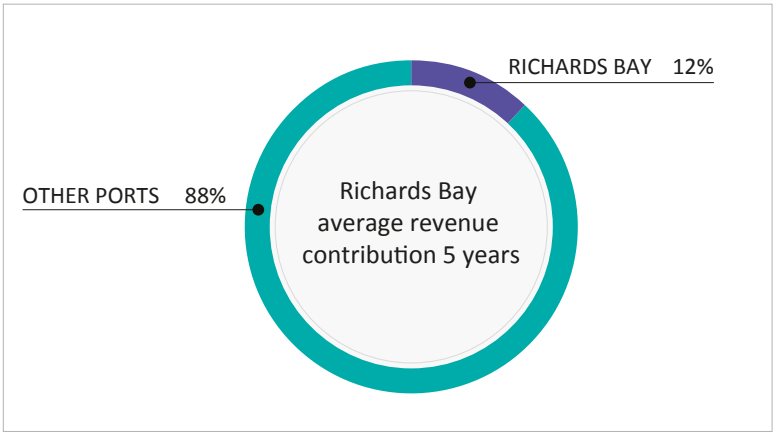


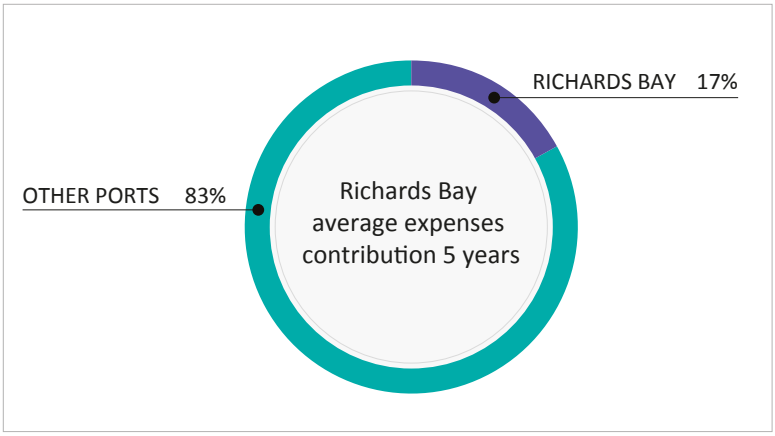
Figure 85: **Richards Bay Revenue Contribution 5 Years**



There has not been significant growth or decline in the Port of Richards Bay's revenue contribution over the review period, with revenues and profits remaining largely stable.

Over the review period, the Port of Richards Bay was responsible for 17% of the NPA's operating costs, and similar to other ports in the system, depreciation and personnel costs accounted for the majority of the port's expenses due in part to large capital assets.

Figure 86: **Richards Bay Expenses Contribution 5 Years**



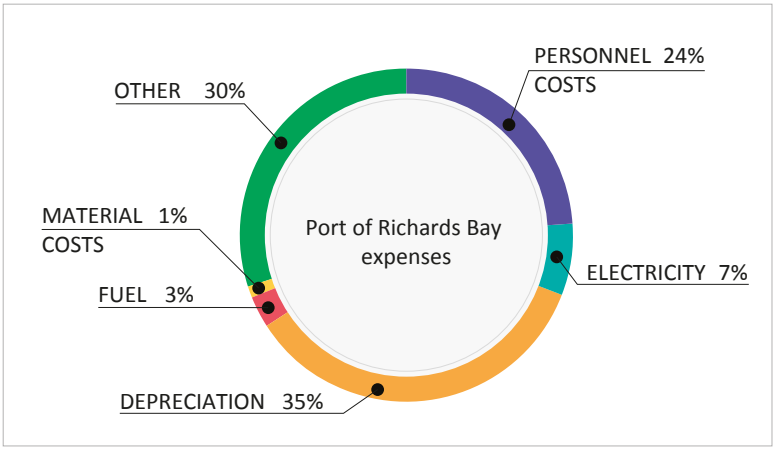
The NPA employs 382 permanent employees, up from 258 at the beginning of the review period In the Richards Bay port.

With regards to five year capital investment, 7% of the total Capex in the port system was allocated to the Port of Richards Bay.

In the past five years nine major projects were planned for Port of Richards Bay. Eight of them have been successfully completed and one project was discontinued which is the Construction of Common User Berth 307.

Industries at the Port of Richards Bay.

Figure 87: **Port of Richards Bay Expenses Distribution**



The Future

Whilst there hasn't been any growth for the Port of Richards Bay in the previous years, the medium and long term development framework envisages some major growth. The port is also looking at exploring the viability of various handling facilities such as container, LNG, oil and gas. The Long Term Plan summarises the following seven year port development initiatives which directly or indirectly should provide for required capacity for the port:

Upgrade all bulk services Infrastructure (roads, water, sewer and electricity);

Develop South Dunes precinct for liquid bulk;

Implement Richards Bay Expansion project;

Explore the viability of oil and gas facilities;

Explore the viability of LNG facilities;

Explore the availability of container terminal; and

Investigate the installation of ship repair facilities.

This bulk carrier at the Port of Richards Bay can carry 55885 tons of cargo.

Source: National Ports Authority.

Port of Saldanha Bay

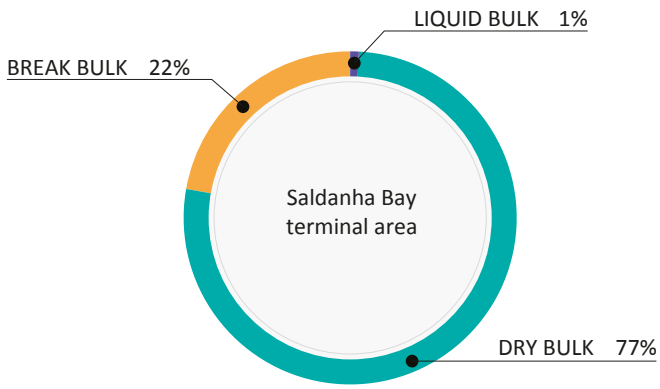
It is argued that only the lack of fresh water prevented this otherwise excellent natural harbour from becoming the major port along the south coast of Africa. The mainly facilitates the export of iron ore from the Northern Cape. This required the construction of a railway more than 800km to the mines at Sishen in the Northern Cape and the construction of a deep water berths and terminal in Saldanha Bay to accommodate the Capesize ore carriers. The first deliveries of iron ore were exported on the vessel Fern Sea during September 1976.

Installed Capacity

Table 13: **Saldanha Bay Installed Capacity**

Cargo Type	Terminal	Berths	Berth Draft
Dry bulk	Iron ore	101, 102	23m
Break bulk	Multi-purpose	201, 202, 203, 204	13m -15m
Liquid bulk	Liquid bulk	103	23m

Figure 88: **Saldanha Bay Terminal Area**



The Port of Saldanha Bay consists of eight berths and current installed capacity reflects the dedicated bulk purpose of the port with an installed terminal capacity of 60 MT dry bulk, 3,3 MT break bulk as well as 25 kl liquid bulk capacity serving the energy needs of the region.

The Port facilitates the movement of break-bulk cargo through its installed capacity of 3,3 million tons per year over one berth with a length of 365 meters.

The liquid bulk terminal features a berth with a length of 365 meters which makes up 1ha of port area.

Figure 89: **Port of Saldanha Bay Infrastructure Throughput per Metre of Berth**

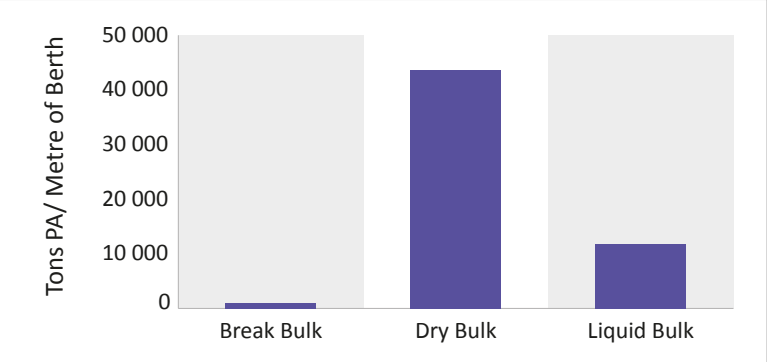
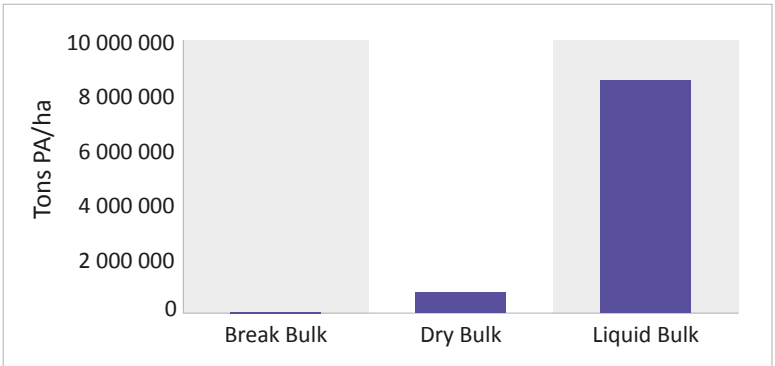


Figure 89b: **Port of Saldanha Bay Infrastructure Throughput**



Liquid Bulk Cargo

The Port of Saldanha experienced little change in liquid bulk imports over the review period, with volumes stable at an average annual growth rate of 1%.

Exports are negligible, and overall the liquid bulk volumes moving through Saldanha represent around 15% of total South African liquid bulk port volumes that are shipped in bulk.

Iron ore stacks at the Port of Saldanha Bay.

Figure 90: **Saldanha Bay Liquid Bulk Volumes 5 Years**

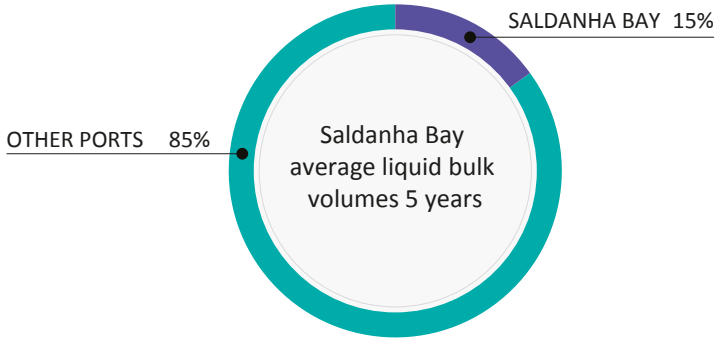
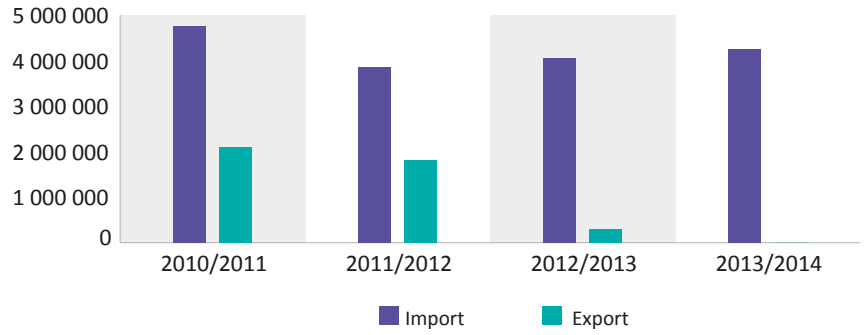


Figure 91: **Saldanha Bay Liquid Bulk Volumes**

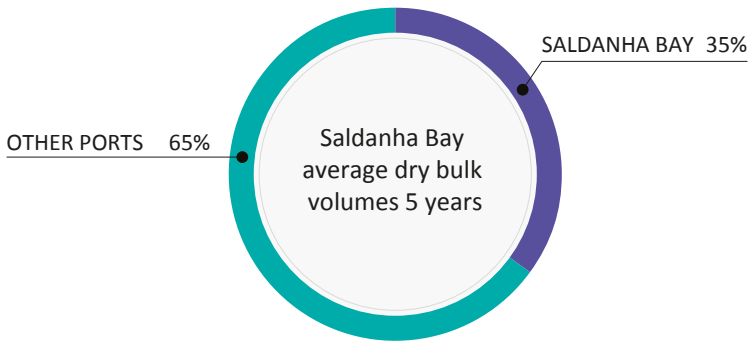


Dry Bulk Cargo

The Port of Saldanha Bay showed minor growth in dry bulk volumes (its primary focus) over the review period, with imports (even if very small volumes) growing at an average annual growth rate of 2%; while exports grew at a rate of 3%.

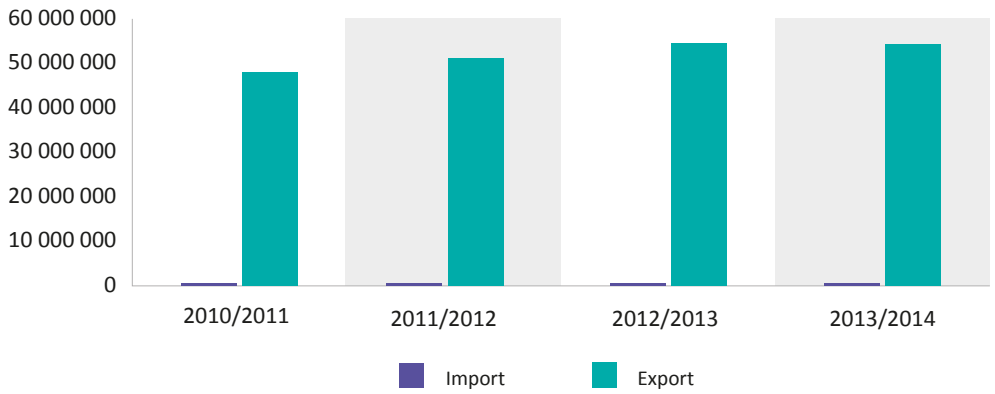
The Port of Saldanha Bay accounted for a 35% share of dry bulk volumes (mostly iron ore from the Northern Cape) in the ports system. The Port of Saldanha Bay's share in overall dry bulk volumes in the port system has remained fairly constant over the period.

Figure 92: **Saldanha Bay Dry Bulk Volumes 5 Years**



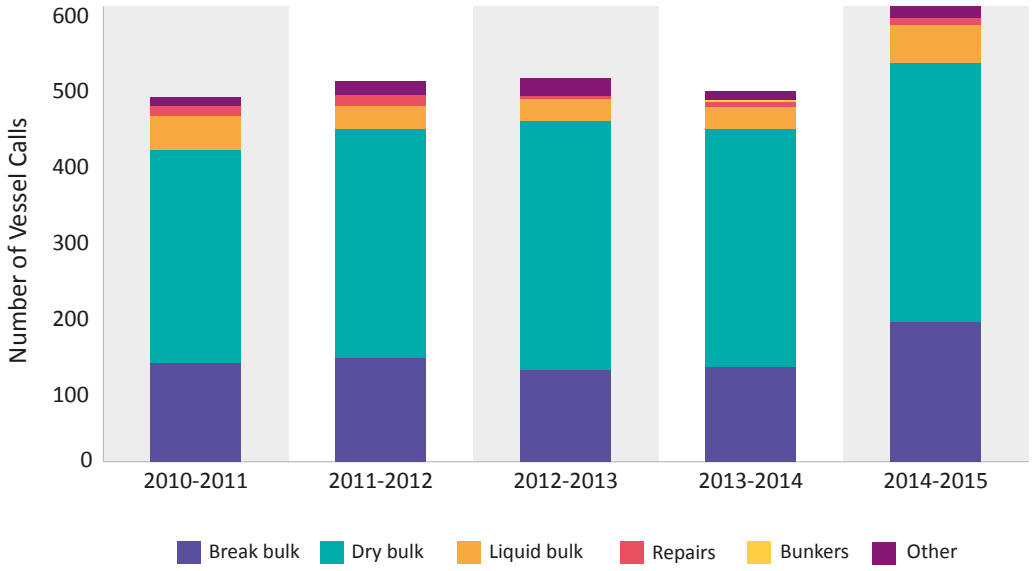
A slowdown in especially the Chinese economy could see volumes of mainly bulk exports through Saldanha come under pressure.

Figure 93: **Port of Saldanha Dry Bulk Volumes**



Non-Cargo Services

Figure 94: **Port of Saldanha Vessel Call Reasons**

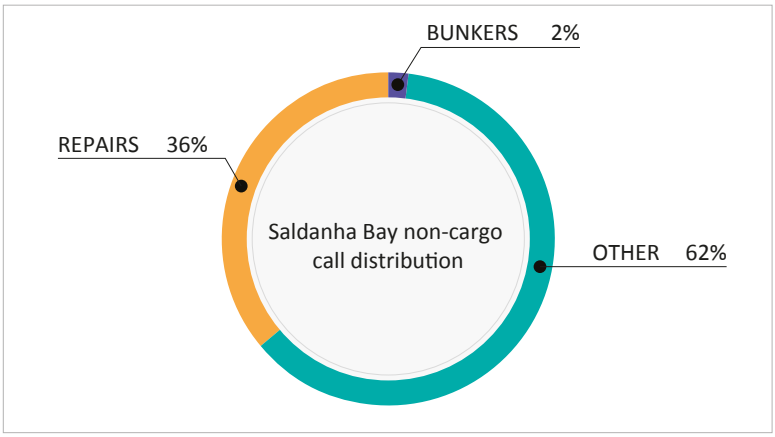


Over the five year period the Port of Saldanha Bay has had on average 515 vessel calls,

Cargo related calls make up about 95% of all vessel calls at the port. The most frequent call reason by far at the Port of Saldanha Bay is consistently dry bulk, followed by break-bulk calls.

Amongst the non-cargo related vessel calls, bunkers calls and limited ship repair visits were the most frequent.

Figure 95: **Saldanha Bay Non-Cargo Call Distribution**



Financial Overview

The Port of Saldanha Bay contributed 7% to the NPA's overall revenue or approximately R650 million per annum as well as profits over the review period and profits contributing on average about 7% over the review period

Figure 96: **Saldanha Bay Revenue Contribution 5 Years**

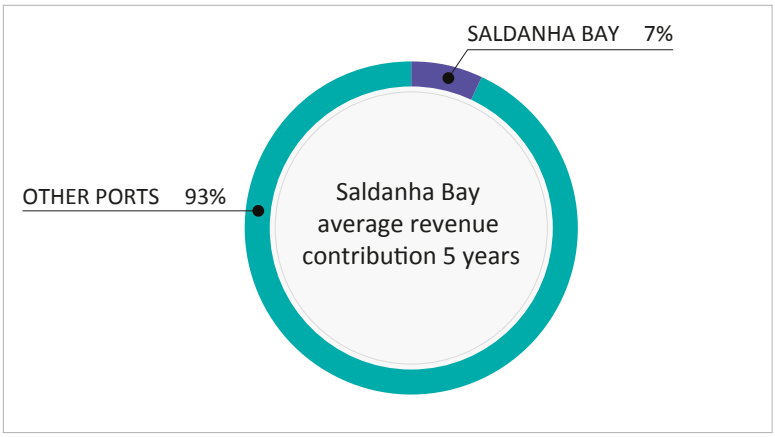
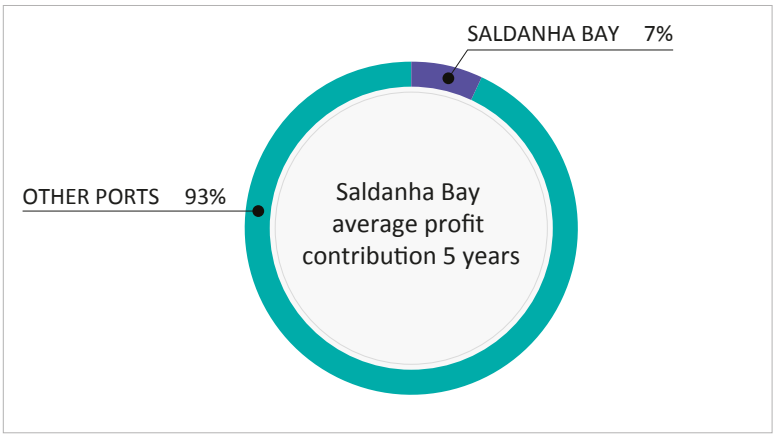


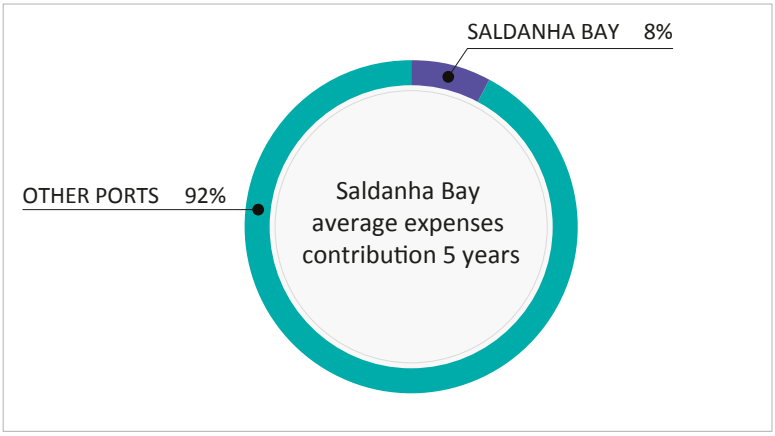
Figure 97: **Saldanha Bay Profit Contribution 5 Years**



Over the review period, the Port of Saldanha was responsible for 8% of the NPA's operating costs.

As in other ports, Depreciation and Personnel Costs accounted for the majority of the port's expenses

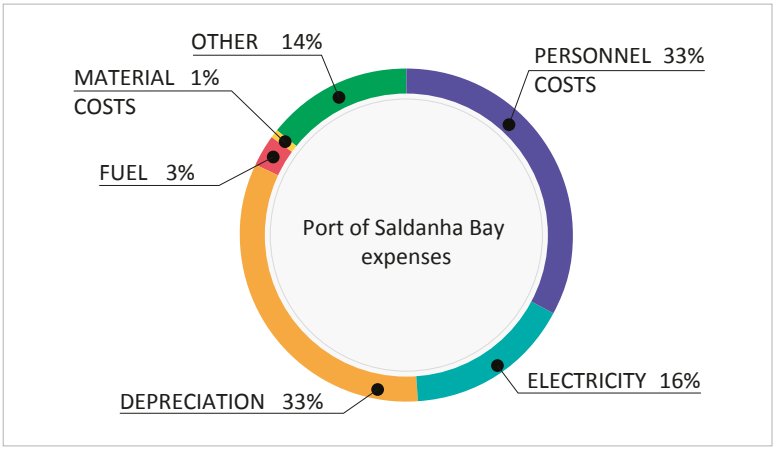
Figure 98: **Saldanha Bay Expenses Contribution 5 Years**



In the Port of Saldanha Bay, the NPA employs 225 permanent employees, marginally up from 216 at the beginning of the review period.

With regards to capital investment over five years, 7% of the total Capex in the port system was allocated to the Port of Saldanha Bay

Figure 99: **Port of Saldanha Bay Expenses Distribution**



The Future

Although there has not been much change in port infrastructure with installed capacity not changing significantly over the past five years, the port's seven year development framework envisages some growth in the port with the Long Term Plan outlining a number of initiatives which directly or indirectly should provide for required capacity for all cargo types:

Development of an oil & gas service hub;

Extension of the general maintenance quay;

Construction of 500m jetty at the mossgas quay;

Provision of dedicated facility for oil rigs (berth 205);

Joint planning with saldanha bay idz;

Construction of an LPG terminal;

Increasing liquid bulk handling capacity;

Development of an LNG terminal;

Marine craft replacement programme;

Iron ore expansion (phase 2).

Though the port is doing well in terms of dry bulk exports, the hazardous nature of iron ore dust and corrosion effects of iron ore has raised concerns from other industries in Saldanha Bay. This could slow growth in iron ore production as a result. However the port is trying to resolve the issue and has put forward a mitigation plan to address the issue. Future expansion plans envisage major investment and development in the liquid bulk facility and LPG and LNG terminal as well as in oil rigs. It is anticipated that liquid bulk volumes for both crude oil and refined products will grow substantially and current capacity is not adequate to handle these forecast volumes. Major expansion in this sector is expected to change the layout of the port.

The break bulk facility is envisaged to be adequate to handle current and future volumes thus no investment is planned.

The rotary end of an iron ore stacker loading ore onto a stack at the Port of Saldanha Bay.

Source: National Ports Authority.

Port of Ngqura

The Port of Ngqura is South Africa's 8th and latest commercial port development. It is a deep-water port capable of handling post-Panamax dry and liquid bulkers as well as 6 500 TEU cellular container vessels. The port's main breakwater is the longest in South Africa. At a construction cost of R10b, the port of Ngqura was to have had an aluminium smelter as its anchor tenant. With the electricity generation crisis in 2008, the aluminium smelter became unlikely against the pressures for Eskom to provide security of supply on a national basis. This brought about a change in focus for the Port of Ngqura from a deep-water bulk port to container handling with operations on the container terminal commencing in 2009. The Coega Industrial Development Zone (IDZ) as well as the Nelson Mandela Bay Strategy all aim to optimise the existence of the two ports in this undeveloped region. [South African Port Capacity and Utilisation Report 2014-15]

Installed Capacity

Table 14: Ngqura Installed Capacity

Cargo Type	Terminal	Berths	Berth Draft
Containers	Container	D100, D101	16,5m
Dry bulk	Container	C100	16,5m
Break bulk	Multi-purpose	C101	16,5m
Liquid bulk	Liquid bulk	B100	18m

The Port of Ngqura consists of five berths with an operational four berth container terminal, as well as three jetty berths.

The container terminal area which accounts for the largest area within port limits has also been widened from 62,33 to 90,40 hectares resulting in just above 500 TEU's per ha throughput, and the 720 meters of berth and 10 cranes result in an average 575 TEU's per metre of berth.

The liquid bulk terminal features two berths with a total berth length of 489 meters and a terminal area of 16ha which accounts for 17% of the total port area.

Figure 100: **Port of Ngqura Throughput per Metre of Berth**

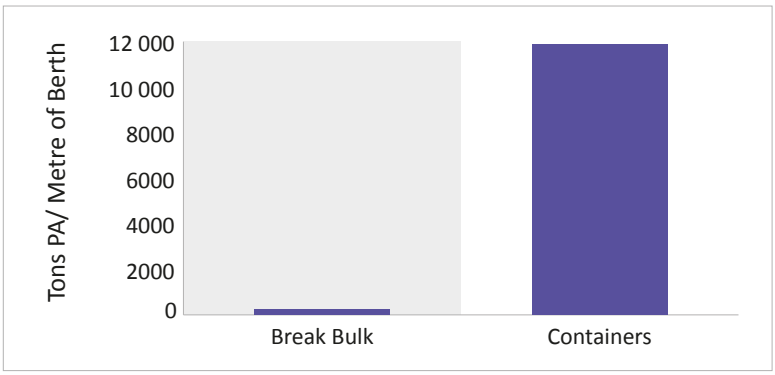
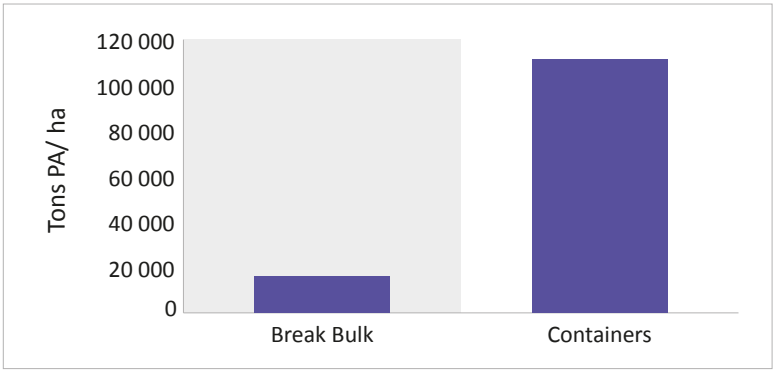


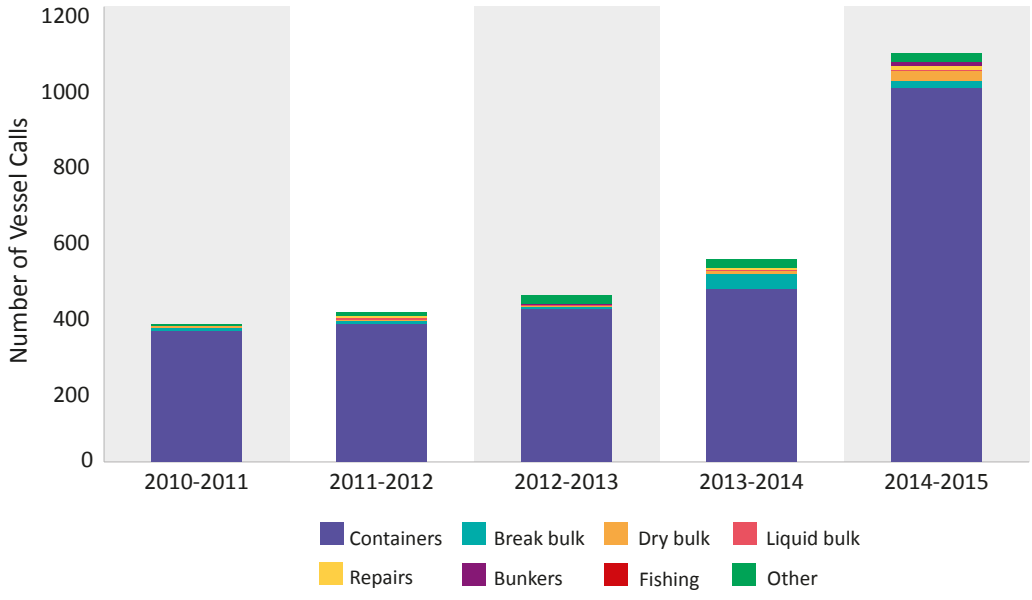
Figure 100b: **Port of Ngqura Throughput**



Non-Cargo Services

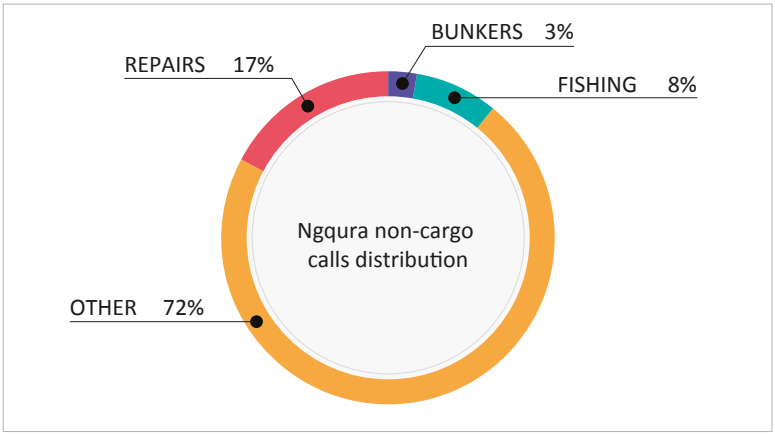
Over the five year period, the Port of Ngqura has had, on average 561 vessel calls.

Figure 101: **Ngqura Vessel Call Reasons**



The Port of Ngqura has seen a year on year increase in the number of vessel calls at the port. From having figures below 400 calls in 2010/11 to around 1100 calls in 2014/15, the port has the highest growth rate in vessel calls amongst all ports in South Africa over the five year period albeit off a low base. The most frequent call reason by far at the Port of Ngqura is consistently container carrying vessels.

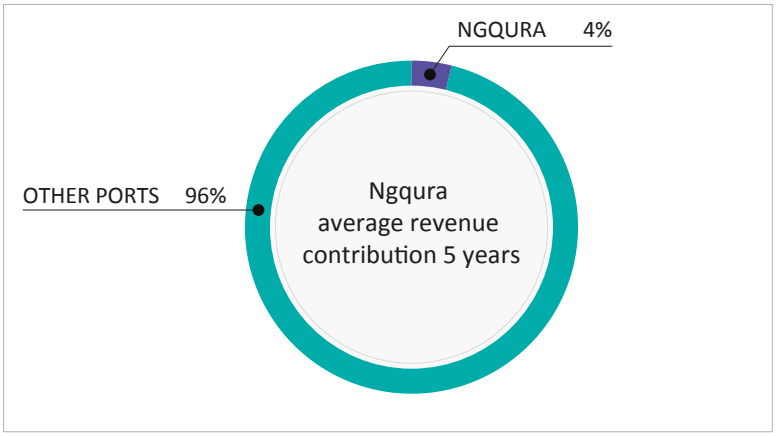
Figure 102: **Ngqura Non-Cargo Calls Distribution**



Financial Overview

The Port of Ngqura contributed 4% (about R370 million annually) to the NPA's overall revenue over the review period and contributed about 2% of total profits.

Figure 103: **Ngqura Average Revenue Contribution 5 Years**



Strong growth in transhipment volumes did not translate in large revenue growth as cargo dues on transhipment containers are very low, at R77,9 per 20' container (2014/15)

Transhipment mainly benefits the NPA marine component of revenue as well as group revenue through the terminal handling charges levied by TPT.

Over the review period, the Port of Ngqura was responsible for 6% of the NPA's operating costs, 4% of revenue and 2% of profit.

Rail mounted gantries for unloading and loading trains at the Port of Ngqura.

Figure 104: **Ngqura Average Profit Contribution 5 Years**

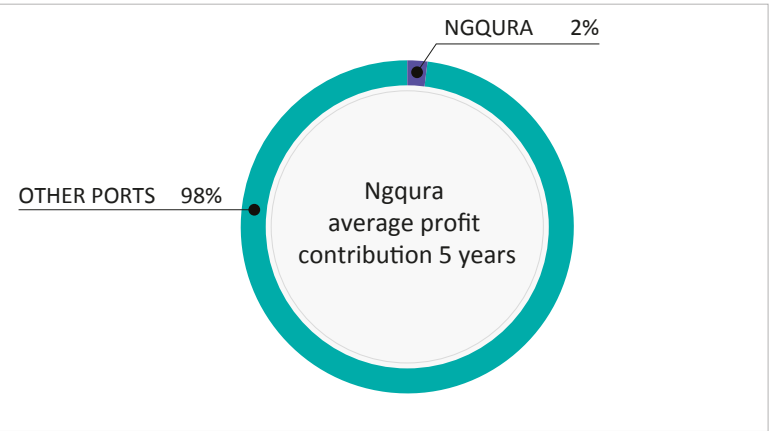
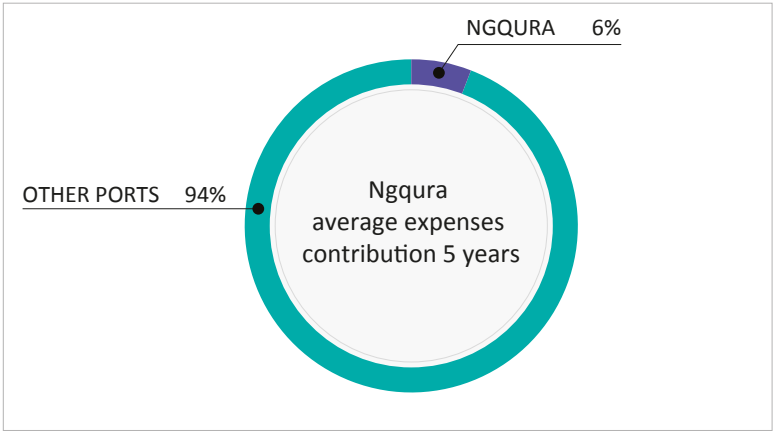


Figure 105: **Ngqura Average Expenses Contribution 5 Years**



Depreciation accounted for over half of the port's expenses.

In the Port, the NPA employs 175 permanent employees, from 68 at the beginning of the review period.

With regard to five year capital investment, 52% of the total Capex in the port system was allocated to the Port of Ngqura; the majority of the port's capex investment went towards the installation of facilities and new construction.

Current and planned projects over the past five years included the Construction of Marine & Landside Infrastructure as well as the operationalisation of the Port. A Manganese terminal is also underway.

The Future

The seven year port development initiatives of the port still envisages major growth in the port; the two major projects which would change the current layout of the port are the relocation of tank farm operation and manganese operation from the Port of Port Elizabeth. Other projects are mainly for safety reasons and risk mitigation since the port is experiencing some long wave effects, swells and strong winds because of weather conditions in the Eastern Cape. The seven year port development initiatives indicate eleven projects which are earmarked for the port, these projects are as listed:

Installation of automated mooring system to mitigate surge at the container berth;

Provision of NPA admin building, marine fleet jetty and marine house;

Relocation of tank farm operations from the port of Port Elizabeth;

Construction of the cadastral boundary, lights and cameras around the port for security purposes;

Plant required by infrastructure for maintenance and to execute minor projects;

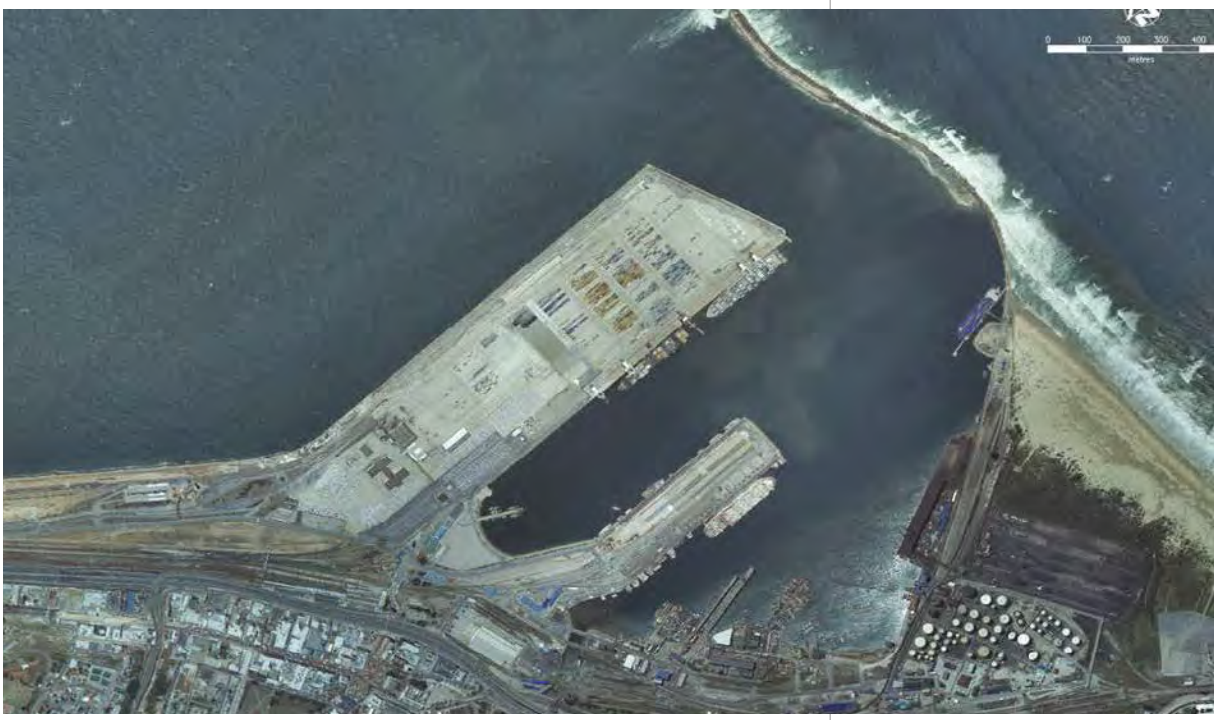
Provision of offices, workshops, and facilities to the infrastructure department personnel;

New general cargo berth to accommodate new business from IDZ and hinterland;

Relocation of manganese operations from port of PE;

Installation of scada system for the port services; and

Provision of additional capacity for marine craft.



Source: National Ports Authority.

Port of Port Elizabeth

Although services started in 1836 and the first jetty was constructed in 1837, the Port of Port Elizabeth was established as a proper harbour in 1933 with the construction of the Charl Malan Quay (now used as the container and car terminals) which for the first time offered protection from open seas.

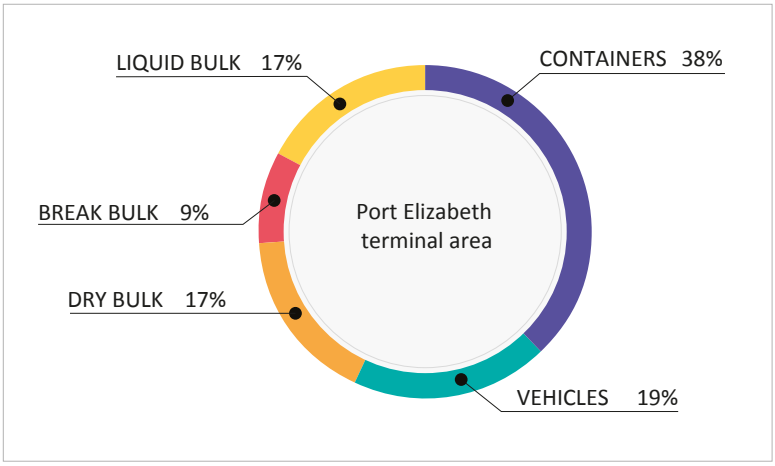
Agriculture and farming – deciduous and citrus fruits and wool crop – played an important role in the development of the Port of Port Elizabeth, prior to the growth of containers and motor industry in prominence in this port. The fishing industry and passenger ships (accommodated at the fruit terminal berths when calling at the Port) are important players in the Port. Other products handled in this port include Manganese ore (which by 2017/18 will be relocated to the Port of Ngqura) and petroleum from other South African ports.

Installed Capacity

Table 15: **Port of Port Elizabeth Installed Capacity**

Cargo Type	Terminal	Berths	Berth Draft
Containers	Container	102,103	12,2m
Motor Vehicles	Car	100,101	12,2m
Dry Bulk	Manganese	13	12,2m
Break Bulk	Multi-purpose	8,9,10,11,12	7m — 11m
Liquid Bulk	Liquid Bulk	15	9,9m

Figure 106: **Port Elizabeth Terminal Area**



The Port of Port Elizabeth consists of nine usable berths and has two container berths with a length of 630 meters and a draft of 12,2m and a terminal area of 36ha resulting in an average throughput of just above 9000 TEU's per ha over the period and just over 500 TEU's per running metre of berth.

The port has only one car terminal berth on the Charl Malan quay with a length of 358 meters and a draft of 12,2m.

There are four break bulk berths with a total berth length of 705 meters and a draft of about 11 meters.

The port has one dry bulk berth on the Dom Pedro jetty with a berth length of 360 meters and a draft of 12,2m.

There is one liquid bulk berth on the breakwater with a berth length of 242 meters and a draft of 9,9m.

Figure 107: **Port Elizabeth Throughput per Metre of Berth**

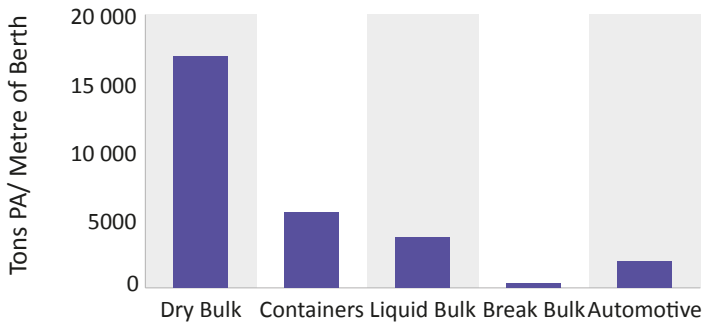
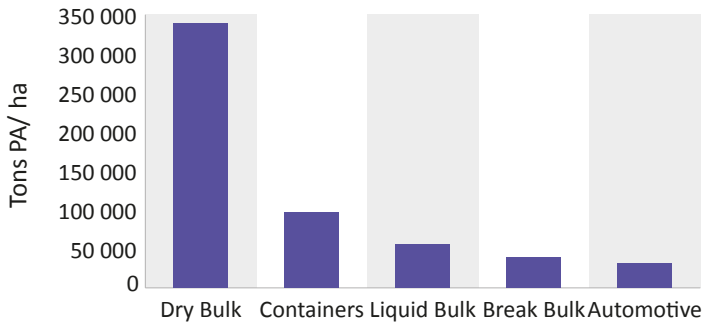


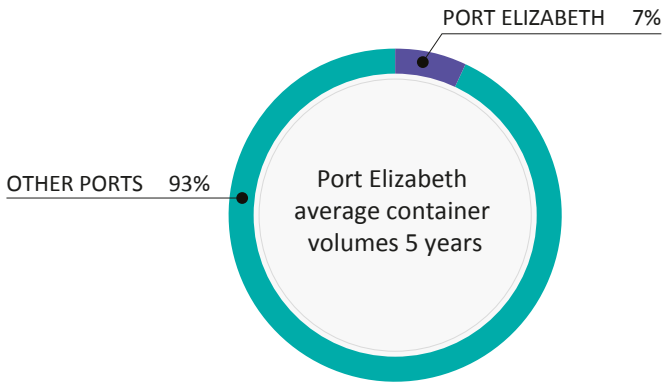
Figure 107b: **Port Elizabeth Throughput**



Container Cargo

The Port of Port Elizabeth experienced a decline in container imports and exports over the review period, with imports declining at an average annual rate of 5%, and exports falling at a rate of 12%. There was a slight increase in transhipment containers which grew at an average annual growth rate of 2% over the review period.

Figure 108: **Average Container Volumes 5 Years**



The Port of Port Elizabeth has a share of 7% of overall container volumes in the South African container sector. The port has handled fewer volumes over the past five years as the shallow draft and the proximity of the nearby deep-water port of Ngqura together with the cascading ship size increases see vessels going elsewhere.

Aerial view of the port of Port Elizabeth.

Imports and exports have decreased, with only transhipment volumes showing a slight increase. The Port's share in total container volumes in the port system has fallen by 2% over the period.

Automotive Cargo

The Port experienced mixed results in automotive volume growth over the review period. There was a substantial shift which saw automotive imports overtake exports.

Over the period, automotive volumes imports grew at an average annual growth rate of 3%, while exports declined at an average annual rate of 11%. This saw the port's share in total automotive volumes in the port system fall by 6% over the period.

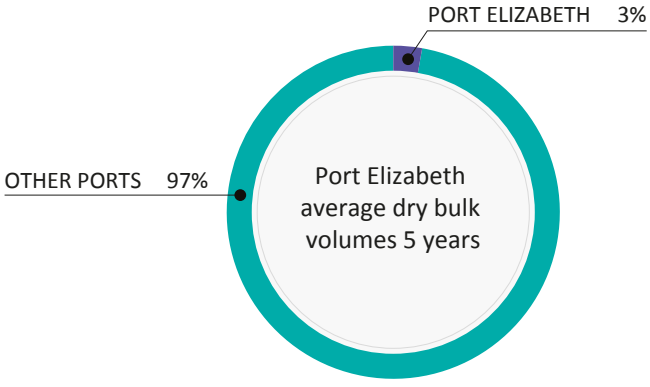
The Port of Port Elizabeth is a vital outlet for automotive cargo in the Eastern Cape. The port has a 19% share of overall automotive volumes in the South African market. The ratio of automotive imports to exports is much closer in Port Elizabeth than in the Port of Durban and East London.

Figure 109: **Port Elizabeth Automotive Volumes**

Dry Bulk Cargo

The Port of Port Elizabeth is ranked fourth in the handling of dry bulk volumes amongst the South African ports with the manganese terminal currently operated in Port Elizabeth. The port has seen a steady increase in dry bulk volumes handled.

Figure 110: **Port Elizabeth Average Dry Bulk Volumes 5 Years**



The Port of Port Elizabeth's share in total dry bulk volumes in the port system has remained constant over the period, but will see very little volumes in future as the manganese terminal is to be moved to the Port of Ngqura.

Figure 111: **Dry Bulk Volumes Port Elizabeth**

Liquid Bulk Cargo

Port Elizabeth saw a significant increase in liquid bulk imports over the review period, which grew at an average annual growth rate of 19%. This increase was not enough to alter the ports share of liquid bulk volumes in the ports system with the Port of Port Elizabeth remaining a small player in the handling of liquid bulk volumes, with only a 0.5% share in liquid bulk volumes amongst the South African ports. As a distributing hub for the Eastern Capes fuel and energy requirements Port Elizabeth has seen significant increase in liquid bulk import volumes whilst there were no liquid bulk exports at the port.

Figure 112: **Port Elizabeth Liquid Bulk Volumes**

Non-Cargo Services

Over the five year period, the Port of Port Elizabeth has had on average 900 vessel calls per annum.

Of the cargo related vessel calls, the majority were container and automotive cargo carrying vessels.

Amongst the non-cargo related vessel calls, fishing vessel calls were the most frequent with an even spread between different vessel calls.

Manganese stacks at the port of Port Elizabeth.

Figure 113: **Port Elizabeth Non-cargo Calls Distribution**

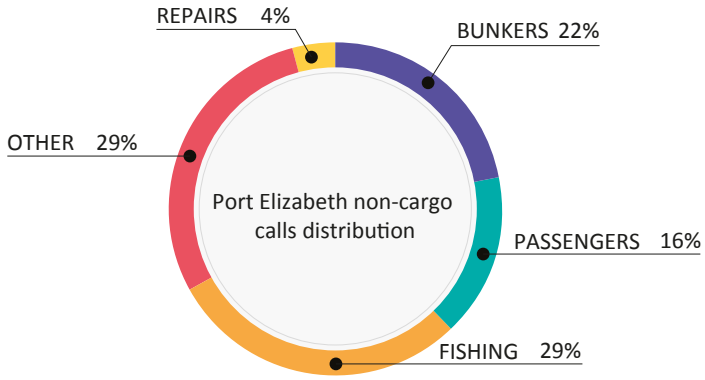
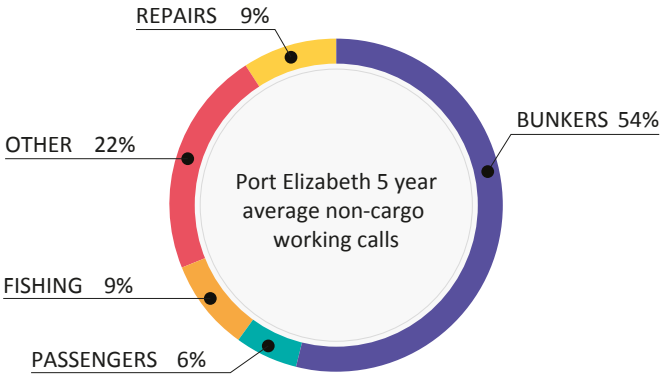


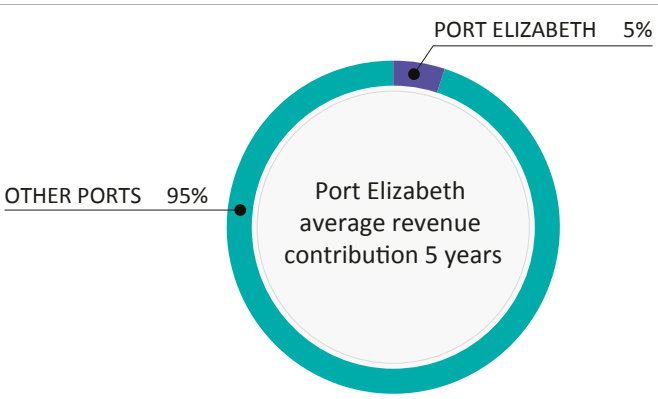
Figure 114: **Port Elizabeth 5 Year Average Non-cargo Working Calls**



Financial Overview

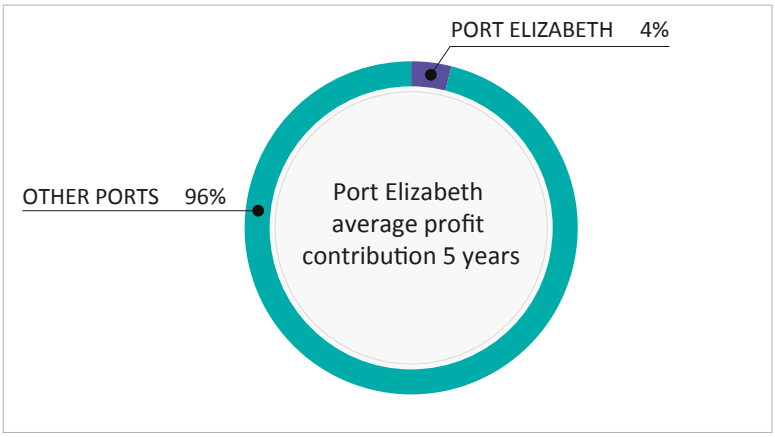
The Port of Port Elizabeth contributed 5% or approximately R497 million to the NPA's overall revenue on an annual basis over the review period and contributed annual average profits of 4%.

Figure 115: **Port Elizabeth Revenue Contribution 5 Years**



There has been a slight decline of -8% in the Port of Port Elizabeth's profits over the review period.

Figure 116: **Port Elizabeth Profit Contribution 5 Years**

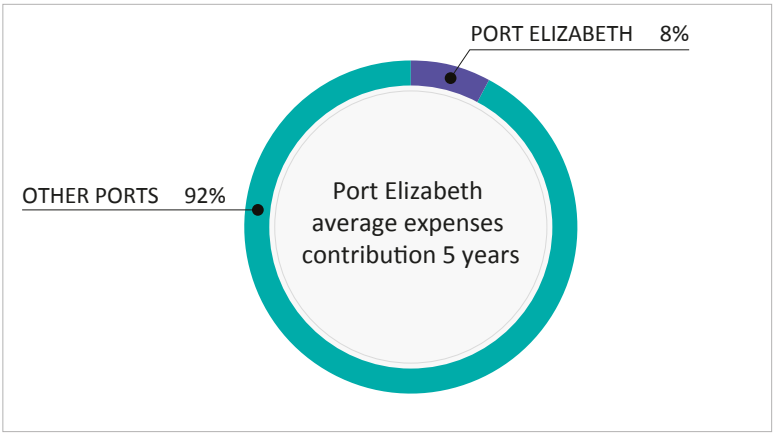


Over the review period, the Port of Port Elizabeth was responsible for 8% of the NPA's operating costs, of which depreciation and personnel costs accounted for the majority of the port's expenses.

In the Port of Port Elizabeth, the NPA employs 327 permanent employees, from 273 at the beginning of the review period.

With regards to capital investment over five years, only 1% of the total Capex in the port system was allocated to the Port of Port Elizabeth.

Figure 117: **Port Elizabeth Expenses Contribution 5 Years**



The Future

The Port of Port Elizabeth is planning to relocate the manganese terminal to the Port of Ngqura. The plan will be to expand the automotive terminal capacity by relocating the automotive to the area vacated by manganese operation and liquid bulk. The seven year PDFP envisaged to provide the following developments in the port:

Decommissioning and rehabilitation of manganese terminal;

Decommissioning and rehabilitation of liquid bulk terminal;

Refurbishment and upgrade of multi-purpose terminal for break bulk operations, cruise liners and ship repair lay-by;

Deepening of container terminal;

Expansion of automotive terminal capacity by relocating the automotive to the area vacated by liquid bulk and manganese operations;

Provision of additional capacity for marine craft repair and expansion of berthing facilities for fishing industries; and

Expansion of leisure and recreational precinct.

Source: National Ports Authority.

Port of Mossel Bay

The Port of Mossel Bay is the smallest commercial harbour in the South African system. It caters for the developing oil industry which began with Mossgas in the late 1980's as well as small but significant fishing industry in the region.

Installed Capacity

The Port of Mossel Bay consists of 5 quay berths and two offshore mooring facilities and has a liquid bulk facility with an installed capacity of 8 mtpa.

Break bulk cargo is moved through three break bulk berths with a berth length of 280 meters and a terminal area of 0,9 hectares.

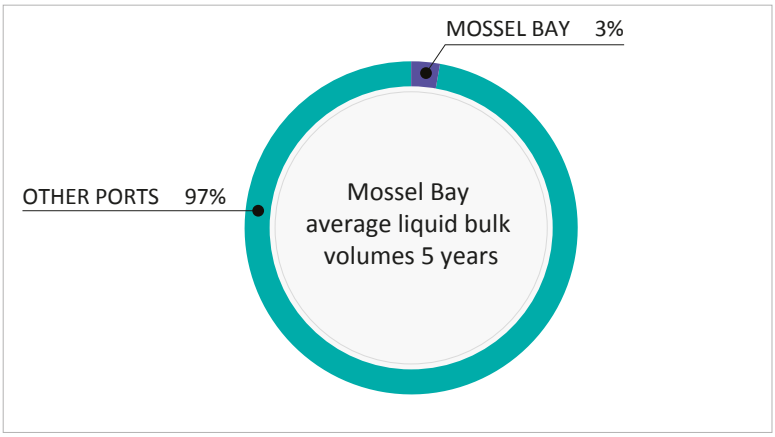
Table 16: **Mossel Bay Installed Capacity**

Cargo Type	Terminal	Berths	Berth Draft
Break Bulk	Quay 4	5	7,0m
Liquid Bulk	CBM/SBM	—	—

Liquid Bulk Cargo

The Port of Mossel Bay experienced strong growth in liquid bulk imports over the review period, with an average annual growth rate of 18%. Liquid bulk exports on the other hand have decreased at an average annual rate of 11% over the period.

Figure 118: Mossel Bay Average Liquid Bulk Volumes 5 Years



Liquid bulk is the main cargo handled at the Port of Mossel Bay and the facility handles 4% of total liquid bulk cargo in the South African ports system. The port has seen a steady increase in liquid bulk volumes over the past five years and has seen its share in total liquid bulk volumes in the port system increased by 2% over the review period

Financial Overview

The Port of Mossel Bay contributed only 0,5% to the NPA's overall revenue or about R93 million per annum over the review period. Despite the low levels of revenue, on average, profits contributed about 1% on an annual basis.

Over the review period, the Port of Mossel Bay was responsible for only 1% of the NPA's operating costs, with depreciation and personnel costs accounting for the majority of the port's expenses. In the Port, the NPA employs 39 permanent employees, up from 24 at the beginning of the review period.

Figure 119: Mossel Bay Average Profit Contribution 5 Years

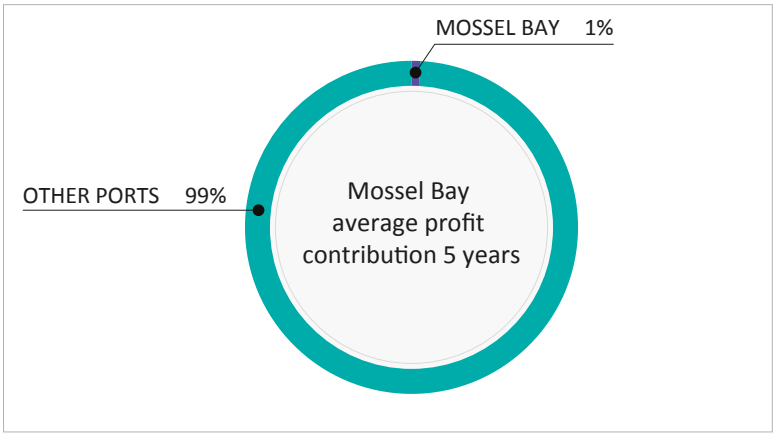


Figure 120: **Mossel Bay Expenses Contribution 5 Years**

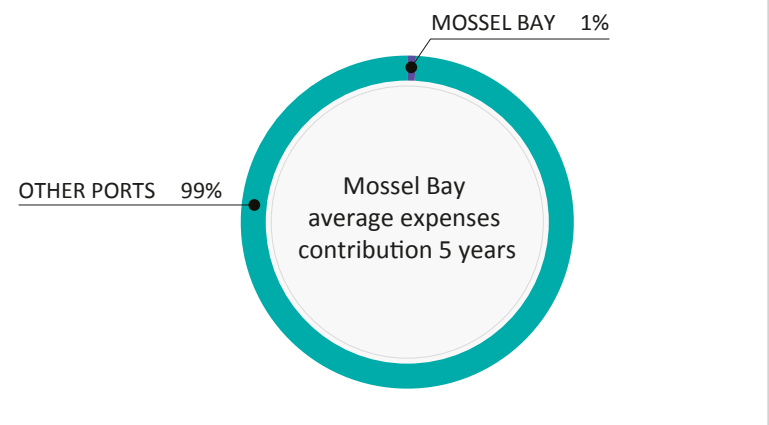
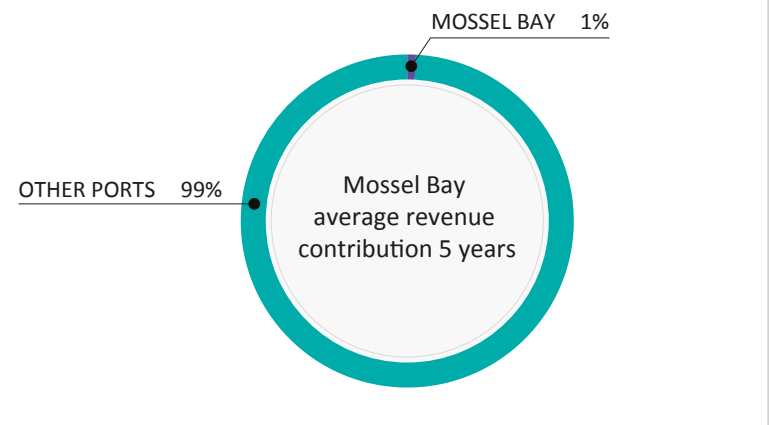


Figure 121: **Mossel Bay Revenue Contribution 5 Years**



The Future

In terms of the seven year port development initiative these are the proposed projects for the port:

Extensions to the existing port administration building to provide space for port staff currently located in different areas of the port;

Replacement of asbestos roof sheets in the port, starting with the long shed on quay 4 and proceeding through all other structure;

Replacement of the old lean to canopy on quay 4 with a new steel structure;

Resurfacing of the existing road serving the recreational area and surfacing of the parking area;

Provision of an alternative radar site for the vessel tracking system of the port;

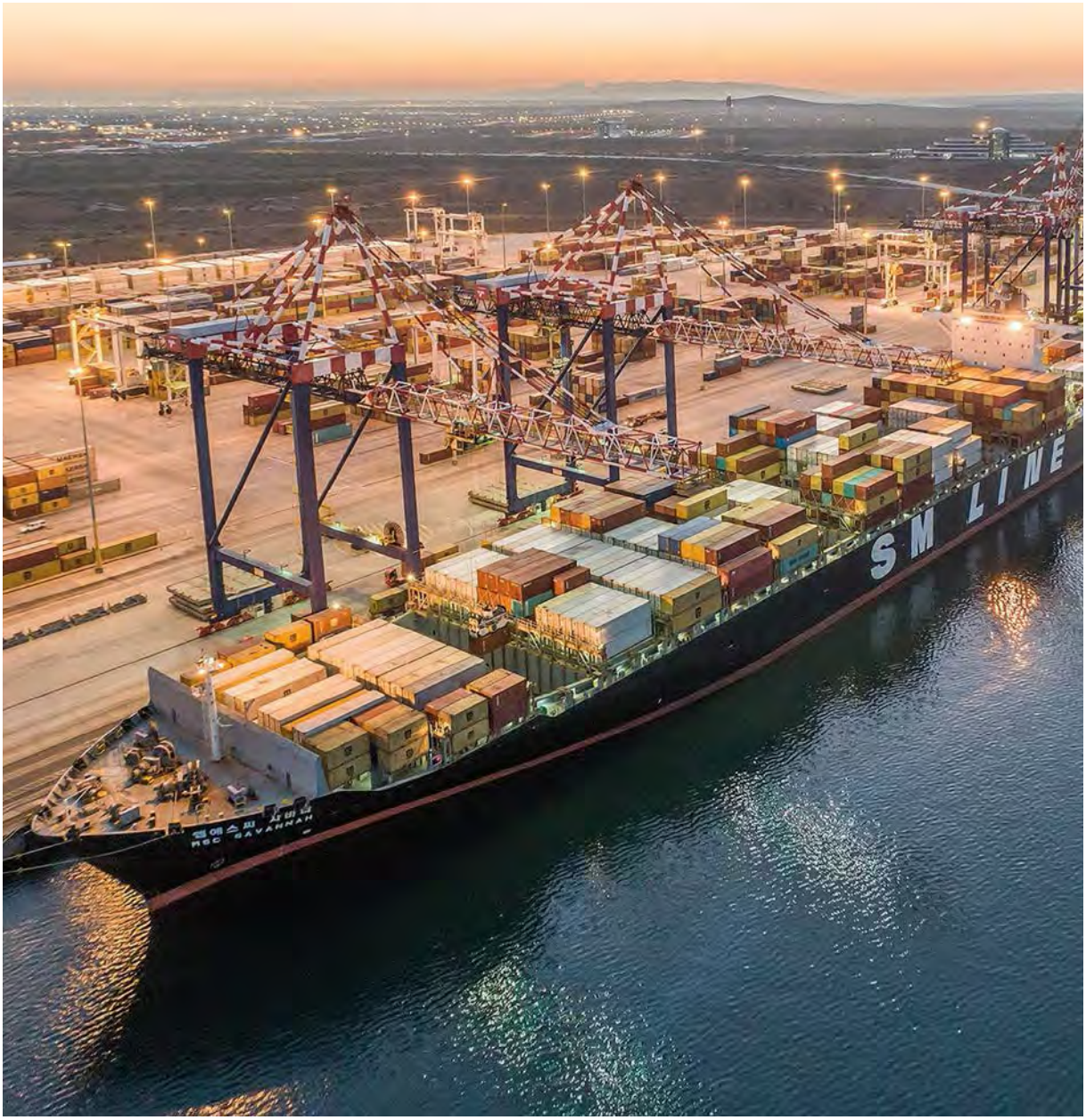
Upgrading and reconstruction of the existing services networks for the port and;

Replacement of the ageing launch.

section 4

Global Pricing Comparator Study (GPCS) 2018/19

Benchmarking South African port administered prices against a sample of international ports



Port of Ngqura welcomes the largest container vessel in July 2018.

The Durban Container Terminal.

section 4

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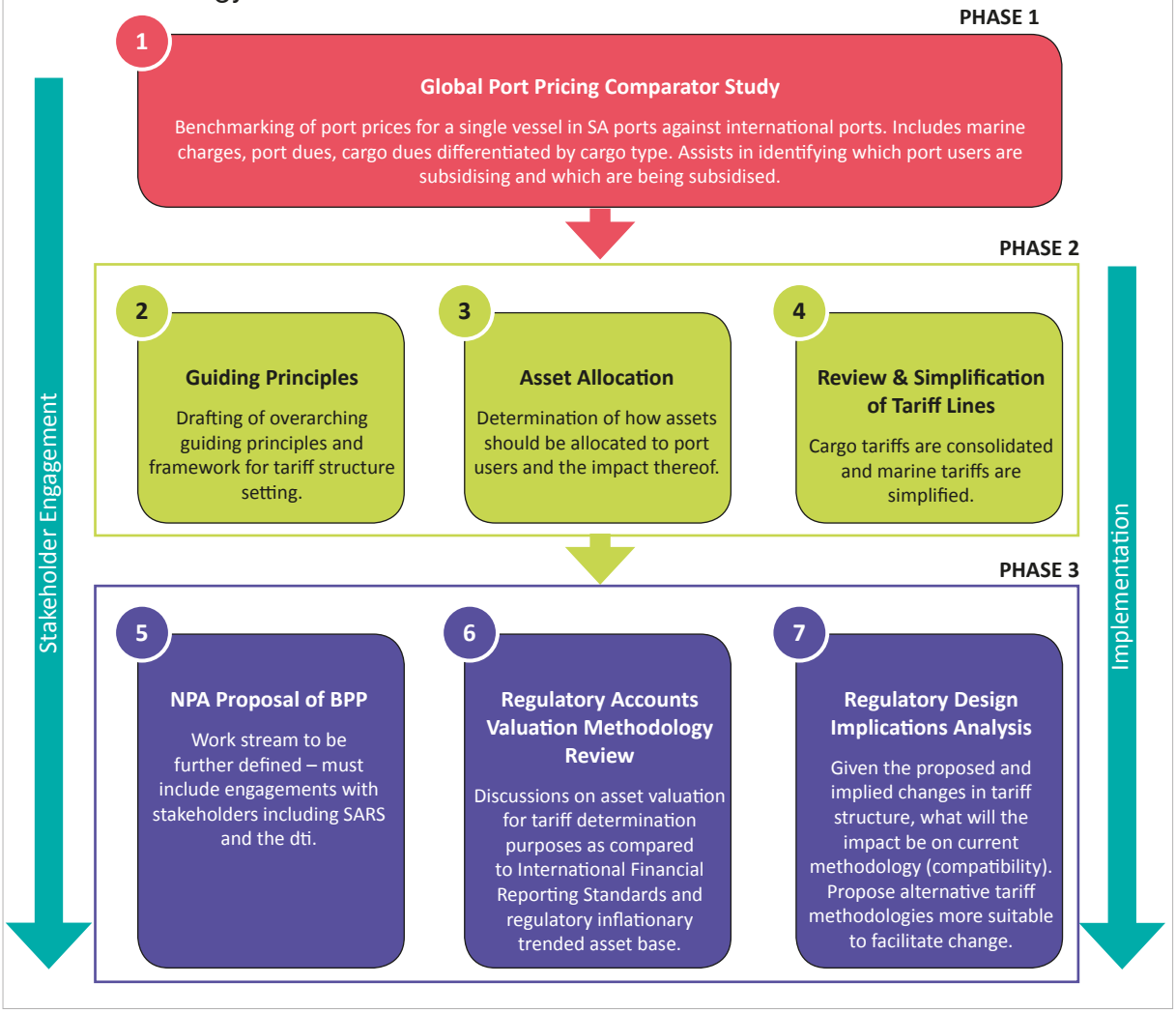
Abstract

The Ports Regulator of South Africa (the Regulator), established by Section 29 of the National Ports Act, 12 of 2005 (the Act), is mandated to, amongst others, "exercise economic regulation of the ports system in line with government's strategic objectives." As an integral part of the development of the regulatory environment, and in turn the ports sector of South Africa (SA), the Regulator has developed and published a Tariff Strategy for the ports system which aims to correct the historic anomalies and imbalances present in the port tariff structure. The Tariff Strategy, published in July 2015, seeks to establish cost-reflective tariffs in the SA port system over ten years and progressively eliminates unfair cross-subsidies. It is important to note that the Global Pricing Comparator Study (GPCS), which the Regulator has been undertaking since 2013 and is deemed phase one of the regulatory process, has played a vital role in guiding the direction of regulation in SA and continues to play an important role of monitoring the impact of the regulatory interventions on the price competitiveness of SA's ports. As set out in the Tariff Strategy, the GPCS and the results thereof, have formed a foundation for phase two of the regulatory process; the Asset Allocation and the Review and Simplification of Tariff Lines (as depicted in Figure 1 below), which has been undertaken and is currently being implemented and reviewed.

Figure 1:
The Tariff Strategy Process



The Global Pricing Comparator Study (GPCS) is in essence a benchmarking of port prices for a single, standardised vessel in a SA port and includes marine charges, port dues, cargo dues (differentiated by cargo type).

This is the seventh update of the GPCS and reviews tariffs for the 2018 period (the first report was published in 2013 reflecting 2012 tariffs), and it continues to confirm the overall results of previous iterations of this study. Furthermore, the impact of regulatory intervention in the port sector is becoming increasingly clear as the overall structure of the South African port pricing system has, on a relative level, changed since the inception of regulation. However, despite large decreases in container cargo dues and export automotive prices (as announced in the Ports Regulator's 2013/14 Record of Decision) as well as relative changes in marine services and dry bulk commodities prices in the following years, imbalances in the system still remain. The largest change is arguably reflected in the lower total port costs facing automotive importers and exporters with only a 34,18% premium over the global sample, down from 246% in 2012; mostly as a result of the equalisation of RORO volume discounts. The results indicate that the price imbalances between SA RORO prices and the global sample average are gradually changing thus increasing SA's competitiveness. Taking into account the impact of sample sizes coupled with the limitations and assumptions incorporated in the methodology, a premium of 34% may easily be considered well within acceptable norms (if measured against the sample average). The GPCS is a useful barometer of SA port pricing competitiveness and serves to note improvements or setbacks annually, as well as provides a measure of the impact of regulatory pricing decisions. In this specific instance, the premium calculated for RORO vehicle cargo dues actually reflect a partially subsidised export tariff, i.e. below the cost reflective rate published in the Tariff Book, moving into subsidised territory in 2019/20.

A RORO vessel being guided out of the port of East London.

Although improvements to the tariff structure in the years preceding the implementation of the Tariff Strategy have been noted (since the first version of this report was completed), cargo owners still face a 215% premium in 2018/19, down from the global sample average in 2017/18. Whilst vessel owners face costs notably below the global average (-26% in 2012/13; -32% in 2013/14; -42% in 2014/15; -44% in 2015/16; -38% in 2016/17; -40% in 2017/18; and -46% in 2018/19), users in container ports face a premium of 198% above the global sample average, up from 178% in the previous year. The report further confirms that bulk commodities are charged total port costs that are much lower than the global sample averages.

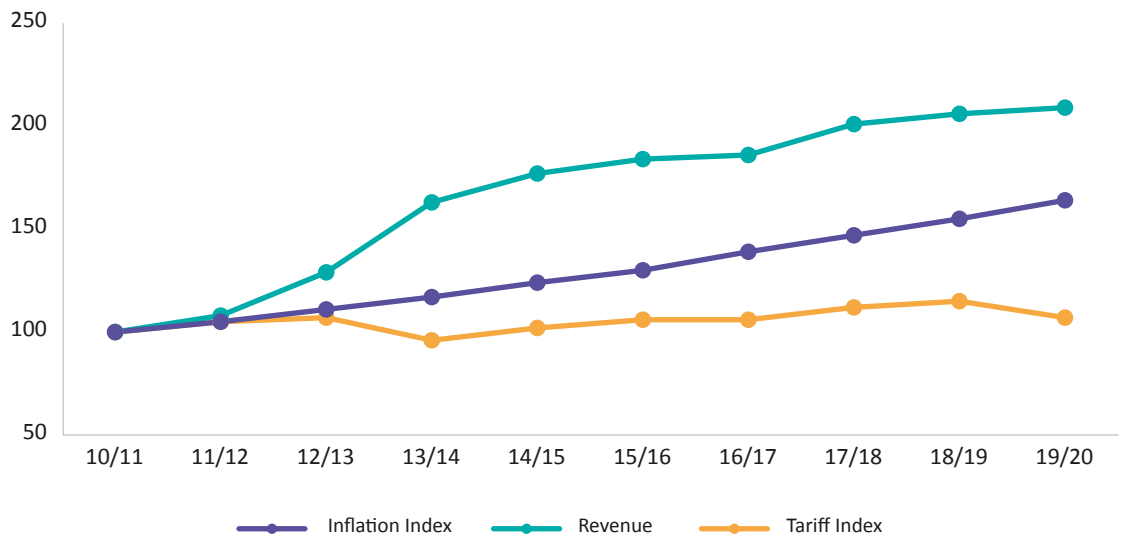
The GPCS, for the first time, reflects the tariff trajectory envisaged by the Tariff Strategy by including a 'tariff strategy tariff' (in essence the current value of a fully implemented Tariff Strategy which is a ten-year process) in the comparisons, not only providing an indication of where tariffs are projected to change to in relation to the rest of the ports used in the sampling, but to enable a clearer view of future port prices facing cargo owners as well.

Terminology and Methodology

The Ports Regulator has, over the past seven years introduced and implemented a tariff methodology that has seen two reviews and various tweaks and corrections on an ongoing basis. The Revenue

Requirement methodology in the form of a Revenue Cap has served the port system well over this period as can be seen in Figure 2, where revenue has far outstripped inflation and tariffs have seen real decreases consistently using 2010/11 as the base year. This does not however tell the whole story and a more nuanced and detailed look is still essential to analysing the progress made in tariff rationalisation in the SA port system.

Figure 2: **Impact of the Tariff Methodology**



Whilst the Tariff Strategy has allowed the Regulator to set out a transparent path towards efficient cost reflective tariffs over a period (included in this report as the 'target' or 'base rates'), a need to compare tariffs not only to a cost reflective "internal" rate, but also an external comparator remains. No single port charge can be accurately compared across the world purely by its tariff, its name, or its category. Port pricing structures differ in the various jurisdictions and may even differ within the same port or port system. Within each port jurisdiction, a particular tariff structure is used largely based on the history of that port system, the country's development, its transport policy, and its economic policy. Therefore, the only meaningful comparisons in such an environment is one which looks at the total costs that are faced by a particular activity which is unitary enough, comprehensive enough, and consistent enough, across all the port jurisdictions at a specific time.

The most appropriate comparator base for port pricing comparisons in our opinion is a standardised vessel call. This vessel call has a standard vessel, a standard port stay duration and a standard cargo profile. This method in itself still contains some inconsistencies such as the differences in efficiency between ports that would ordinarily either lengthen or shorten a port stay depending on the port, which in turn has ramifications for the time related port charges. To prevent too convoluted an approach that requires too many assumptions and adjustments that are in themselves tainted by uncertainty, the vessel calls have been standardised for the purposes of this analysis. This would render some foreign ports slightly more expensive than they would otherwise be. It is however important to note that some

aspects of what contributes to the total makeup of the port cost structure were not included. These include the charges between cargo owners and their service providers (document fees etc.) and taxes on activity other than the specific port related activity, amongst others. This methodology was again followed in the 2018/19 iteration of the study to retain consistency in the results. It must further be noted that the global sample prices used for the study are prices as at 01 April in each year and therefore do not reflect any in-year variations in prices in international ports. SA ports, being regulated, experience price changes once a year effective 01 April, in Rands, and the Dollar rate is reflected in the study for this day, even though this may vary with the exchange rate throughout the year.

It is important to note that while corrections to the data and improvements to the methodology are applied retrospectively as information becomes available, they did not however have a significant impact on the results of the previous study and the broad outcomes still remain. Further, it is important that the magnitude of the deviation from a global sample average must be considered together with the relevant change experienced from year to year. In addition, currency fluctuations impact on the results and as such, using a standard US dollar price in the methodology will capture any exchange rate benefit or loss on the side of the user. The Ports Regulator Global Price Comparator for 01 April 2018 represents an assessment of the global pricing context for ports with respect to a defined list of commodities, and contextualises en port pricing in this global context and compares it to the results of the previous six years.

The study is based on publicly available information and only focuses on the level of charges that are faced by third party service users without 'special' pricing arrangements. Annexure A outlines underlying assumptions in the study related to the unitary vessels used for the different cargo types.

RORO vessel at the Port of East London car terminal.

Exchange Rate Impact

As in the previous report, the continued depreciation in the value of the South African Rand (ZAR) against the US Dollar (USD) has had a significant impact on port pricing in SA. In simple terms, the study reflects a comparison of port prices in USD, i.e. all prices are converted to USD before being compared to each other. An appreciation of the ZAR against the USD, was experienced with a 11,67% appreciation from April 2017 to April 2018 and a 35,32% depreciation from the sample date in 2012 to April 2018, implies a lower USD price as the South African tariff book is published in ZAR. Other ports in the comparator have also realised changes in value against the USD, the ZAR was amongst many currencies to appreciate against the USD in the past year (on 01 April).

However, despite the recent gains by the ZAR, The overall impact of the weakening ZAR effectively renders the South African ports as 'cheaper' in USD over the past seven years despite the Rand strengthening in the past two years. Whilst this provides a clear benefit to shipping lines and export buyers, the South African cargo owner is still required to pay in ZAR and the results may thus underestimate the impact on domestic cargo importers.

Figure 3: **Growth Rates Against USD Over the Period 2012-2018 for Selected Countries (on 01 April)**

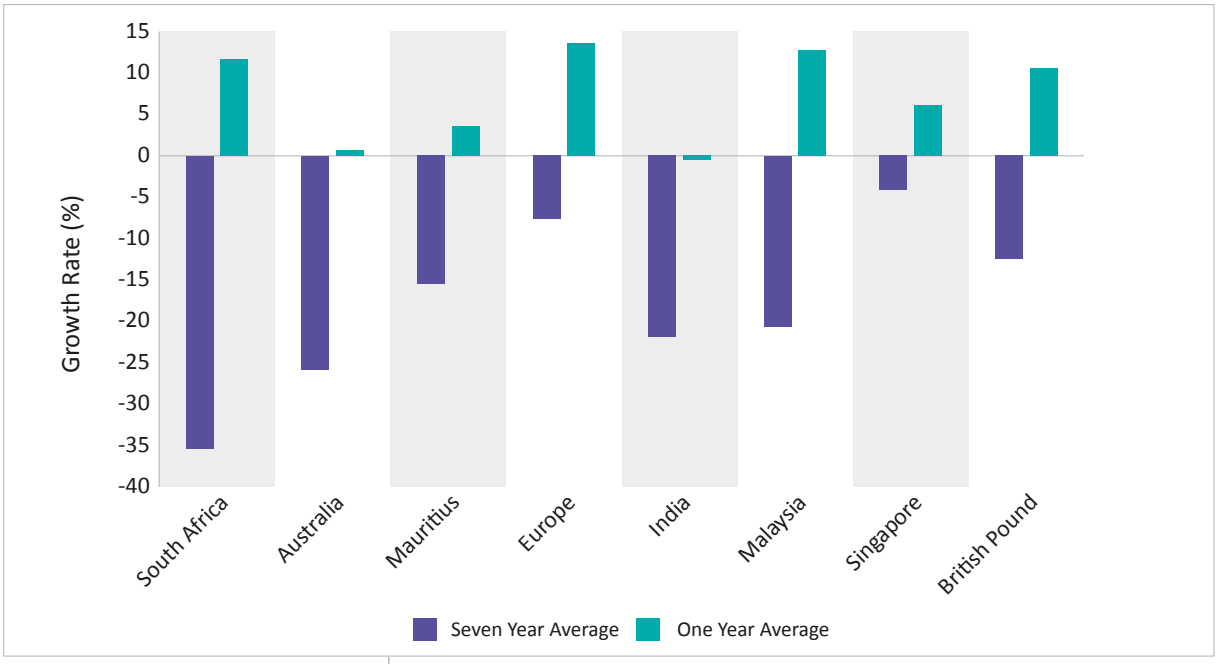
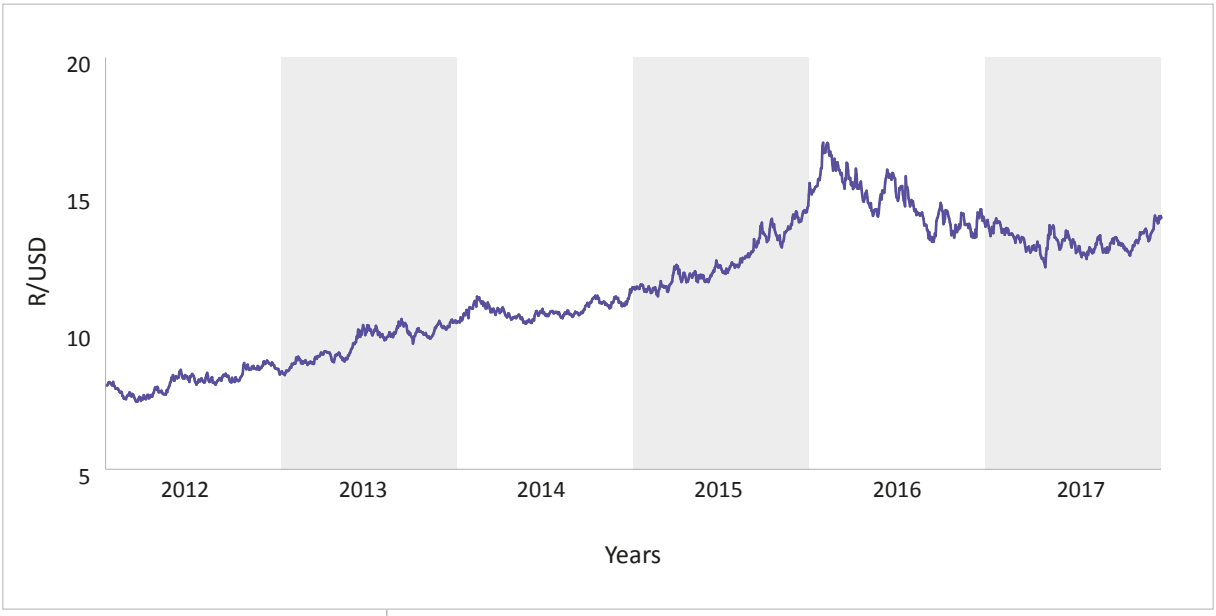


Figure 4: **South African Rand vs. US Dollar**



Although the depreciation of the ZAR has slowed, and some of the losses recouped, the impact of the lower currency will continue to hide the real costs to foreign entities in South African ports. The buffer provided by the depreciated ZAR further provides some shielding to these ship owners as the published Tariff Strategy seeks to rebalance the tariff book that will necessarily see their tariff book line item be adjusted upwards as 'cost and use' reflected tariffs are implemented.

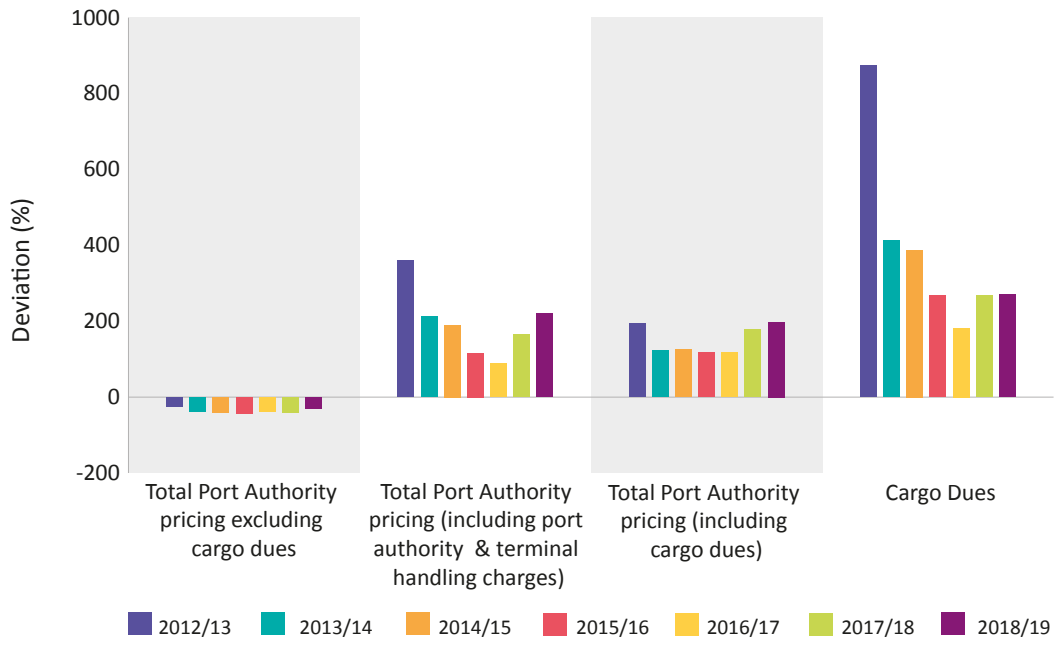
Looking forward, the recent appreciation in the currency against the USD will see a stronger Rand-Dollar exchange rate reflected in the next iteration of the report, resulting in a slightly weaker tariff position in the global sample for shipping lines (all else being equal).

Decreasing Port Costs on Containers

The results of this study, similar to the results of previous versions of this study, indicate that containers are still significantly more expensive than the global sample average. However, this isn't applicable to foreign cargo owners transhipping through South African ports with cargo dues at a discount of 31% to the sample average, mainly due to changes in relative prices as well as the exchange rate impact. In total, container costs including terminal handling charges are still 221% above the sample global average, up from the 166% recorded in last year's report.

Figure 5 reflects that cargo owners, through cargo dues payable, faced a premium of 271% in 2018/19 compared to a premium of 874% to the global sample average in 2012/13. The recalculated number for 2013/14 (all historical data is checked and updated on an annual basis, as information becomes available) resulted in a recorded premium to the global sample average of 13% and 388% in 2014/15. While vessel owners face costs below the global sample average (-26% in 2012/13, -37,75% in 2013/14, -42% in 2014/15, -44% in 2015/16, -38% in 2016/17, -40% in 2017/18 and -31% this year), the total NPA costs in container terminals is still considered high at 198% above the global sample average.

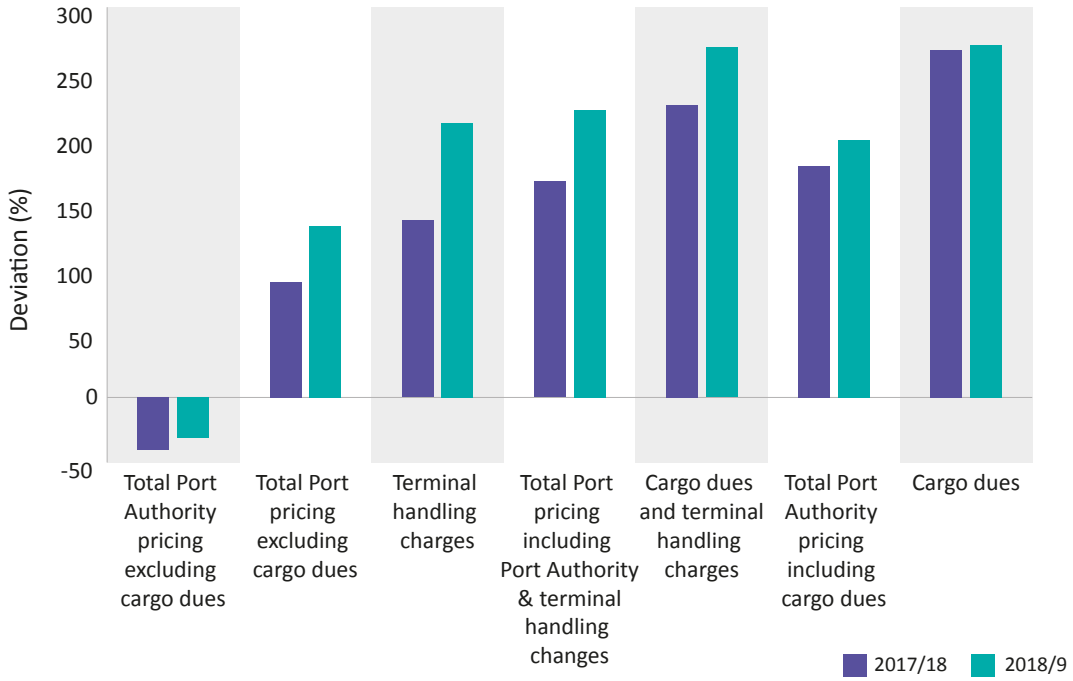
Figure 5: South African Container Port Costs (as Deviation from the Sample Global Average)



If terminal handling charges are to be taken into account, total port costs (including terminal handling charges for container owners) go down from 360% above the global sample average in 2012/13 to 213% in 2013/14; 190% in 2014/15; 116% in 2015/16; 88% in 2016/17; 166% in 2017/18; and finally 221% in 2018/19. Although dramatically lower, these costs still remain significant. Furthermore, the potential cross-subsidisation between manufactured goods (containers and automotives) and bulk commodity exports remains evident as confirmed by the Tariff Strategy and the deviations that exists as per the base rates published in the Regulator's last two ROD's. The impact

of the reduction of 43,3% and 14% in export and import container cargo dues in 2013/14 has moved the South African tariff closer to that of the global norm with no real (inflation adjusted) increase (0%) in cargo dues (nominal of 5.9% in 2014/15). Similar changes in this tariff year further contribute to the slight relative shift towards the global sample average. However, these costs still remain excessive as shown in Figure 7 which indicates that the South African ports (Durban and Cape Town) remain amongst the most expensive in the sample despite the sizable reduction in container cargo dues in recent years.

Figure 6: **Components of Container Port Costs (As Deviation from the Sample Global Average)**

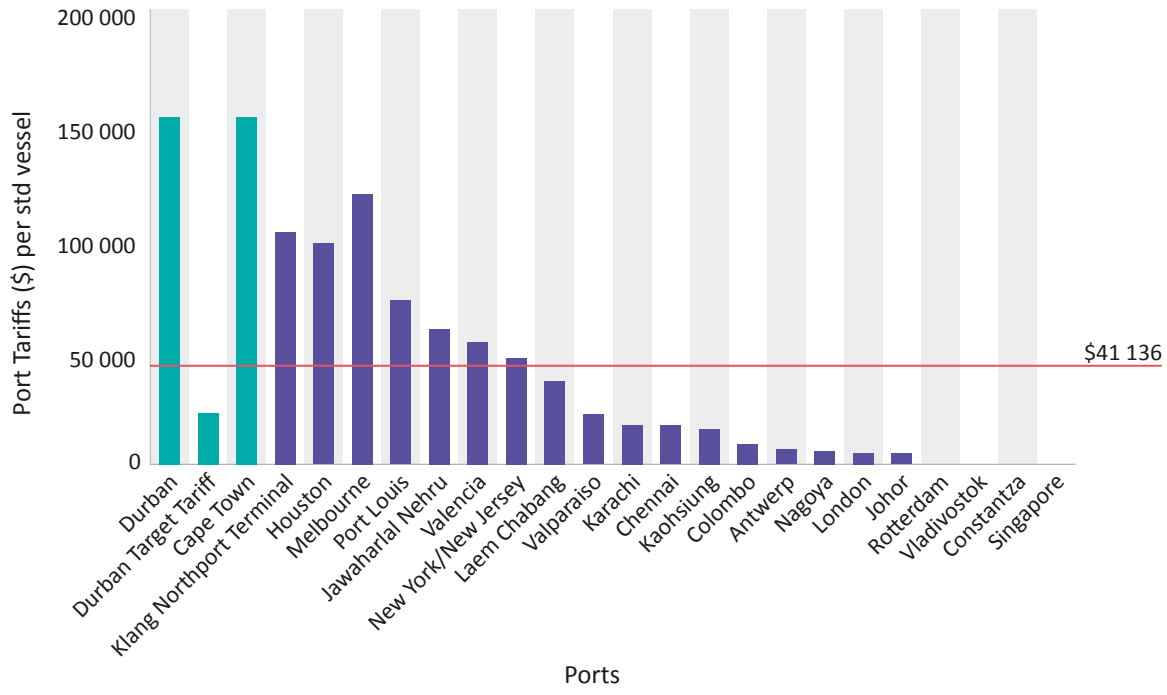


The continued imbalances between container vessel costs (see Figure 6 for SA's position relative to global ports in the sample related to vessel costs), terminal handling charges, and cargo dues remains a concern, although regulatory intervention over recent tariff determinations has significantly reduced the imbalances in the tariff structure. Whilst vessel owners, in addition to the already low costs, received an additional discount from the depreciation of the ZAR over the period, cargo owners had little to benefit in that sense. The inability of the current tariff structure to reflect underlying assets and cost structures of the port system requires a significant shift. Whilst the Regulator has some ability to impact on cargo dues and marine charges and will over the implementation period of the Tariff Strategy continue to address all unfair cross-subsidies (see Figure 7) terminal handling charges remains outside of the Regulator's mandate as these are not specific National Ports Authority charges.

Figure 7 illustrates the impact of the Tariff Strategy on cargo dues. The full implementation of the Strategy over the next ten years will result in cargo dues for containers moving towards a cost reflective price relative to the South African market.

Whether this cost reflective price is above or below the global average is coincidental as all ports around the world have different costs for

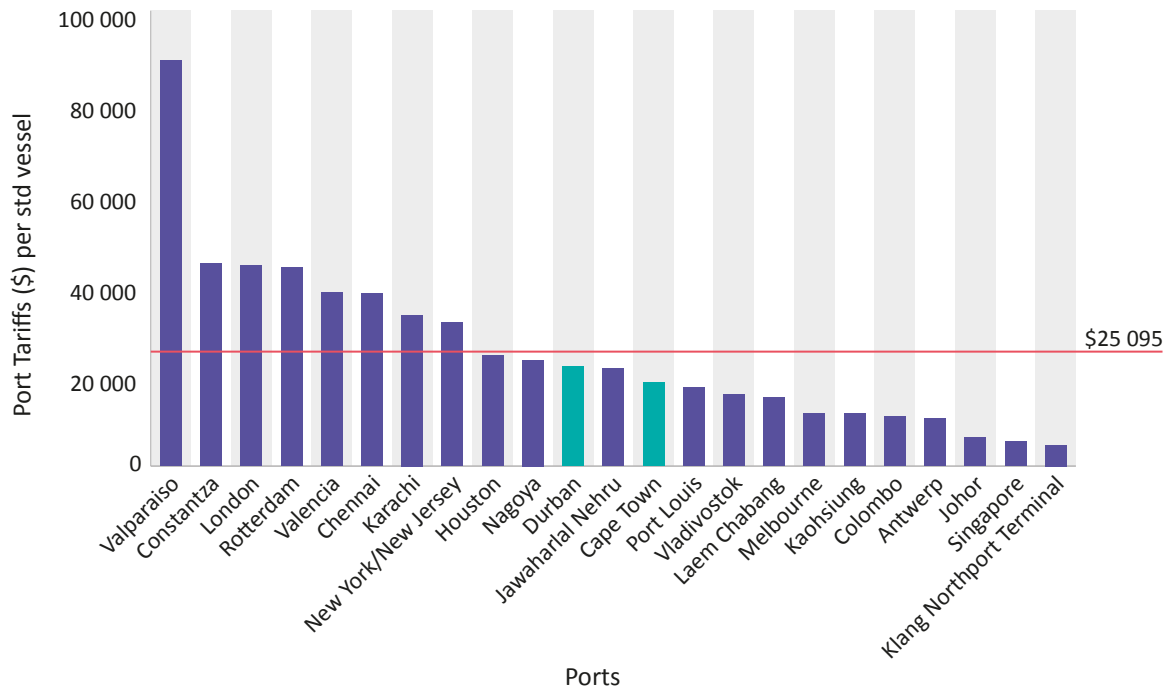
Figure 7: **Container Cargo Dues: USD per Standardised Vessel**



providing a particular service. Where the global average is useful as a benchmark, it is useful in monitoring the expected trajectory of tariffs for South African ports over time.

Container cargo dues for 2018 are currently 271% above the global average which has come up from 267% in 2017/18, indicating an

Figure 8: **Container Vessel Costs: USD per Standardised Vessel**



upward trajectory in tariffs. At full implementation of the Tariff Strategy, container cargo dues will be approximately 43% below the global average, at current asset values.

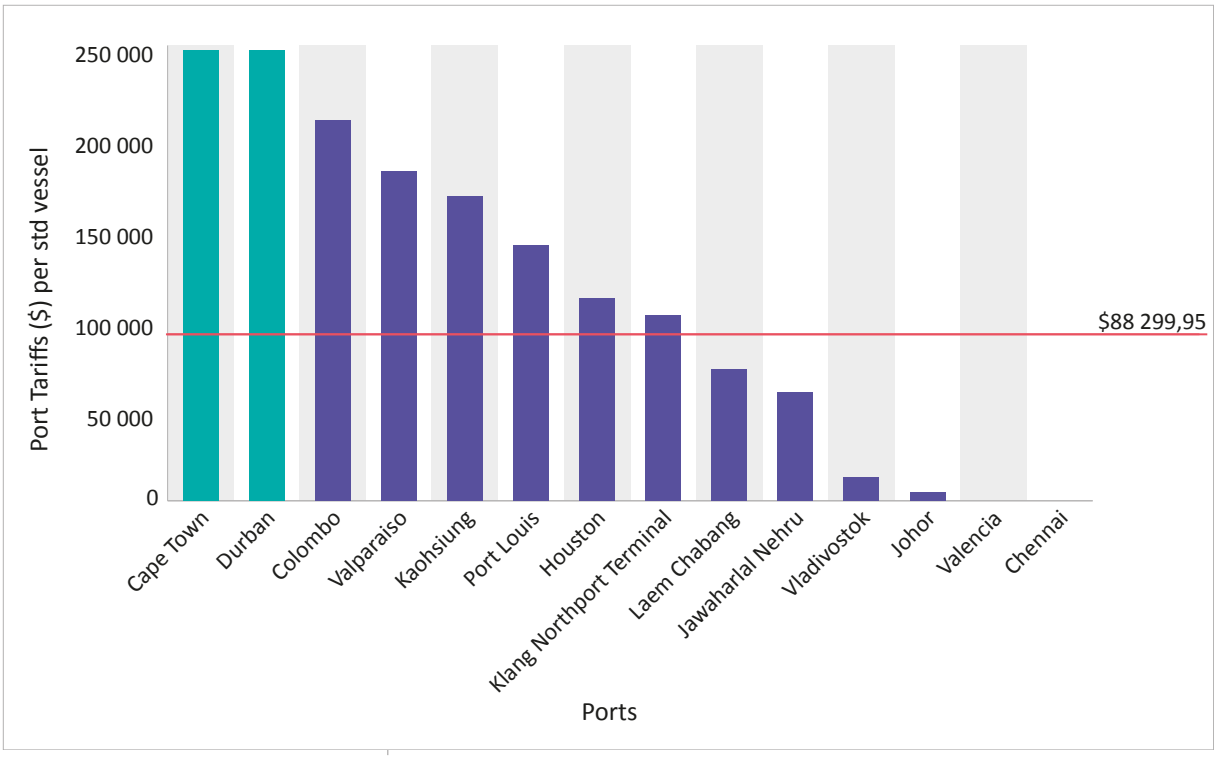
By contrast to persistently high container cargo dues to the SA importer *vs* exporter container vessel costs to shipping lines remains below the global sample as can be seen in Figure 8. The relative strength of the USD *vs* the ZAR has played a part in the reduced SA vessel costs compared to the global sample, in particular with the developed countries, resulting in an effective windfall for foreign owned ships paying in USD for services provided in South African ports.

Terminal Handling Charges (Container Terminals)

The appreciation of the ZAR, compared to currencies belonging to most developing countries over the course of the past year, resulted in the USD cost in terms of port tariffs lowering for other ports in the sample; this includes terminal handling charges, cargo dues, and container handling charges.

Cargo owners are usually required to pay their tariffs in ZAR, however, at an average in excess of $274 422, container handling charges (per unitary sample vessel) in SA remains more expensive than that of the global sample average. On a twenty-foot equivalent unit (TEU) basis, South African terminal handling charges for containers are 211% above that of the global sample average in the Port of Durban. Efficiency levels in container handling remain a concern, but are an area of focus for the current implementation of the Weighted Efficiency Gains from Operations (WEGO) that incentivises or penalises the NPA based on operational efficiencies starting in 2018/19. The final WEGO KPI's were published towards the end of the 2017/18 tariff year and operational

Figure 9: Terminal Handling Charges by Port: USD per Standardised Vessel



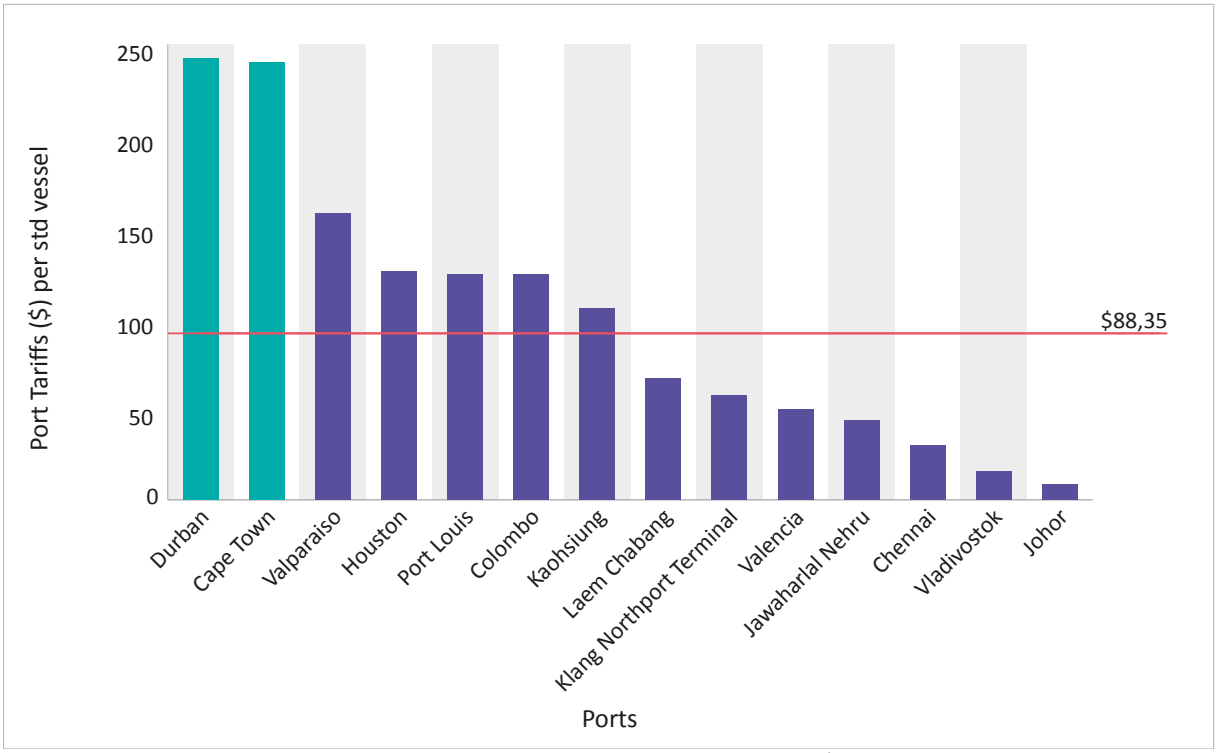
efficiency improvements should in part at least offset the expected 'dollar losses' facing shipping lines due to the strengthening South African Rand.

The data clearly indicates that South African cargo owners face significantly higher costs than that of the sample average, despite the shielding of the USD effect in this report. With the bulk of SA's manufactured goods arguably exported through containers, high costs are clearly contradictory to current industrial policy which aims to incentivise value addition, broadening of the manufacturing base, as well as increasing manufactured exports.

Whilst tariffs for marine services remain below the global sample average (as depicted in Figure 6: Total Port Authority pricing excluding cargo dues) with container vessels facing costs approximately 31% below the global sample average, terminal handling charges together with cargo dues significantly contribute to above average overall prices.

Figure 10 illustrates the below average costs faced by a container vessel in a South African port; this is with a comparison of the Port of Durban where terminal handling charges (THC) have been included and recorded a decrease in the average from $97 to $88 per TEU and an increase from $220 to $242 per TEU for the Port of Durban between years 2012/13–2018/19 due to above inflation increases in THC's.

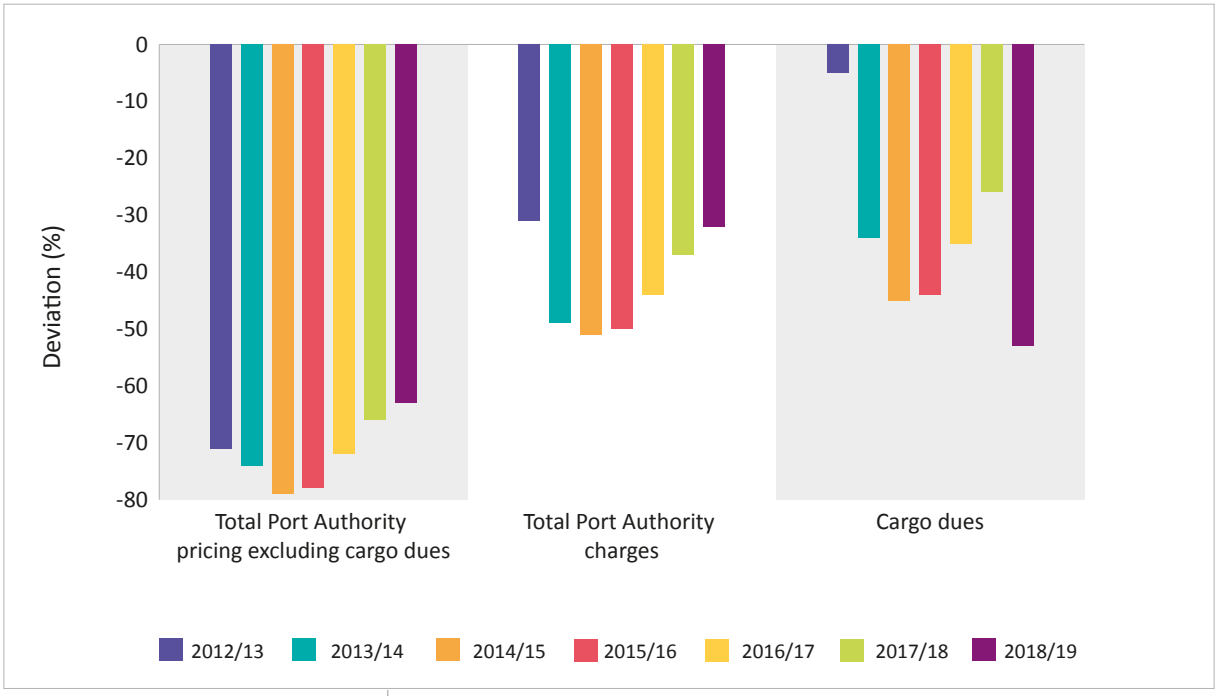
Figure 10: **Total Port Costs Including Terminal Handling Charges per TEU**



Port Costs on Dry Bulk Commodities Remain Lower than the Global Sample Averages

Although bulk commodities are faced with lower than global average total port costs, they have moved slightly closer to the global average for two reasons. Firstly, this is a result of lower port prices in some of the commodity exporting countries, and secondly due to commodity exporters experiencing currency depreciations in general over the last year, in part due to the global pressure on commodity prices, the dollar prices have moved lower. For example, the Australian dollar has depreciated 25,92% over the last year, following the trend for commodity exporting currencies. Coal (Richards Bay) and iron ore (Saldanha Bay) were found to have faced total port costs 49% and 31% below the global sample average respectively. The cargo dues faced by cargo owners are 55% and 53% below the global norm for coal and iron ore respectively.

Figure 11: **South African Coal Port Cost (As Deviation from the Sample Global Average)**



The 0% tariff change in 2013/14 for both cargo dues and marine services resulted in a real decline in dry bulk port prices. However, recent years' slightly above-inflation increase for both iron ore and coal cargo dues, as well as for marine charges (7,9% increase in 2017/18), and a lower relative USD based tariff change in the global sample, were not fully offset by the weakened rand with the resultant deviation moving closer to the global sample average. This in turn indicates slightly higher relative price levels in the South African port system.

Cargo dues facing coal owners have moved marginally further relative to the global sample average from a discount of -50,03% in 2012/13; -57,76% in 2013/14; -59,7% in 2014/15; -59,01% in 2015/16; -63,92 in 2016/17; -62,14% in 2017/18; and -55,57% in 2018/19. A similar pattern has emerged in the iron ore sector (see Figure 14) with iron ore cargo dues moving to -53,27% below the sample global average and total port costs for iron ore from -31,85% in 2012/13 to -31,57% in 2018/19.

Figure 12: **Coal Cargo Dues and the Expected Impact of the Implementation of the Tariff Strategy (01 April 2018)**

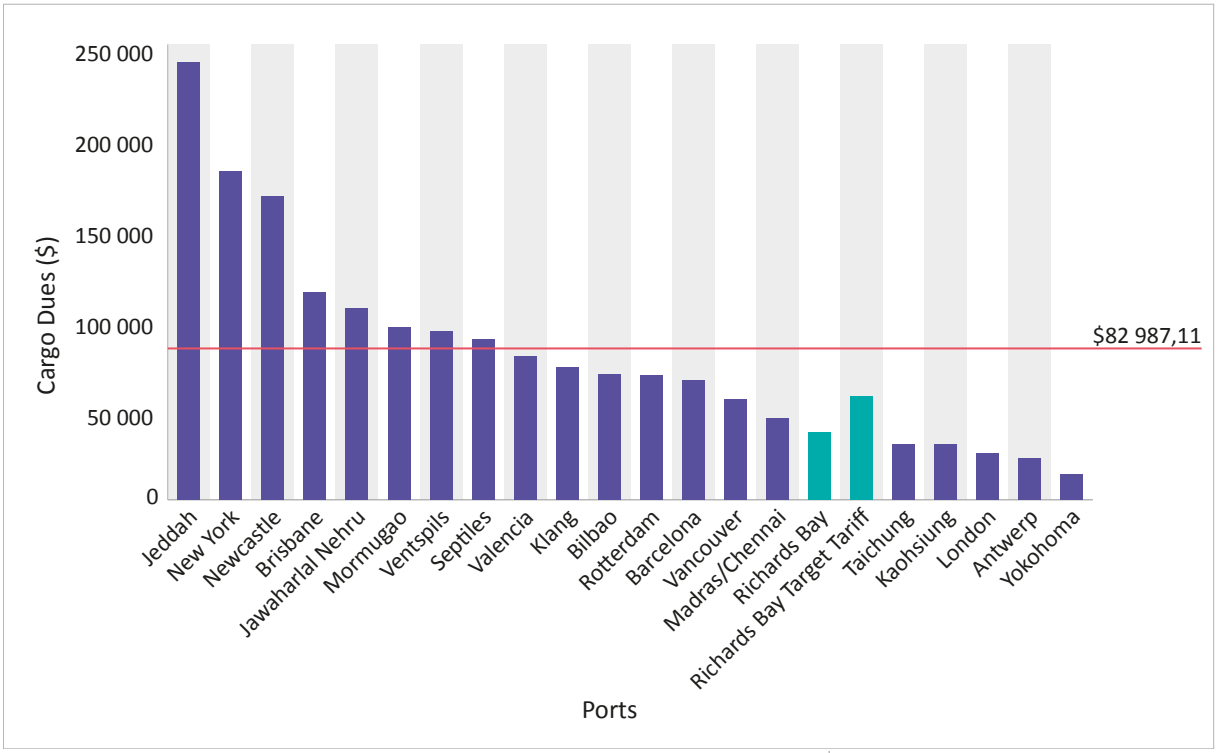


Figure 12 reflects the expected impact of the Tariff Strategy on coal cargo dues after full implementation of the Tariff Strategy over the next ten years which will result in cargo dues for coal being charged at the cost reflective price.

Specifically, coal cargo dues for 2018 have been recorded as being 55% below the global average, this is slightly higher than the 62% below average recorded in 2017/18, and in turn indicates a downward trajectory of tariffs. At full implementation of the Tariff Strategy, iron ore cargo dues are to be 46% below the global average.

Figure 13: **Richards Bay Port Tariffs (01 April 2018)**

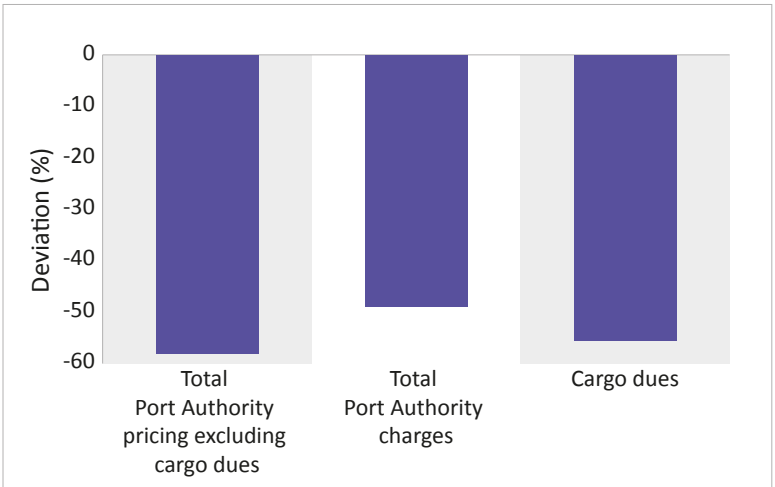
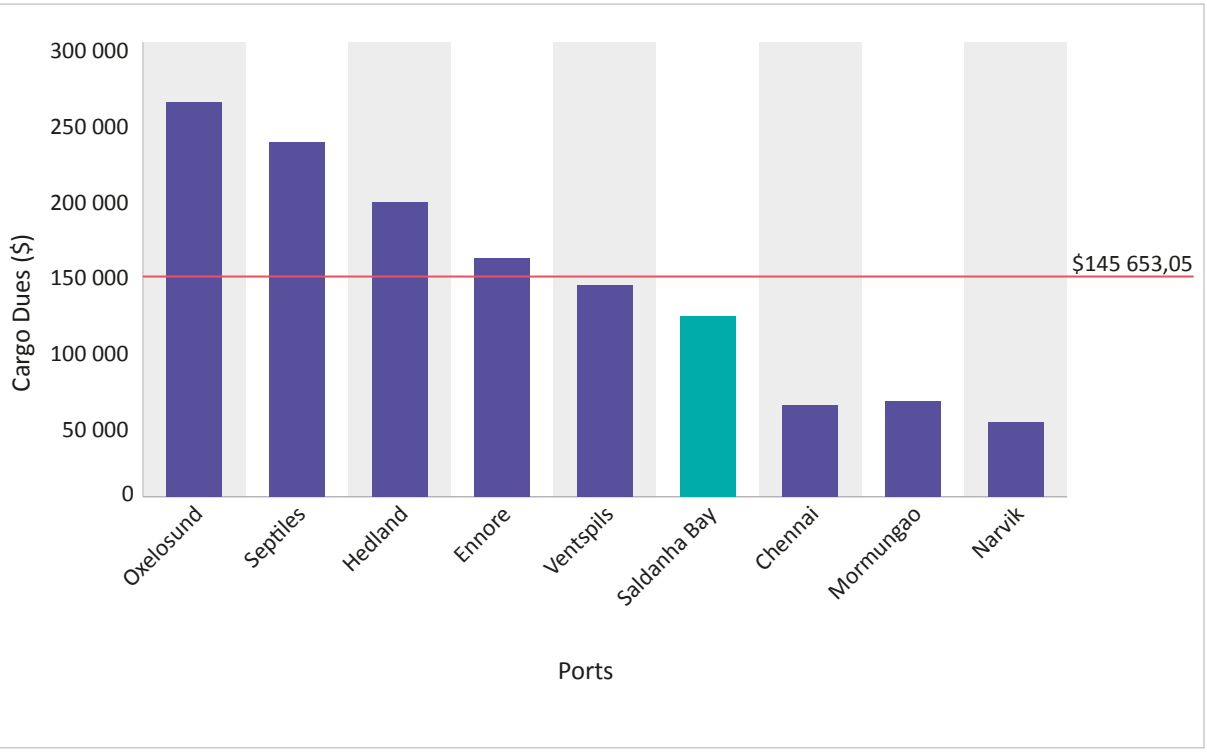
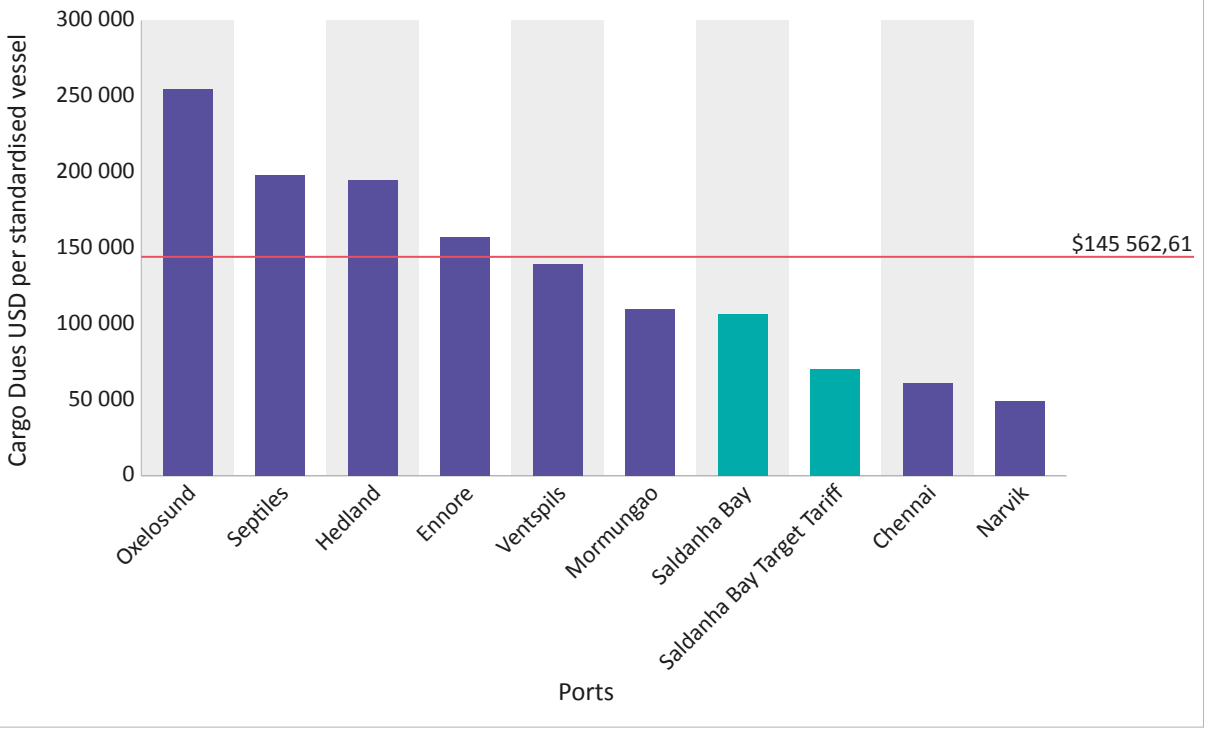


Figure 14: **Iron Ore Cargo Dues per Port per Standard Ship (01 April 2018)**



Iron ore cargo dues have recorded a discount -53% to the global average when being compared to vessel costs discounted at -63%. Whilst both coal and iron ore have again recorded relative differences in the total port pricing structure, it is clear that both vessel costs as well as cargo dues remain well below the global sample average.

Figure 15: **Expected Impact of the Full Implementation of the Tariff Strategy on Iron Ore Cargo Dues (01 April 2018)**



Iron ore cargo dues for 2018 are currently 53% below the global average. This has come down from 59% below the global average in 2015/16, in turn indicating an upward trajectory in tariffs. At full implementation of the Tariff Strategy, coal cargo dues are to be 46% below the global average.

Figure 16: **Saldanha Bay Port Tariffs Premium / Discount to Global Sample (01 April 2018)**

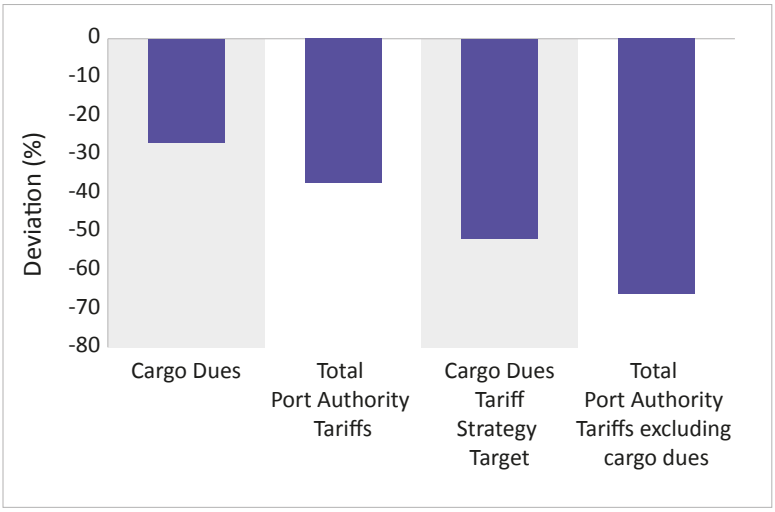
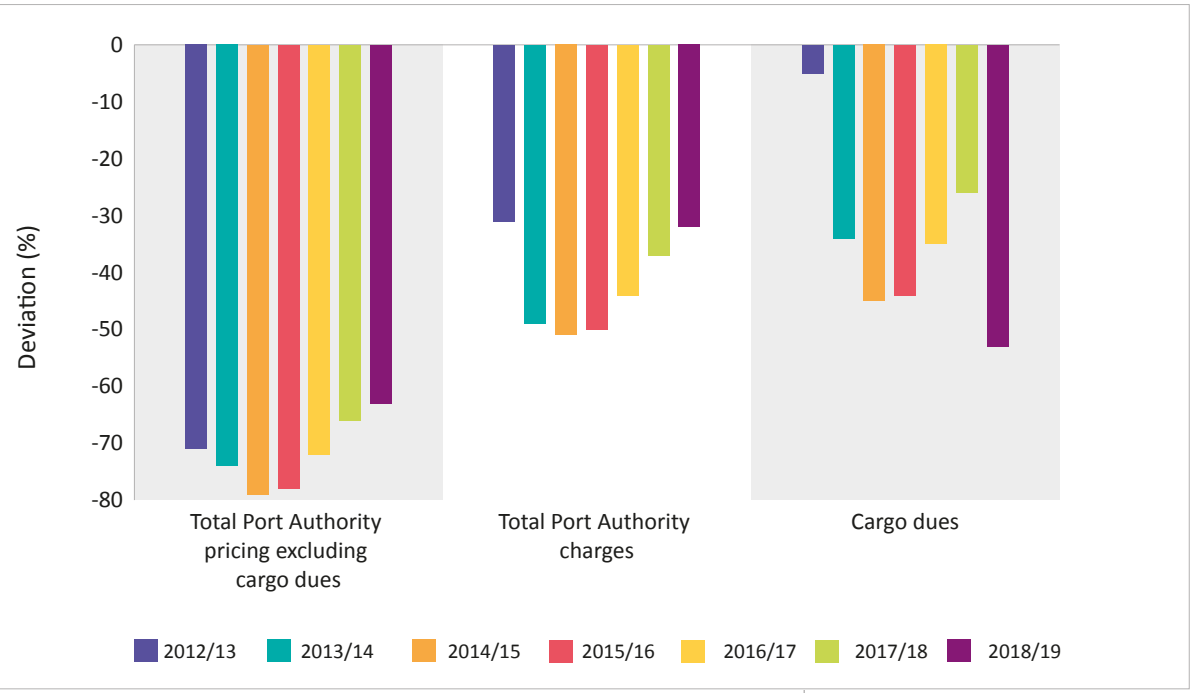


Figure 17: **Iron Ore Port Pricing Components (As Deviation from the Sample Global Average) (01 April 2018)**

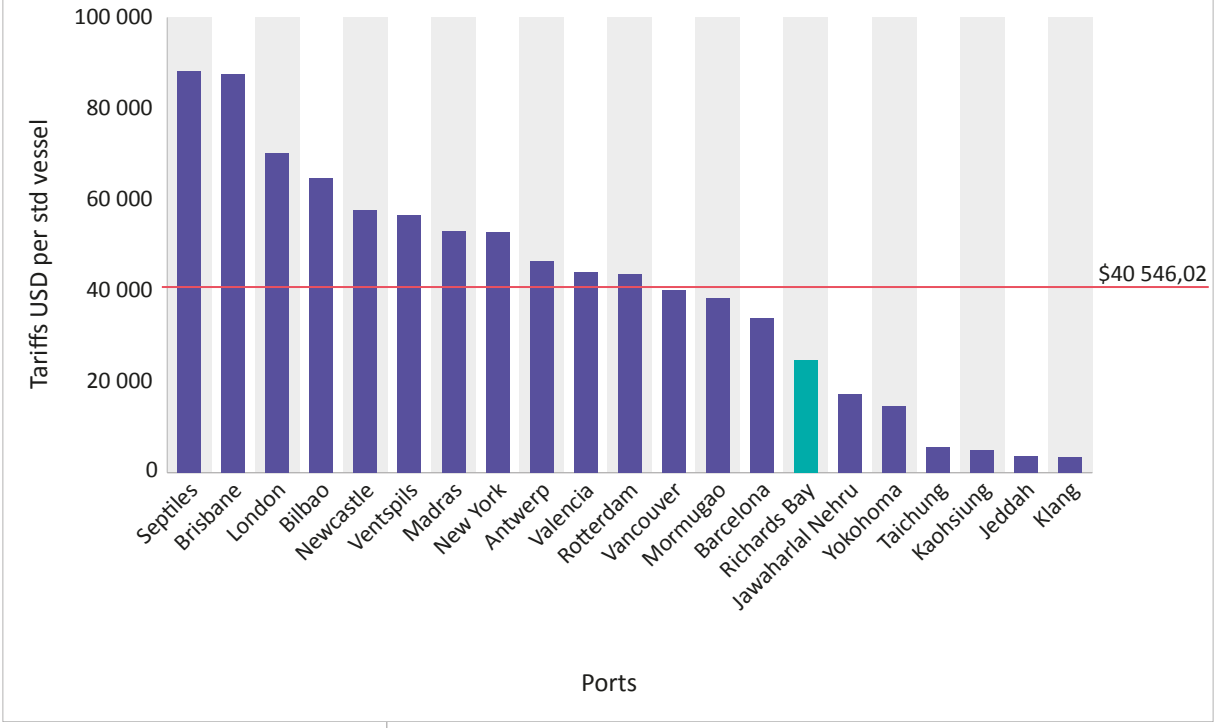


The continued low marine charges faced by bulk cargo owners exacerbate the already low cargo dues on these products. With significant discounts to the global sample averages for pilotage, towage and other port charges, the marine component, supported by the weaker ZAR, remains low and does not reflect the underlying cost structure of the South African ports system, but does indicate significant support through port tariffs for the iron ore mining sector.

A more balanced tariff structure will see a marginal decrease in cargo dues, but significant increases in marine services, and will see shipping costs reflect a more cost reflective level over the longer term. Currently however, the weak ZAR does provide a windfall to the shipping industry when visiting SA ports for this sector.

A similar pattern (see Figure 18) is evident in the Port of Richards Bay with below global sample average costs facing vessel owners. Furthermore, Richards Bay ranks sixteenth out of a total twenty-one ports in the sample when comparing vessel costs and records a relative discount of 58%. Whilst this places SA favourably in terms of global competitiveness, with coal mainly an exported product, some room to increase tariffs whilst not impacting on the competitiveness of the domestic manufacturing sector does exist and will be incrementally addressed with the implementation of the Tariff Strategy.

Figure 18: **Port Costs Facing Coal Vessels: USD per Standardised Vessel (01 April 2018)**



Automotive Prices Improve Further

Automotive cargo owners are facing total Port Authority tariffs slightly below the global sample average. Total NPA cargo dues for the vehicle sector are still 146,9% higher than the global sample average, however, this is down from a high of 743% four years ago. There has been a 21,1% decrease in export cargo dues in 2013/14, and inflation or below inflation related increases in the previous two tariff determinations has resulted in total NPA charges decreasing to 8,15% above the global sample average from 245% in the first year of the study (2012/13). This may be attributed to the exchange rate movements offsetting the slight increase in marine charges and relative movements in sample ports resulting in a higher global sample average, as well as the impact of the removal of the volume discount scheme from the tariff book, resulting in an equalisation of rates at the level previously enjoyed by only the very large manufacturers.

Figure 19: **Automotive Port Costs (01 April 2018)**

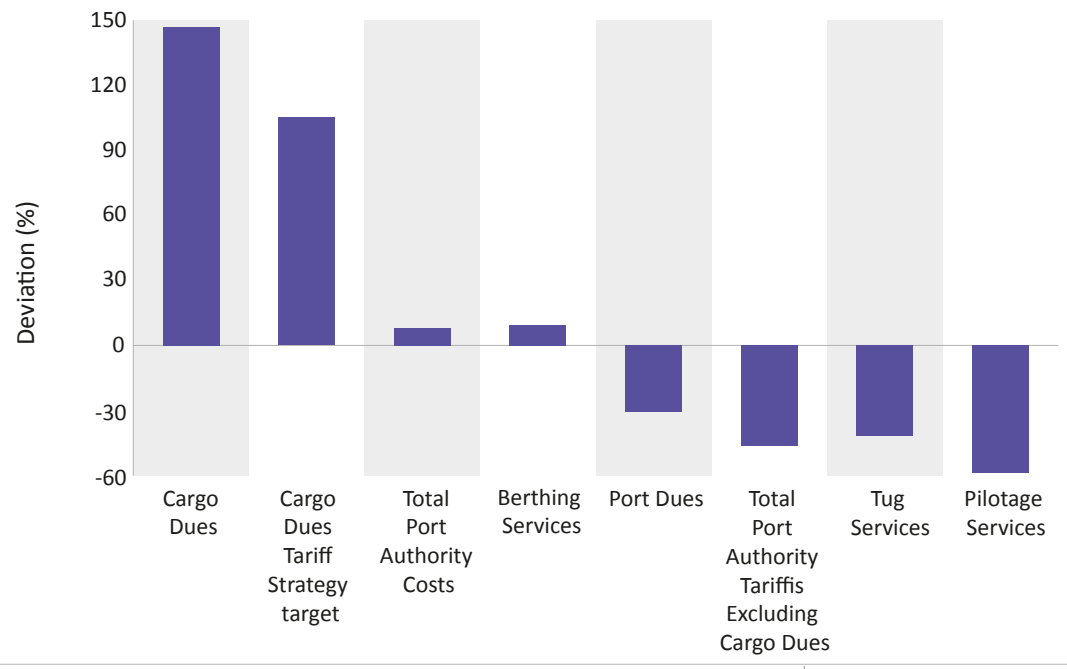
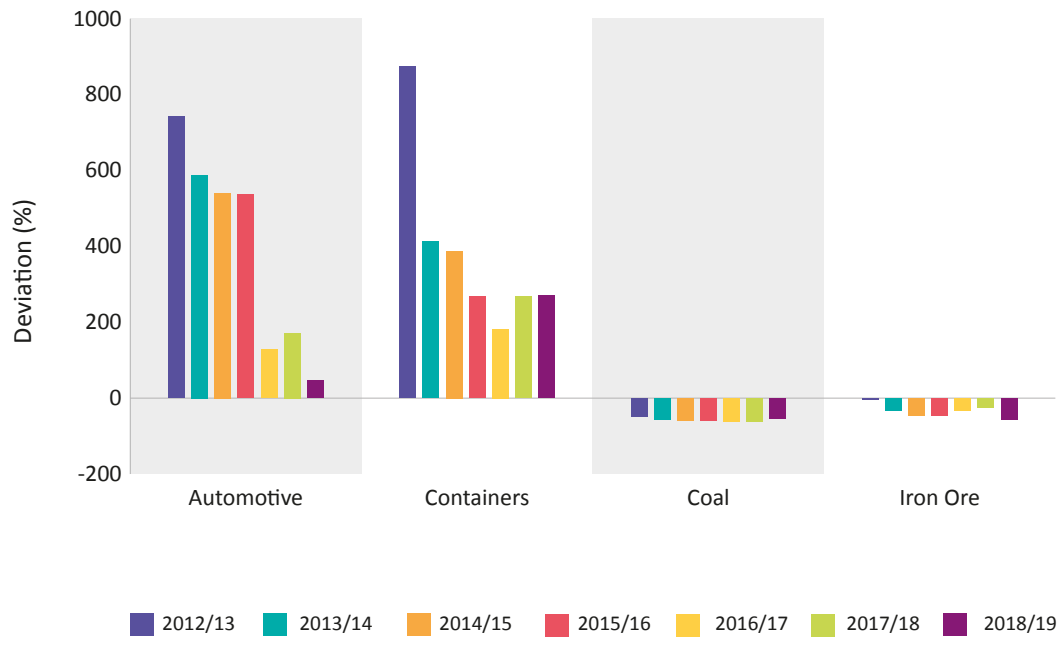


Figure 20: **South African Automotive Port Costs (As Deviation from the Sample Global Average) (01 April 2018)**



Automotive cargo dues for 2018 are currently 146,95% above the global average which has come down from being 537% above the global average in 2015/16, indicating a downward trajectory in tariffs. At full implementation of the Tariff Strategy, automotive cargo dues will be approximately 52% above the global average at today's exchange rates, and if constant sample tariffs are assumed. In reality, under the assumption of rising global prices, if only in nominal terms, the end result will see much lower tariffs.

Figure 21: **The Expected Impact of the Full Implementation on Cargo Dues in the Automotive Sector (01 April 2018)**

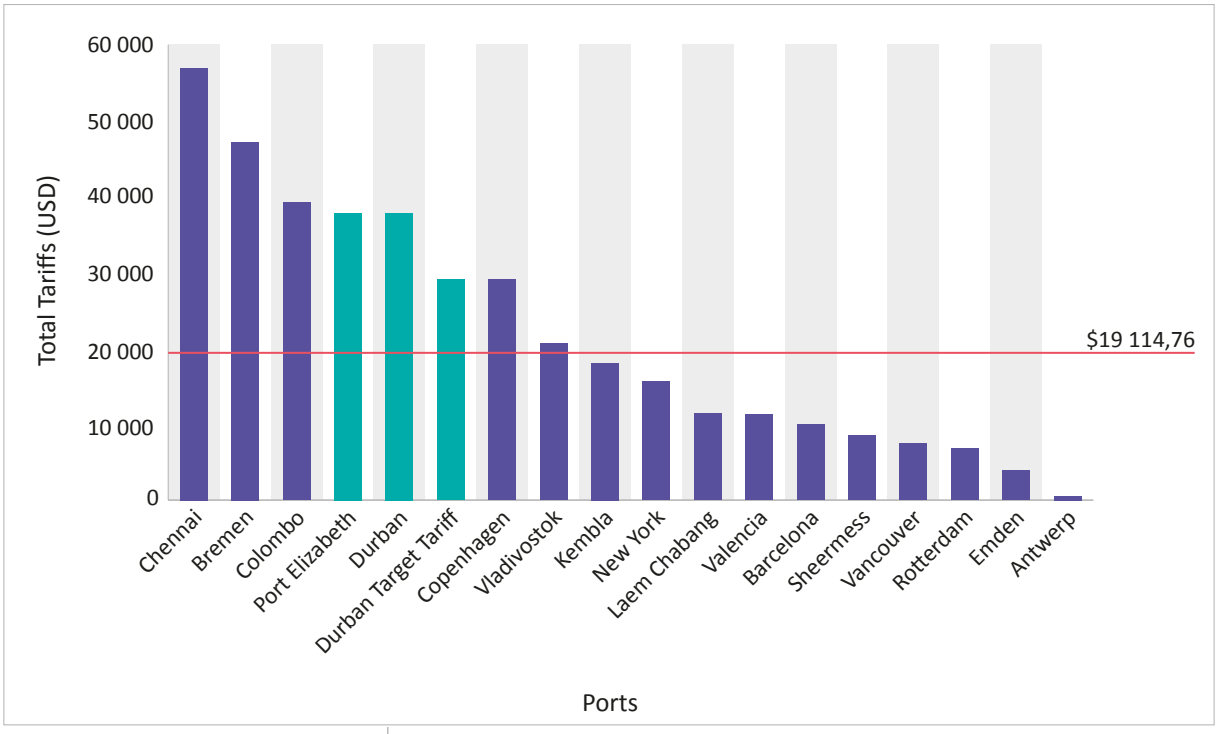
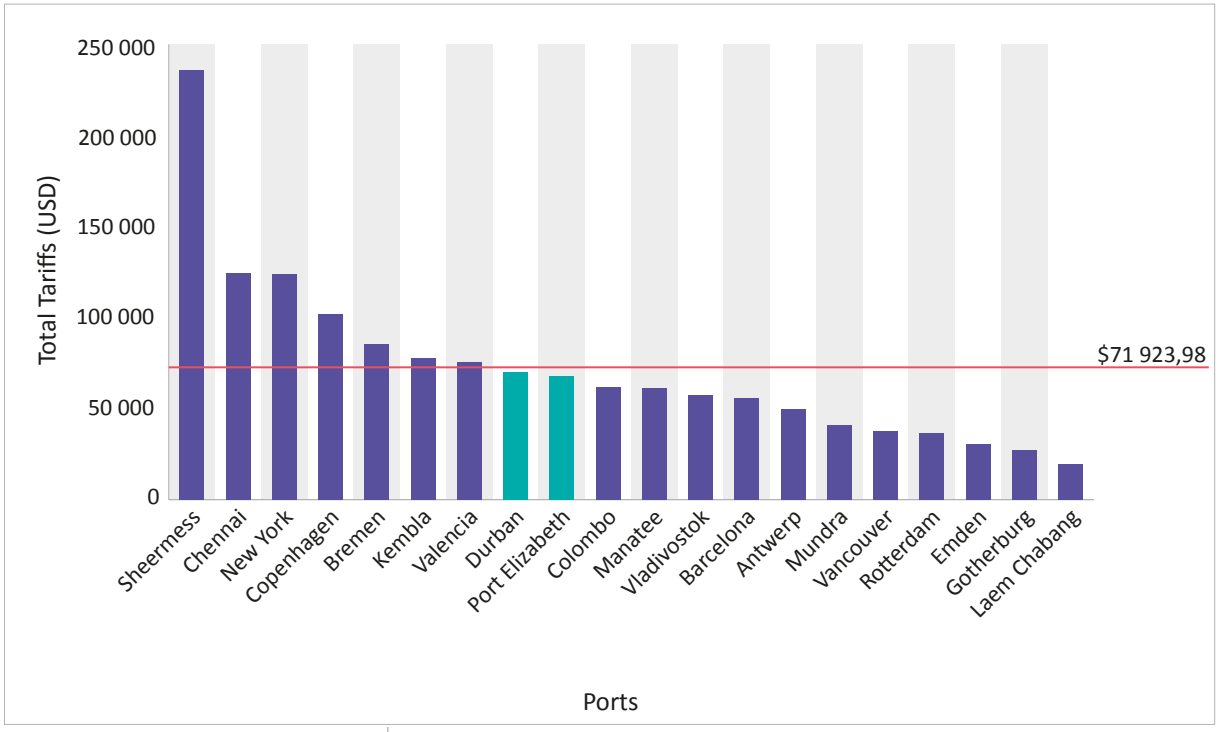


Figure 22: **Total Port Pricing (Automotives) per Port per Standard Vessel (01 April 2018)**



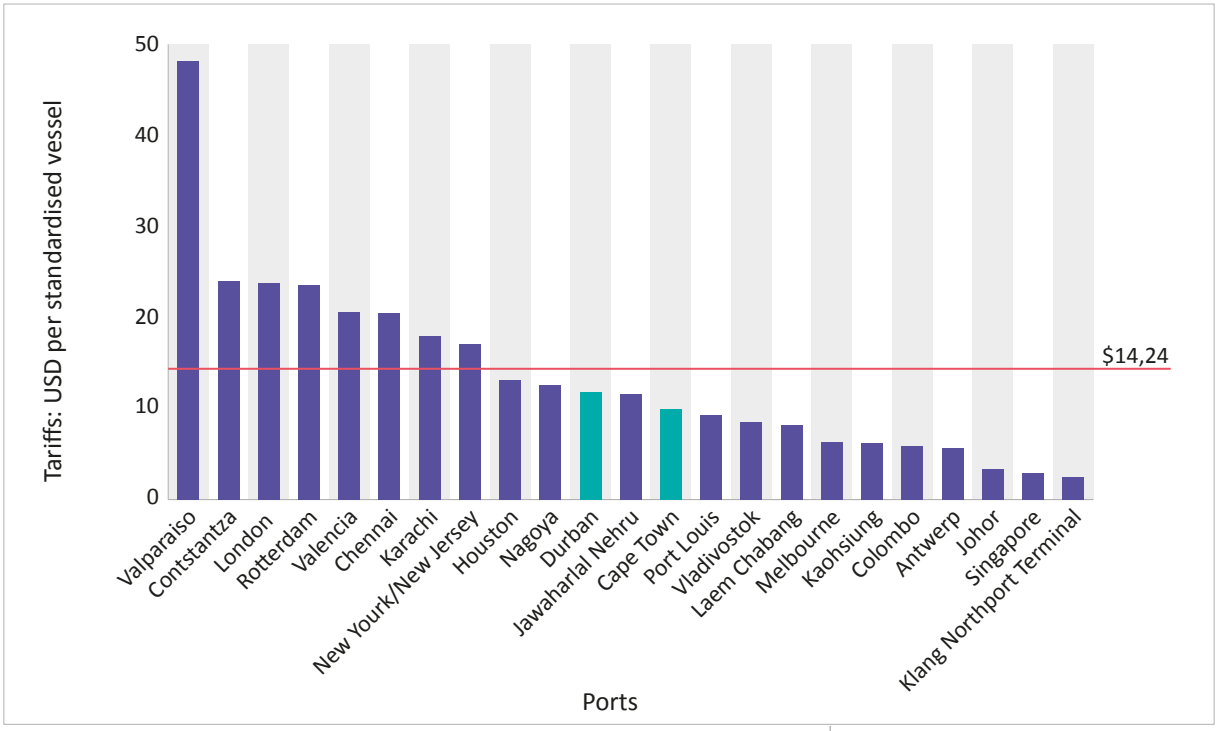
Again, similar to containers, cargo dues on automotives remain higher than the global sample average with total cargo dues on vehicles at a 146% (172% last year; 128% in 2016/17; 537% 2015/16; 541% in 2014/15; 588% in 2013/14; and 743% in 2012/13) premium to the global sample average. However, as highlighted in the previous reports, the extension of the NPA's Automotive Industry Volume Discount (AIVD) of 60% to all importers and exporters of vehicles

has resulted in cargo dues reducing significantly, especially for smaller OEM's. Specifically, the extension (or equalisation) of the AIVD maximum discount to all importers and exporters meant that the AIVD programme has come to an end and the data shows that after the equalisation of the AIVD at the 60% level, the cargo dues faced by South African exporters ($37 827) are still above the global sample average cargo due tariffs ($ 19 114), However, continued tariff differentiation including a 0% tariff increase allowed in the 2018/19 RoD moved the tariff continuously closer to the cost reflective rate. The decision contained in the subsequent 2019/20 RoD of a 10% reduction will further reduce these tariffs with the target tariff for export vehicles achieved in the 2019/20 tariff year.

Vessel Costs Remain Relatively Cheaper

The 2018/19 study confirmed that all vessels face much lower overall vessel costs in South African ports than the averages in the study, ranging from 31% below the global norm in the case of containers and 63% for iron ore vessels.

Figure 23: Container Vessel Port Costs per TEU (Excluding Cargo Dues) (01 April 2018)

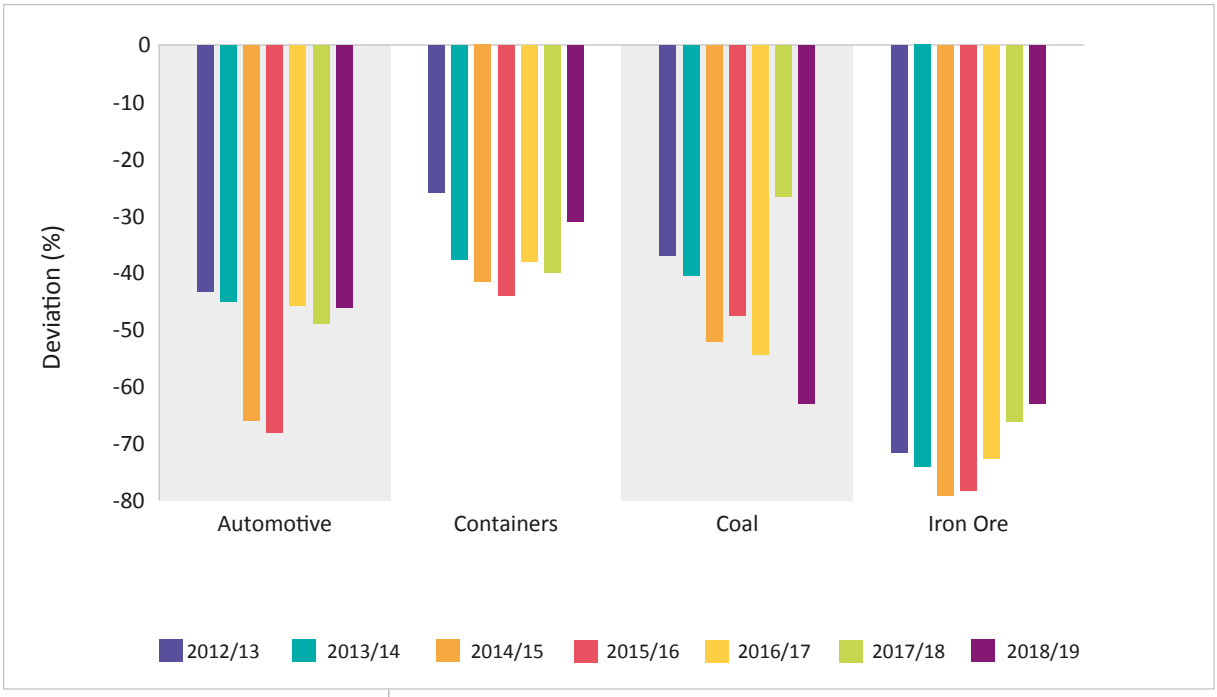


The 8,5% tariff increase allowed by the Regulator in 2018/19 has not significantly changed the continued below global average position recorded for vessel costs in South African ports. This has been more than fully offset by the depreciation of the ZAR as vessel costs are normally paid for in USD.

The incidence of the tariff clearly indicates that foreign vessels are not subjected to high tariffs level in SA rates as they do in the sample global sample average, whilst they continue to receive an exchange rate windfall as well as being cross-subsidized by cargo dues over the years up to the full implementation of the Tariff Strategy.

Overall, vessel costs faced by cargo owners recorded discounts of 31% in the case of containers, 46% for automotives, 63% for coal and 63% for iron ore to the sample average.

Figure 24: South African Vessel Costs (As Deviation from the Sample Global Average) (01 April 2018)

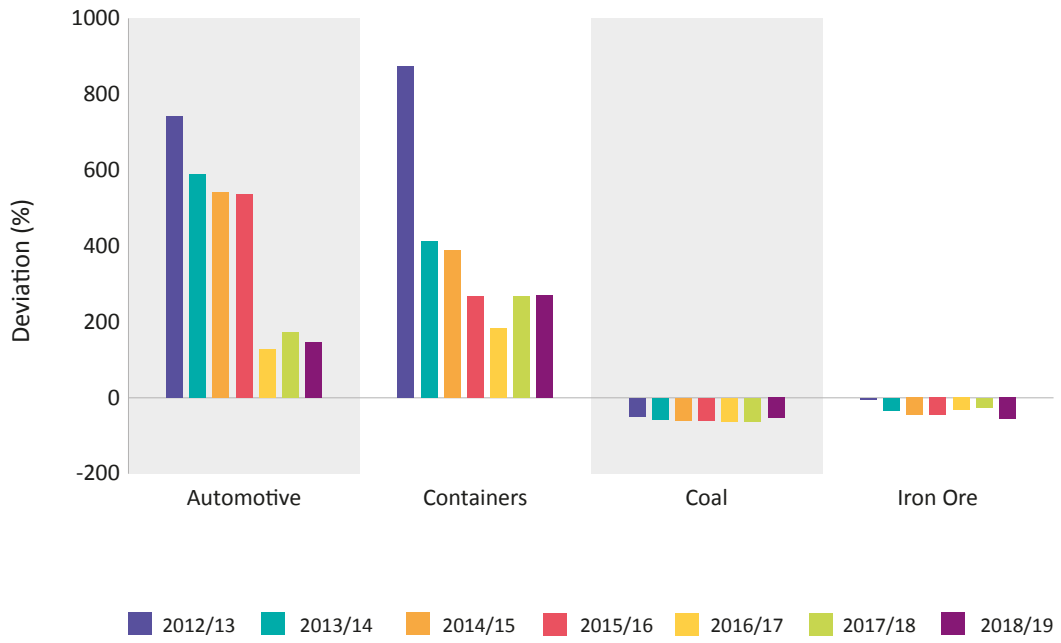


What was not considered in this research and is part of current research is the incidence of various other costs. These include vessel delays (faced by vessel owners and operators), cost of ocean legs of transport (faced by cargo owners or logistics integrators), costs of delays into and out of ports (inventory, temporary local cargo storage and truck standing time costs etc.) faced by cargo owners and logistics providers, and other such costs that are occasioned by specific issues such as the market structure of marine transport providers and the port system, as well as operational and infrastructure issues in certain ports.

Evidence of Rebalancing Tariffs in the Port System

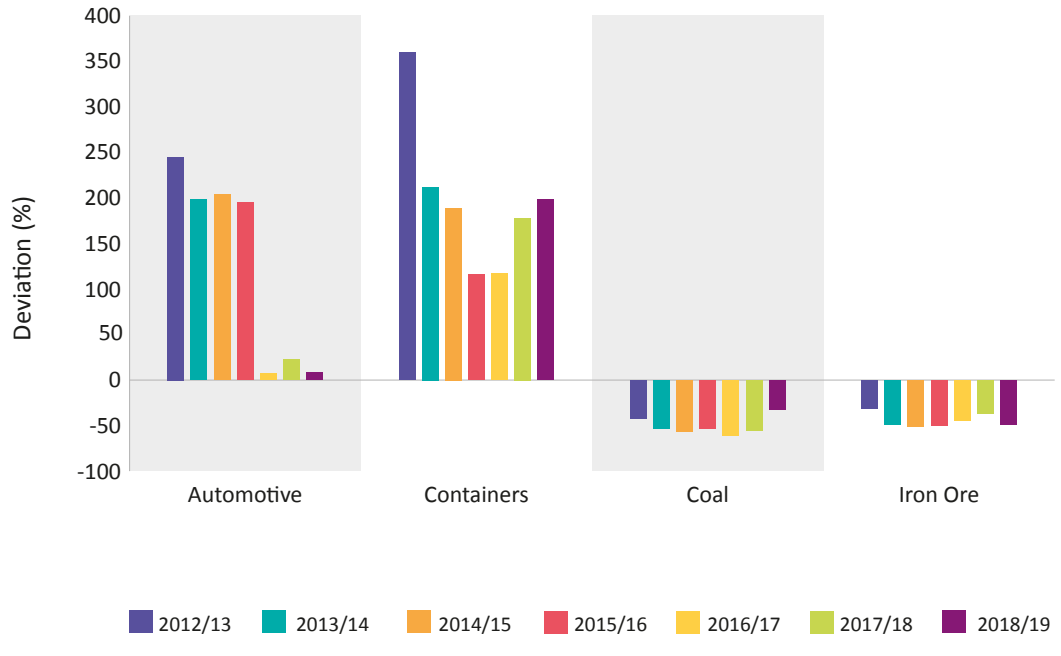
Previous versions of this report have argued that as bulk commodities are charged much lower rates than the norm and containers and automotives are charged much higher than the norm, containers (export and import) and automotives are still potentially cross-subsidising bulk exports tariffs, even more so if only cargo dues are taken into account with container and automotive cargo owners facing costs at premiums of between 271% and 146% of the global norm respectively and the bulk cargo types below the global sample average. The publication of cost reflective cargo dues in the last three RoD's continues this and allows the quantification of the magnitude of the cross subsidies. In particular, taking into account the differentials between the tariff book rates and the cost reflective "base" rates, other port users are subsidised by container owners by more than R3 billion in 2017/18. Keeping in mind that much of the full impact is shielded by the depreciated currency as USD prices are compared,

Figure 25: **South African Cargo Owner Costs Across All Four Commodities (As Deviation from the Sample Global Average) (01 April 2018)**



the base or target tariffs published by the Regulator in its ROD, does show that the magnitude of the cross subsidy is larger in terms of coal than iron ore. The rebalancing in the port tariff structure however will require significant changes in rental revenue and marine charges in order to retain the zero-sum effect on the revenue requirement as set by the Regulator.

Figure 26: **South African Total Port Costs Across All Commodities (As Deviation from the Sample Global Average) (01 April 2018)**



The share of cargo dues in tariff book tariffs, (about 61% in 2016/17), further results in the excessively high cargo dues skewing total port costs. Whilst bulk commodities do reflect this, the impact on containers are significant with total port costs at around 198% of the global sample average, while the removal of the volume discount scheme has significantly reduced the port costs facing the vehicle sector.

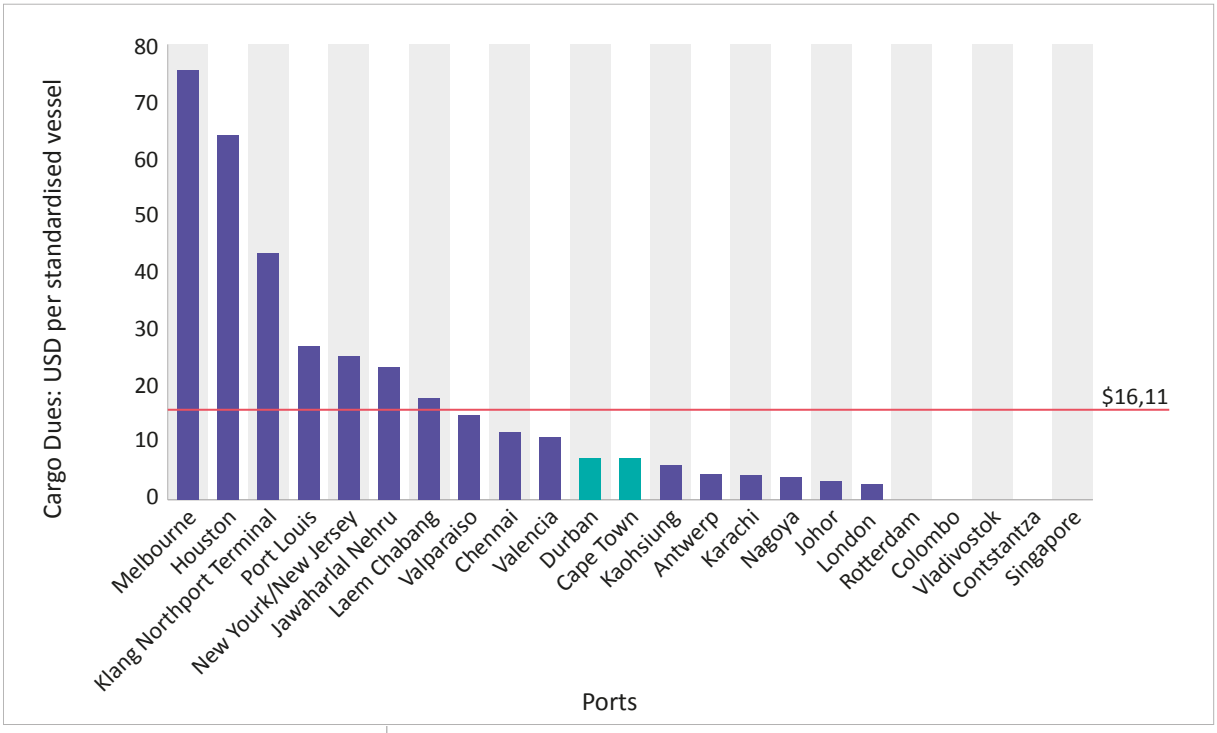
Transhipment

The South African port system continues to incentivise liners transhipping through our ports with marine services dues faced by a full transhipped container below the global sample average. The cargo dues recorded for transhipped containers were recorded as 55% below the global sample average in 2018.

The Ports Regulator, in 2013, stated that "Little statistical evidence could be found of a relationship between the tariff level and the recent transhipment volumes in the South African ports system". The Regulator's analysis indicated that global growth and subsequent trade volumes and the cost of freight only explain a portion of the change in the transhipment volumes in the Port of Durban between 2005 and 2012 with the bulk of the decision depending on the inherent market and infrastructural advantages of one port over another." (Record of Decision, 2013).

Whilst the economic rationale for a transhipment friendly port tariff structure is still required, it is evident that not only are cargo dues on transhipment cargo very much below global norms, vessel costs are also below the global sample average and only terminal handling charges can under the current regime, materially influence the transhipment pricing structure.

Figure 27: **Transhipment Export Cargo Dues per TEU (01 April 2018)**



Conclusion

Although relative port costs have improved over the period that the study was been conducted, cargo owners still face a 271% premium in 2018/19, although down from a premium of 874% to the global sample average in 2012/13. While vessel owners face costs below the global sample average (-26% in 2012/13; -32% in 2013/14; -42% in 2014/15; -44% in 2015/16; -38% in 2016/17; -40% in 2017/18; and -31% this year), the total NPA costs to users in container ports comes at a still high premium of 198% above the global sample average (similar results for the automotive sector applies) whilst the report shows that bulk commodities are charged much lower total port costs than the global sample averages.

The depreciation of the ZAR has had a significant impact on the average tariff levels being paid in the South African port sector. However, this impact does not equally benefit port users. USD paying users receive a direct discount in ZAR values, while domestic users do not receive the same benefit.

The high levels of potential cross-subsidisation due to the imbalances in the tariff structure in the port system remain a concern. The Regulator has commenced a tariff book adjustment process, within the parameters of the Revenue Required Methodology applied in the tariff setting process, and will continue the process of targeted differentiated pricing as set out in the Tariff Strategy published in 2015. It is positive to see the impact of the incremental pricing changes the Regulator has implemented resulting in an ever more price competitive port system, and this report remains crucial in monitoring the impact thereof.

Whilst relative changes in other ports and relevant currencies will impact the results of an analysis such as these, the need to keep the methodology constant makes the results extremely useful as a monitoring tool, whilst at the same time serves as a warning system of changes in international competitiveness of our ports.

Issues such as the impact of ship size cascading and other technological changes will have to be addressed in future reports.

Grain silos at the port of East London.

Interpreting the Results

The process and outcomes of benchmarking port pricing is not an exact science. The global sample averages that we have defined in our studies do not represent what we should be charging in South African ports, rather it provides a form of indication of the direction that our pricing should be moving in, rather than the exact absolute level of pricing. This has been determined through the development of a comprehensive Tariff Strategy that sets out the appropriate cost reflective rates for services in the port system. Cost reflective rates in SA can still be higher or lower than other countries depending on the cost of labour, infrastructure, age of ports, etc. and therefore average global port prices are not used to set prices. It does however provide us with a reasonable indication that would allow assessment of the alignment between port policy, port pricing, and economic policy and more importantly, the Strategy serves as a measuring tool to assess the impact of regulatory intervention in the regulatory framework through pricing changes.

Cranes in operation at the Port of Durban.

It is thus important to keep in mind that the identification of pricing differentials that exist does not automatically suggest that certain industries should be charged at a globally comparable rate. It does not suggest that certain cargoes may not be charged lower or higher rates than the global sample averages. It arguably does identify the size of the divergence between what is the stated overarching economic and development policy of the country and what port pricing reflects. It provides a reason to assess and shift port pricing in a direction that better reflects the global reality and actually aligns with South African economic structure, economic policy, industrial policy and economic development policy. Furthermore, it requires that any differentials that we allow to exist in the future must result from an open engagement that includes all affected parties and is justifiable in the public interest. These and other pricing effects and structural imbalances are addressed comprehensively in the Tariff Strategy which was published by the Regulator in July 2015.

That a change in indices such as either the weighted dollar price over the year (rather than fixing it at the date of the study) or some other selection of ports as a population would no doubt influence the findings to a greater or lesser extent, the continuation of the use of a consistent methodology allows the intertemporal comparisons that renders an assessment like this invaluable.

Amending an index or changing a sample will not remove the internal difference between the significant premiums on cargo owners of manufactured goods and the significant discounts to un-beneficiated bulk commodities as these have been confirmed to exist and are quantified in the tariff setting process in line with the Tariff Strategy. The amendment of parameters of the research will not change the fact that South African cargo owners carry the majority of the burden of infrastructure costs while foreign cargo owners and vessels receive globally competitive rates or implicit discounts. In addition, carefully selecting ports that support a particular argument in response to these numbers does not remove the reality, as an equally careful selection, can make the numbers even worse. In some cases, our pricing is seen to be comparatively low, and in other cases high. What they also show is that different stakeholders in the logistics system inappropriately bear the incidence of tariffs, in comparison to global practice.

As example: The trend in port pricing in SA, from an internal coherence (using global sample averages) perspective, appears to subsidise the industries that have lower levels of job creation and value addition in SA. The higher job creation industries tend to be penalised. An example is the differential of cargo dues that existed between stainless steel and mild steel prior to the Regulator's decision (although this element was one of the issues considered in that matter, it was not the basis of the decision). An industry that stopped at one level in the value addition process and then exported its product to have further value added in another country, paid roughly one quarter of the price paid by the producer that took that product and added further value inside of the country, for the same use of infrastructure. This is clearly not in line with SA's economic development policies, and the need for stronger alignment between various policies and regulatory regimes is critical in advancing a coherent and sustainable industrial policy. As such the current tariff structure, in which bulk trades tended to be less than or close to the global sample averages, while the value added trades were significantly above the global sample averages, unless you

were a foreign cargo owner merely transhipping your cargo through South African ports, is clearly not aligned with the country's industrial objectives.

This research was thus not intended to automatically define the levels of pricing that are appropriate and the targets that needed to be set for pricing incidence, it was designed to add to the debate in reviewing and setting appropriate pricing and price incidence in the port system and contributed to the need for a comprehensive Tariff Strategy, which has been published and is currently being used in the process of determining prices, along with the Tariff Methodology.

Sample selection

The researchers involved in this project compiled the port samples based on a number of criteria, with tariffs not considered until the very end, and played no role in the sample construction process. The criteria included throughput, capacity, commodity and cargo handling characteristics, availability of public tariff information (in English as far as possible), and the ability of the port to handle the unitary vessel size.

Comment

The research is therefore published and any correction, criticism, and comment is welcomed. We do however request that where parties wish to make submission. Kindly provide the following:

- An explanation as to why the information in the study is incorrect or inappropriately used;
- The correct information, if the information in the study is claimed to be incorrect, or a more appropriate use or exposition of information if the appropriateness or exposition of the information is questioned;
- The original public documents and or information that the 'corrected' information is based on; and
- The reason why an alternate view, if it is opinion-based such as the selection of different populations or indices, is more appropriate.

Bulk, Break Bulk Terminals and Finger Jetty at the Port of Richards Bay.

Car terminal at the Port of Durban.

Annex A: Methodology Assumptions

Container Study

Table 1: **Standardised Ship Call**				
	Landed		Shipped	
Total TEU Parcel Size = 1,853	*Deep-sea*		*Deep-sea*	
	Full	686	Full	427
	Empty	71	Empty	288
	Coastwise		*Coastwise*	
	Full	2	Full	9
	Empty	4	Empty	8
	Transhipped		*Transhipped*	
	Full	148	Full	148
	Empty	30	Empty	32

Table 2: **Vessel Dimensions**	
Length (metres)	221
Breadth (metres)	32
Height (metres)	25.91
Draft (metres)	12.2
DWT (tons)	41 800
GT (tons)	35 800
NT (tons)	14 444
Power Output (KW)	26 270

Additional Assumptions

- The vessel utilises the port services within normal working hours of the port, and abides by all rules and regulations of the port
- Assume the vessel enters the berth on weekdays, except on public holidays, at 08h00 and exits the berth at 08h00. (i.e. number of hours in berth = 48 hours)
- No additional surcharges, waiting fees, penalties or cancellation fees are applicable within the vessel call
- There is no use of miscellaneous services, such as Fire & Emergency services, Fire Protection, etc.
- Port charges such as security service fees, fresh water fees, electricity and removal of refuse, etc. where a minimum fee is not stipulated, will be excluded from the port charges
- Assume the vessel is a liner trade which operates on a scheduled basis
- Assume there are no reductions (based on the number of calls) in the port charges offered to vessels
- Assume the following weights of TEUs: Full = 21 Tons Empty = 2,5 Tons

- Unless otherwise specified, assume a vessel of this size will always require the assistance of two tugs for one hour
- Unless otherwise specified, assume a vessel of this size will always require the assistance of a pilot for one hour. Shifting tariffs are excluded
- Where no tariffs are allocated to Coastwise & Transhipped Cargoes, the 'deep-sea' rates will be used
- Assume one vessel call per port per month
- Assume vessel call at non-concessionary terminals and berths
- Where there is more than one service provider, an average of the tariffs was taken
- Assume all information about the vessel and cargo is provided in advance in accordance with requirements of each port prior to the arrival/departure of the vessel and cargo to/from the port
- Assume vessel needs to use the port's mooring or unmooring ropes
- Vessel always makes use of the port's equipment
- Assume all imported transhipment containers are transhipped within 14 days of arrival at the port
- Assume all transhipment containers landed/shipped are foreign-going transhipment containers
- Assume all transhipment containers are shipped from the same port terminal it landed in
- Assume one container move to load or off load containers for terminal handling charges
- Klang Northport and Jawaharlal Nehru cargo dues and terminal handling charges are consolidated into a single charge
- Container loading and unloading operations begins within two hours after the vessel enters the berth and ends two hours before the vessel exits the berth. i.e. cargo operations are completed in the 44 hours the vessel is at berth
- No amendments have been made to reduce total handling and port authority charges of non-South African ports for efficiency differentials
- Terminal handling charges includes vessel to stack, vessel to truck, vessel to rail wagon, rail wagon to vessel, truck to vessel, stack to vessel, as appropriate.

A view of the Durban Container Terminal.

Automotive Study

Table 3: **Standardised Ship Call**	
Commodity Moved	**Cars**
Parcel Size (tons)	3715,64+8085,32
Import (tons)	8085,32
Export (tons)	3715,64
Parcel Size (units)	890+409
Import (units)	890
Export (units)	409

Table 4: **Vessel Dimensions**	
LOA (metres)	198
Breadth (metres)	32
Draft (metres)	8,6
DWT (tons)	19 893
GT (tons)	56 439
NT (tons)	17 959

Additional Assumptions

- Number of days in port: 1 Day and 8 hours (32 hours)
- Assume that there are no penalties, additional surcharges, or waiting fees applicable within the vessel call
- Assume the vessel utilises the port within the normal working hours of that port, and abides by all rules and regulations of the port
- Assume the vessel will use two tugs
- Assume the vessel will always need pilotage assistance in the port
- This study is based on new automotive vehicles imported/ exported at the selected ports
- Assume all vehicles imported/exported are for one vehicle manufacturing company
- The average length of a vehicle is 4.5 metres
- The vessel is a Car Carrier vessel.

Iron Ore Study

Table 5: **Vessel Dimensions**	
Length (metres)	280
Breadth (metres)	44
Draft (metres)	12
DWT (tons)	180 000
GT (tons)	95 000
NT (tons)	–
Cubic Dimension	147,840

Additional Assumptions

- Iron Ore parcel size: 170 000 tons
- Number of days in port: 1 day and 23 hours (47 hours)
- The vessel utilises the port within the normal working hours of the port, and abides by all rules and regulations of the port
- No additional surcharges, waiting fees, penalties or cancellation fees are applicable within the vessel call
- There is no use of miscellaneous services, such as Fire & Emergency services, Fire Protection, etc.
- Port charges such as security service fees, fresh water fees, electricity, and removal of refuse, etc. where a minimum fee is not stipulated, will be excluded from the Port Charges
- Assume there are no reductions (based on the number of calls) in the port charges offered to vessels
- Assume a vessel of this size will always require the assistance of two tugs for one hour
- Pilotage is always required. Shifting tariffs are excluded
- Assume one vessel call per port per month
- Assume vessel call at non-concessionary terminals and berths
- Where there is more than one service provider, an average of the tariffs was taken
- Assume all information about the vessel & cargo is provided in advance in accordance with requirements of each port prior to the arrival/departure of the vessel & cargo to/from the port
- Assume vessel needs to use the port's mooring or unmooring ropes, two mooring ropes are used
- Vessel always makes use of the port's equipment
- Assume the vessel enters the berth at 10h00 and leaves at 09h00 (47 hours later)
- Assume cargo operations commence within one hour of entering the berth and stops one hour prior to vessel exit from berth.

Coal terminals a the Port of Richards Bay.

Coal Study

Table 6: **Standardised Ship Call**	
Commodity Moved	**Coal**
Parcel Size (tons)	112 586

Table 7: **Vessel Dimensions**	
LOA (metres)	225
Breadth (metres)	32
Draft (metres)	13.54
DWT (tons)	75 122
GT (tons)	39 763
NT (tons)	25 329

Additional Assumptions

- Number of days in Port: 1 Day and 8 hours (32 hours)
- Assume that there are no penalties, additional surcharges, or waiting fees applicable within the vessel call
- Assume the vessel utilises the port within the normal working hours of that port, and abides by all rules and regulations of the port
- Assume the vessel will use two tugs
- Assume the vessel will always need pilotage assistance in the port.

section 5

Equity of Access in SA Ports 2019

Ports Regulator Baseline Report on the Implementation of B-BBEE using 2015/16 data

NPA intake of helicopter pilot and engineer trainees in 2013.

section 5

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section 5

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African Marine Solutions successfully transfer marine oil between two vessels.

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Tables & Figures

Introduction

The Ports Regulator of South Africa, (the Regulator) must monitor the activities of the National Ports Authority (NPA /the Authority), to ensure that it performs its functions in accordance with the National Ports Act, 2005 (the Act). In line with section 30 (b) of the Act, the Ports Regulator must promote equity of access to ports and to facilities and services provided in the South African (SA) port system.

Regulations developed in terms of the Act and promulgated by the Minister of Transport in 2007 defined equity of access in the SA port system in terms of the incorporation of black economic empowerment into decision-making of the Authority in terms of the Code of Good Practice section 9 of the B-BBEE Act (as amended).

The Regulations make provision for implementation of B-BBEE in ports where chapter one outlines how economic participation and empowerment of historically disadvantaged groups in port operations will be driven through set B-BBEE targets for the Authority and monitoring thereof by the Ports Regulator. Chapter two sets out the framework for complaints and/or appeals processes to address lack of economic participation in port operations in line with a set private sector participation framework.

Regulation 3(1) required the Authority to ensure that, within three years of the Regulations becoming effective, at least 25% of those it contracted with were Level Four B-BBEE contributors whilst Regulation 3 (2) extended this to 75% by year five. Regulation 4 defined the Ports Regulator's monitoring role i.e. receipt of annual reports from the NPA pertaining to Regulations 2 and 3.

The Authority has submitted B-BBEE reports to the Regulator annually since 2013/14 focussing on the following agreements, licences and port rule/ services:

- Section 56 (1) terminal operators agreements for the operation of a port terminal or port facility.
- Section 57 Licences which are issued to regulate port services.
- Section 65 Licences based on port rules for the licensing of companies to provide services in ports.
- Registrations/permits – vessel agents.
- Authorisations and/or section 79 Ministerial Directives.
- Sale of property.
- Lease of property.
- Partnership with private sector.

The Regulator's 2014 compliance assessment concluded that there was compliance with both the Act and its regulations with regards to B-BBEE with 85,62% of all Section 56s, Section 57/65s, port licences and registrations that were entered into, issued or granted to persons or entities which had attained the B-BBEE Status of at least a Level four contributor rising to 89,7% by 2015/16.

Hoisting the SA flag on the Lefkas in the Port of Port Elizabeth. It was the third vessel to be registered on the South African Ships Register. It provides offshore bunkering services.

This report endeavours, within the context of the regulations, to establish a baseline of the extent of equity of access within the port system with due regard to performance on the transformative elements of the B-BBEE certificates beyond Level 4 B-BBEE contributor.

Objectives and Focus of the Project

The objective of the report is to establish a baseline or starting point for measuring transformation in the SA port system by focusing on B-BBEE elements of companies that the Authority contracts with in terms of section 56, section 57 and section 65 of the Act with a focus on:

a. B-BBEE levels

- Type of scorecard used,
- Local and foreign ownership (specific to terminal operations), and
- Verification agencies.

b. Reflection on the extent of participation by Large Enterprises (LEs), Emerging Micro Enterprises (EME) and Qualifying Small Enterprises (QSE) in the different sub-sectors in ports (terminal operations, commercial leasing and licensing, port activities - stevedoring, diving, waste disposal, bunkering, and vessel registration agents)

c. The extent of ownership by black and women owned entities in these subsectors.

Limitations

The following are some of the limitations that apply to the report.

a. Due to a focus on the enabling legislative provisions and reliance on the Regulator's compliance function which is focussed on the B-BBEE compliance in terms of section 56, section 57 and section 65, this baseline report does not cover the entire universe of the NPA's procurement. In particular, the B-BBEE through Supply Chain processes and contracting on infrastructure/capital expenditure (capex) projects are not included. Processes are in place to ensure that the Regulator's capacity is expanded to cover this in future updates.

b. The scope of the study was not expanded to include an assessment of actual values of contracts/leases which would assist in quantifying the significance of participation by different types of empowered companies/entities. Whereas, the measured entity's status (EME, QSE, LE) allows for a rough estimation of maximum values of the companies annual turnover, the report could only triangulate information from the Terminal Operator Performance System (TOPS) and the Regulator's Compliance Project to quantify the extent to which the measured entities are responsible for terminal operating space in the port. These represent an area where further work, which would nuance the observed changes happening in the sector, is required.

Pinky Zungu Deputy Harbour Master Nautical at the Port of Durban has a marine pilot open licence.

c. The veracity of the certificates relied on is an issue, especially with practices such as fronting, etc. Whilst verification of certificates is outside the mandate of the Regulator and the scope of the project, providentially, the B-BBEE Commission – the country's watchdog on B-BBEE matters - has published a report (B-BBEE Commission , 2017) on the practices of rating agencies enabling us to at least cross-reference, and in future to keep watch of companies with certificates issued by companies under investigation by the B-BBEE Commission. In addition, the Annual Reports of those Johannesburg Stock Exchange (JSE) listed companies (terminal operators) were perused for the purpose of verifying consistency of the information presented with that in the company's annual report. This method of verification, however, was limited by the fact that to date, only 7 of the 37 terminal operators are listed on the JSE, and have publicly available annual reports.

Structure of Report

The rest of the report is structured as follows. The following three sections (sections 2 - 4) covers the B-BBEE certificates of terminal operators, commercial and terminal leases and section 57 Licences; and reports on the size of the enterprises, the B-BBEE scorecards they used, the B-BBEE levels of the companies, the verification agencies used by the companies, amongst other things. Sections 5, 6 and 7 include average B-BBEE scores in relation to the elements by companies, i.e. average ownership, employment equity, management control, skills development, enterprise development, preferential procurement, and socio-economic development. The report also reflects on the use of the old and new B-BBEE codes with a view to recommending a prompt adoption and use of the Transport/Maritime Score Card as far as possible in this sector.

Each section concludes with a brief summary while final conclusions and recommendations are made at the end of the report. A strategy for addressing transformation in the port system will be developed from updates to this baseline report.

B-BBEE Analysis – Terminal Operations (Section 56 Agreements)

Against the backdrop of the existence and use of old and new score cards in the transport and maritime sector, the report provides a summary of the scorecards used by companies operating SA terminals as well as the rating agency they have used, prior to outlining their B-BBEE status and profiles.

Terminal Operators

Section 56 of the Act, regarding provision of port services, port facilities, and use of land, allows the Authority to enter into agreements with any person in terms of which that person, for the period and in accordance with the terms and conditions of the agreements, is authorised to design, construct, rehabilitate, develop, finance, maintain or operate a port terminal or port facility, or provide services relating thereto; and shall provide any other service within a port designated by the Authority for this purpose.

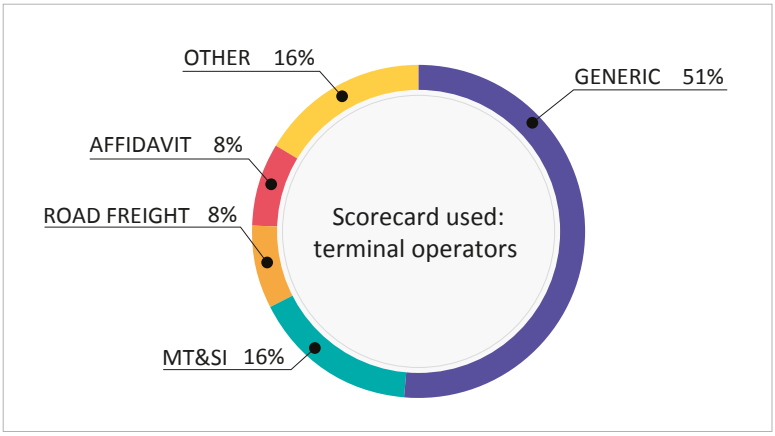
As in 2015/16, there were 85 active terminal operator agreements entered into by the Authority and this section will look into the

companies that entered into these agreements with the Authority. Although there are a total of 85 active Terminal Operating Licences issued, there are only thirty-seven terminal operating companies as some terminal operators have licences to operate more than one terminal. This section will analyse the B-BBEE certificates of the 37 terminal operators.

B-BBEE Scorecard Used - Terminal Operators

Figure 1 shows the scorecards that were used by terminal operators. The summary indicates that a vast majority of companies within the maritime transport sector are using generic B-BBEE codes (19 out of 37 terminal operators), with over 50% using the generic scorecards, and only 6 (16,2%) using the Maritime Transport & Services Industry (MT&SI) codes. Three out of 37 (8%) were using the Road Freight Transport Sector codes and three EMEs used affidavits.

Figure 1: **Scorecard Used - Terminal Operators**



B-BBEE Verification

There are concerns around the certificates issued by verification agencies or even the use of unverified verification agencies to obtain B-BBEE accreditation. There are verification agencies who have been reported by the Broad-Based Black Economic Empowerment (B-BBEE) Commission as being under investigation for possible violation of the B-BBEE Act relating to their processes in verifying B-BBEE ownership structures and non-compliance with the Codes of Good Practice.

Figure 2: **B-BBEE Verification Agencies Used**

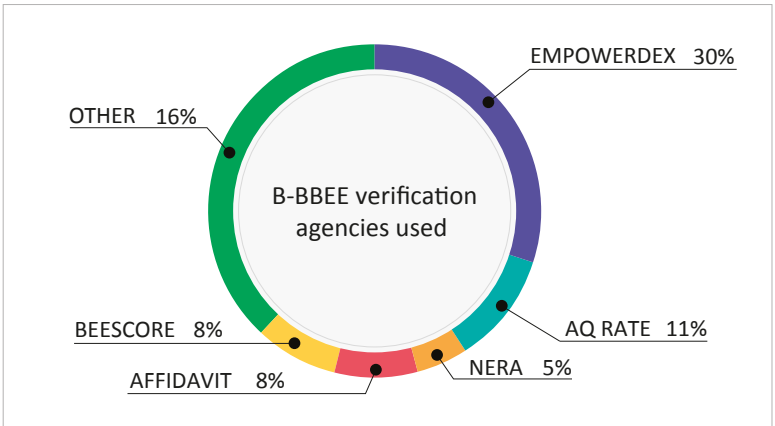


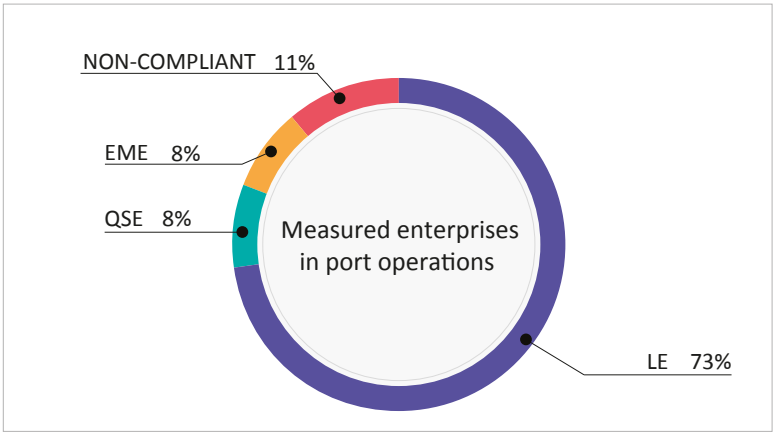
Figure 2 summarises which verification agencies were used by terminal operators as presented on each terminal operator's B-BBEE certificates as obtained from the NPA. A majority of the terminal operators relied on the services of "Empowerdex" as their preferred verification agency, with 30% of the terminal operators utilising their services. The second preferred verification agency by terminal operators was "AQ Rate Services", with 11% relying on their services. "BEEScore" was used by 8% of the terminal operators, 8% used affidavits as they were EMEs and 5% relied on the services of National "Empowerment Rating Agency (NERA)" as their rating agency.

There are among these, companies that have been reported to be under investigation by the B-BBEE Commission as of 07 August 2017. The investigation is to "determine whether the black ownership structure of the verification agency complies with the black ownership requirements and whether in its conduct of verification it follows the procedures required of a verification agency and the verification professionals in line with the B-BBEE Act", (B-BBEE Commission, 2017)

B-BBEE Measures in Terminal Operations

This section reports on the size of the terminal operators according to measured entity status. Of the 85 active terminal operator licences, there effectively are 37 companies that hold the licences which means some companies hold multiple licences in a port and/or across the different ports. Depending on whether the report can consolidate the licences held by each company and analyse the 37 companies or analyse the B-BBEE certificates of each company the results vary slightly, though the trend is the same.

Figure 3: Measured Enterprises in Port Operations

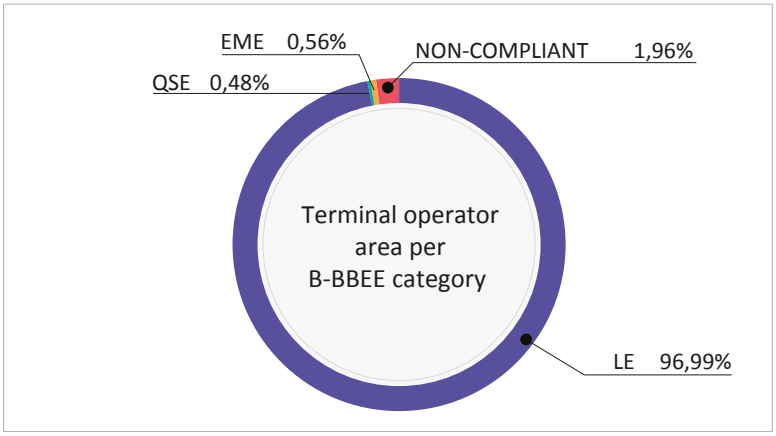


The consolidated picture is summarised in Figure 3, where a majority (73%) of the 37 measured terminal operators fall under the Large Enterprises (LEs) category which according to the B-BBEE criteria are companies with annual turnover of R50 million and above. Eight percent are Qualifying Small Enterprises (QSE) with turnover of between R5 million and R10 million per annum and 8% are Exempt Micro Enterprises (EMEs) whose turnover is below R5 million per annum. A significant proportion amounting to 11% are B-BBEE non-compliant and whose annual turnover and B-BBEE status cannot be determined. Overall, only three terminal operators across the port system are EMEs and another three are QSEs.

Figure 3 shows that LEs and non-compliant entities hold a majority (84%) of the terminal operator licences while only 16% accounted for by EMEs and QSEs collectively. The participation of EMEs and QSEs in terminal operation licensing is undeniably very small.

The size and proportion of the prime port real estate, measured in terms of square meters (m^2) of port area occupied, indicates the significant role that a terminal operator plays in a port. The square metre area occupied by the different terminal operators were summed together by licence holders in each category to determine the total terminal operator area occupied by the respective measured entity category and these are reported in Figure 4, as a percentage of total area.

Figure 4: **Terminal Operator Area per B-BBEE Category**



The same trend emerges where almost all (96,99%) of the 8 245 522,1 m^2 of available terminal area is licenced to LEs. The 41 137,6 m^2 (0,48%) operated by QSEs and 47 746 m^2 (0,56%) occupied by EMEs are even less than the remaining 166 600 m^2 (1,96%) occupied by non-compliant terminal operators. QSEs and EMEs combined occupy just over 1% of the terminal operator area, showing that their participation is not significant based on terminal area size.

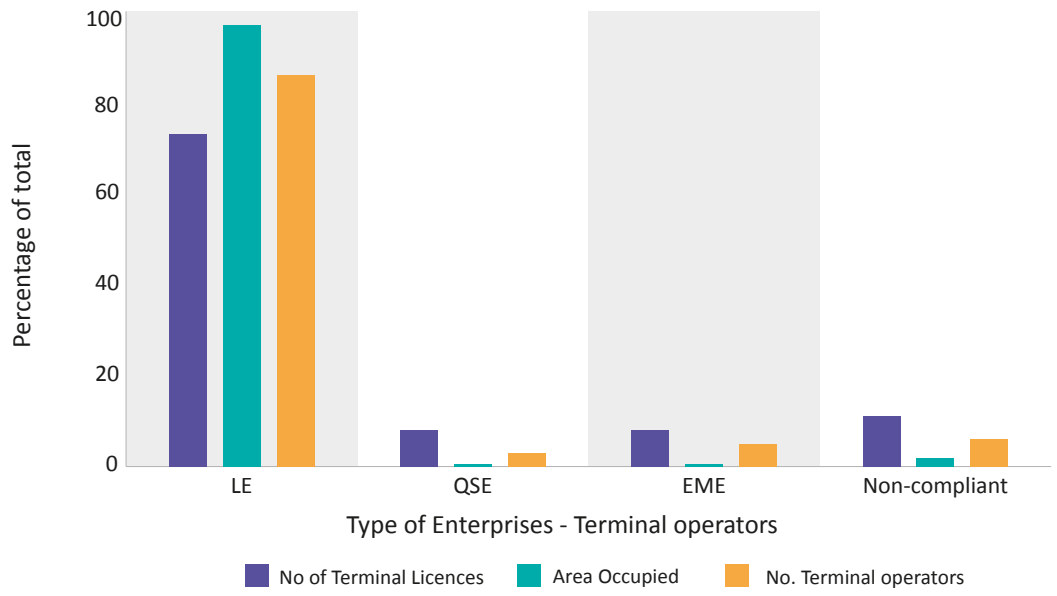
Spread of Licence, Terminal Area and Number of Operator Licences by Measured Entity.

Figure 5 shows the percentage of terminal operators per category relative to the extent of their involvement in terminal operations through number of licences and area occupied. LEs accounted for 73% of the terminal operators and they operated 86% of the terminals whilst occupying 8 245 226,1 m^2 (96,99%) of total terminal area. For the most part, terminal operator licences and terminal area occupation in the port system are in the hands of LEs and B-BBEE non-compliant companies.

Section 80 of the National Ports Act empowers the Minister of Transport to develop regulations which will govern how historically disadvantaged individuals and/or groups participate in port operations through a private sector participation framework (Republic Of South Africa, 2005). The absence of such a framework since the start of regulation may account, in part, for the situation reported above.

From a transformation perspective, the renewal of licences offers the opportunity for the Authority to address access by categories other than LEs and non-compliant entities, ensuring that more QSEs and/or EMEs participate.

Figure 5: **Terminal Operator Licences and Area Occupied- per category**



Terminal Operators and Their Ownership: No. of Terminal Operators per Category

Figure 6 shows the ownership of companies in terminal operations where 38% of the companies are private unlisted, 35% are foreign owned, 22% are JSE listed companies, and 5% are state owned. While Figure 7 shows the percentage number of terminal licences that are in the hands of terminal operators; the ownership of those terminal operators; that 35% of terminal licences are in the hands of foreign owned companies, 24% are state-owned entities (SOE), 23% are with JSE- listed entities and 20% are private unlisted terminal operators. Figure 8 shows that the two state-owned terminal operators occupy 63% of terminal area in South African ports.

Figure 6: **Terminal Operators: Local and Foreign**

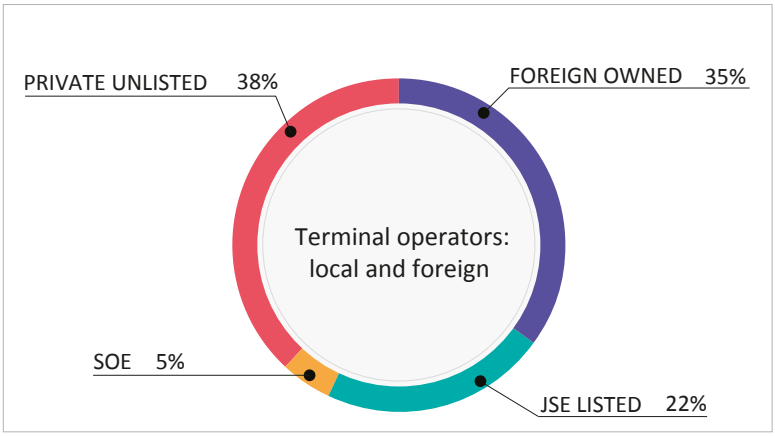


Figure 7: **Terminal Operator Licences in the Hands of Local and Foreign Companies**

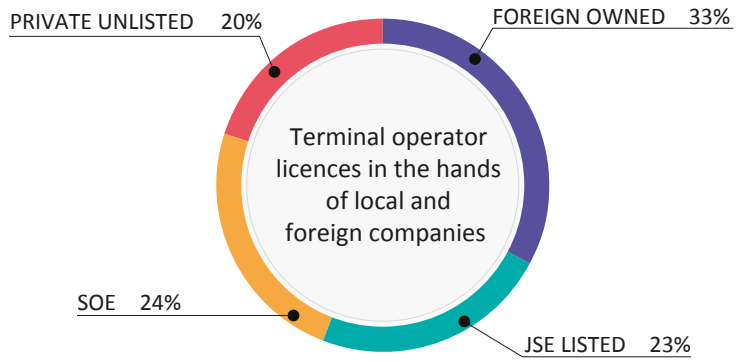
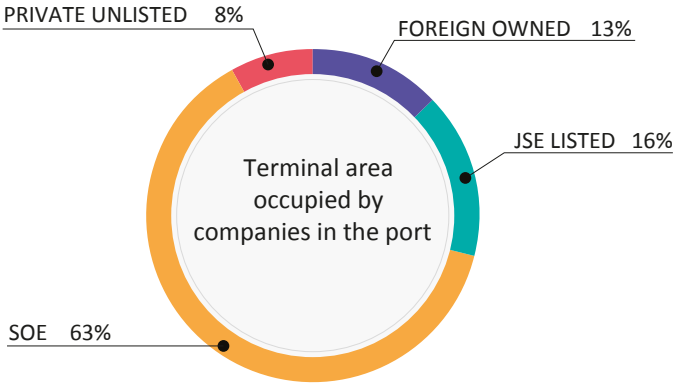


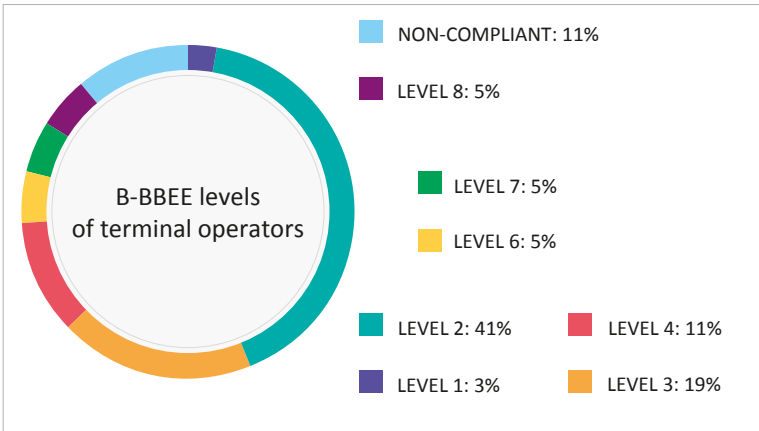
Figure 8: **Terminal Area Occupied by Companies in the Port**



B-BBEE Levels of the Terminal Operators

This section summarises the B-BBEE compliant levels of all measured terminal operators. The B-BBEE complying levels range from level 1 (highest compliant level) to level 8 (least compliant level) as well as assesses the extent of enterprises that were B-BBEE non-compliant. These are summarised in Figure 9.

Figure 9: **B-BBEE Levels of Terminal Operators**



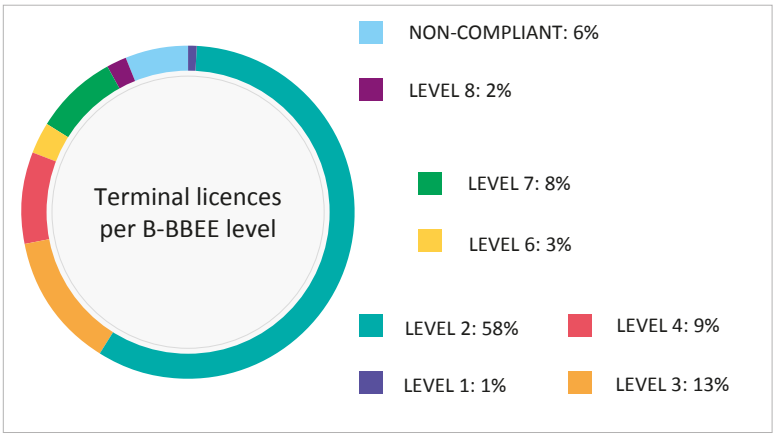
Xoliswa Bekiswa Marine Operations Manager and marine pilot at the Port of Ngqura.

Three quarters, 74% of companies, collectively achieved B-BBEE ratings of level four or higher, meeting the requirements of the B-BBEE regulations. On the other end of the spectrum a quarter of the operators had B-BBEE ratings between level 5 to 8 and non-compliant. Holding other developments constant, these represent areas of improvement i.e. where the Authority, in reviewing such contracts, would be able to ensure that the companies' ratings are in line with the required B-BBEE levels.

Terminal Licences per B-BBEE Level

The ensuing assessment was based on a consolidation of licences by terminal operator. When actual terminal licences are considered, the picture is as reflected in Figure 10. The overall average of terminal operators with level four and above rating increases from 74% to 81% which is in compliance with the regulations. Notably, over half of these had a B-BBEE rating of level 2.

Figure 10: **Terminal Licences per B-BBEE Level**



As mentioned previously, the Authority is in compliance with the Regulations as it contracts or issues licences and permits, to more companies with level 4 B-BBEE rating and above. The utility of achieved B-BBEE levels does not go beyond compliance with Regulations. Transformation imperatives are driven in the short and long-term by the different elements of the scorecard i.e. ownership, management, skills development, enterprise development and preferential procurement.

The real transformation imperative is for significant ownership and management control of such entities to be in the hands of black people and/or women. It also ensures that these targeted groups, which have had very limited to no opportunities to participate significantly in ports, start making tangible inroads into the different operations, leasing and port activities. Thereby making skills development, enterprise development and preferential procurement significant avenues to bring about the required changes in the long run.

As a baseline for measurement, statistics on these transformation criteria based on 2015/16 B-BBEE certificates is presented.

B-BBEE Score Card Elements

Black Ownership in Terminal Operations

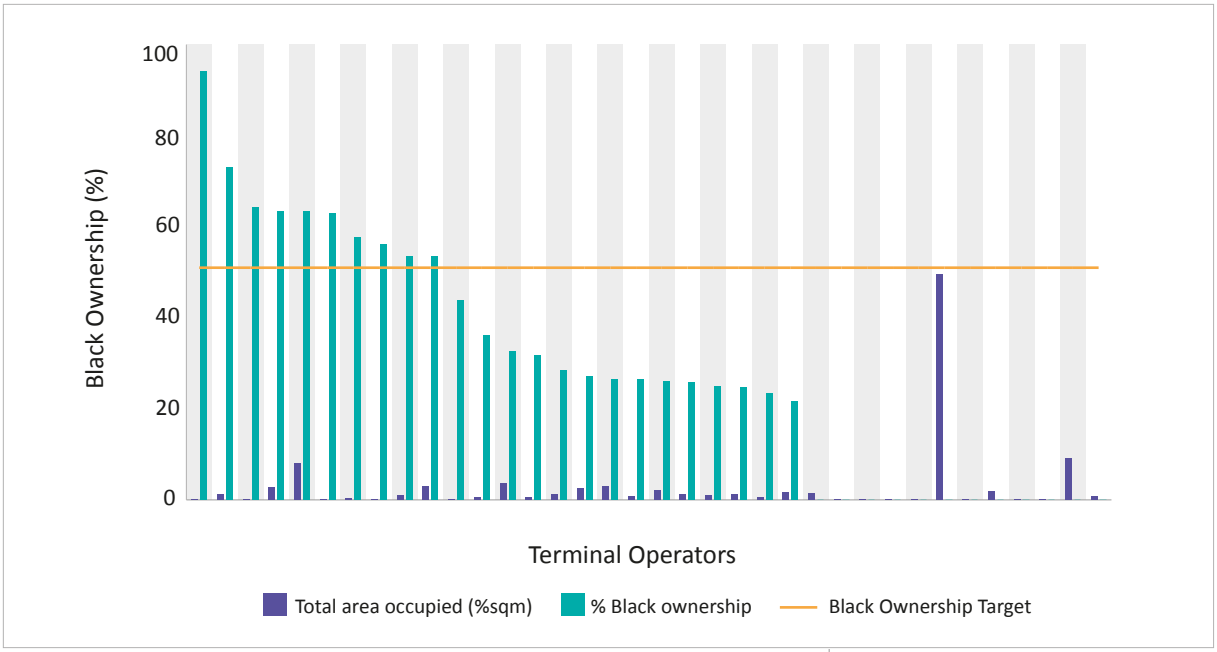
Ownership is one of the priority elements for B-BBEE and it is one of the main measures of transformation in the country. The ownership element's purpose is to measure effective ownership of companies. Indicators used for measurement include; voting rights; economic interest; realisation points of the net value in broad-based ownership schemes and employee share ownership programmes as ownership indicators. Ultimately, the maximum score achievable through the ownership element towards B-BBEE is 25 out of 105 total points*. Ownership recognises and measures the entitlement of black people to voting rights and economic interest associated with equity holding in a company, with voting rights affording the right to determine strategic and operational policies of an enterprise. For this reason, black ownership in B-BBEE includes voting rights, entitlement to economic benefits i.e. dividend participation and capital appreciation, as well as debt free ownership held by black people in a company, (Xaba, 2017) with the same applying to women.

Participation by black and women owned entities was assessed not only from an ownership perspective, but also by giving regard to the number of licences and size of terminals in their control. As noted before, although the actual value of the transactions would be useful in quantifying the extent of participation, i.e. indicating the relative worth of the number of licences, the scope of this report did not allow for such.

The 21 terminals operated by the two State Owned Entities (SOEs) and which account for 60% of terminal area are not included in the assessment as they are subjected to a specialised score card which does not include "ownership" as an element.

**B-BBEE generic score card, the DTI.*

Figure 11: **Black Ownership and Terminal Licences**



In Figure 11 terminal operators with the highest to the lowest levels of black ownership are reflected from the left to right. Overall, only 24 terminal operators had a level of black ownership (black ownership that is above 0%), and 10 terminal operators' black ownership was above 50%. The terminal with the highest black ownership of 94% is an EME which operates a liquid bulk terminal in Durban. Four terminal operators have black ownership that is between 30% and 60%, while 10 have black ownership that is below 30% but greater than 0%.

The terminal operator with the largest black ownership (94%) only occupied 0,06% or 64 356 m^2 of the total terminal operator area. Out of the five other companies with more than 50% black ownership, only two occupied more than 3% of terminal operator area respectively with the rest occupying less than 1% of terminal operator space. Notably, the terminal with the second highest black ownership of 73,4% and occupied 1,11% or 85 257 m^2. Five terminal operators had black ownership below 40% with the rest between 20% and 30%. Together with the two SOEs whose black ownership is not measured, these companies with limited black ownership collectively account for almost two thirds (63%) of terminal area.

Women Ownership in Terminal Operation

In this section the report analyses women ownership within terminal operations against the number of terminals that are operated by the terminal operator and at the area occupied by each terminal operator within the port system. The findings are summarised in Figure 12

Figure 12: **Women Ownership and Terminal Operations**

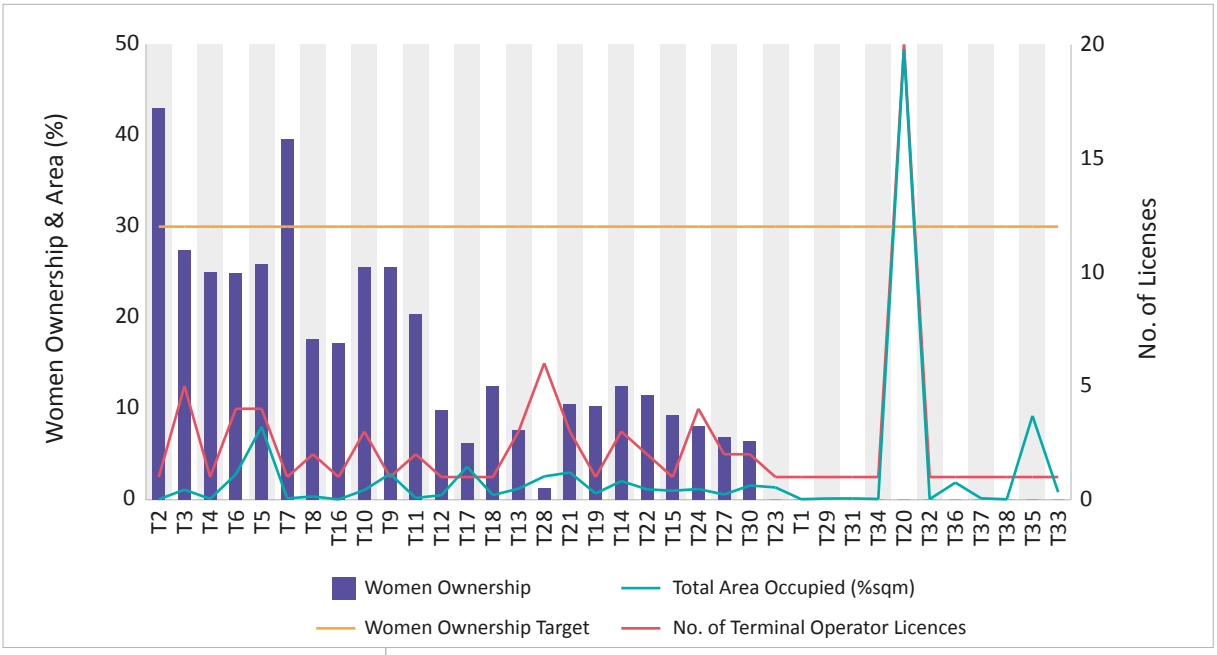


Figure 12 shows that there were only 2 terminal operators with women ownership that is more than 30%, these companies only operate 2 terminals between them and they occupy less than two percent of terminal area (1,55%) or 119 213 m^2.

Four terminal operators have a women ownership of between 25% and 30%. These terminal operators have 10 licences between them and occupy 12% (392 764 m^2) of terminal area. Three terminal operators have women ownership that is between 20% and 25% and have 10 licences between them, they occupy 15% (1 436 835 m^2) of the terminal area.

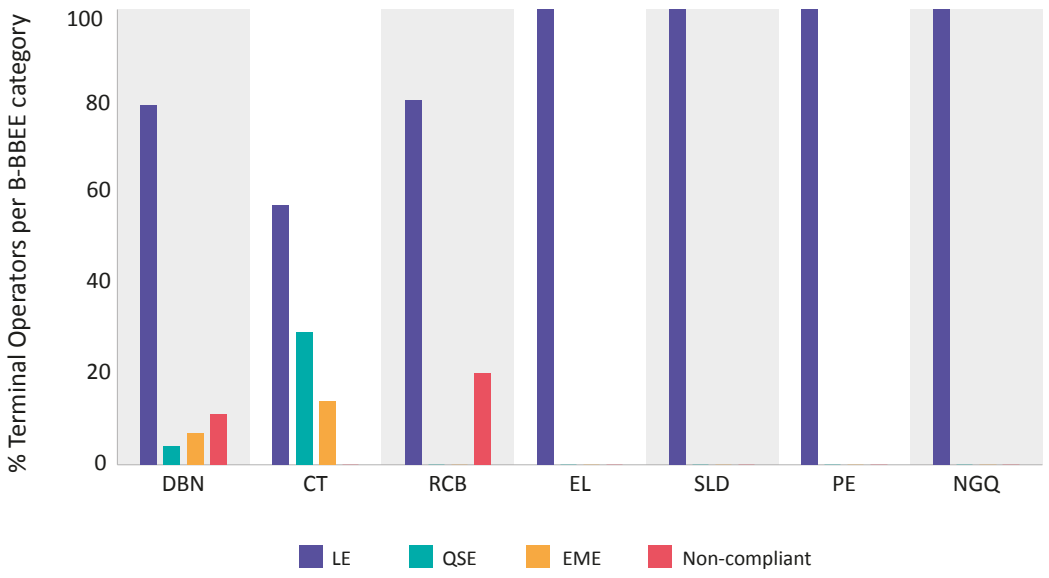
Fifteen terminal operators have a women ownership that is below 20% but above 0% and have 32 licences occupying 17% (1 618 777,70 m^2) terminal area. While the remaining terminal operators have 0% women ownership and operate 31 terminals occupying 63% (5 936 008,36 m^2) of the total terminal area.

B-BBEE Analysis per Port

Terminal Operators per B-BBEE Turnover Category- All Ports

Figure 13 shows the percentage of terminal operators per B-BBEE turnover across all commercial ports. In the Port of Durban 79% of the terminal operators were LEs; 4% were QSEs; 7% were EMEs and 11% were B-BBEE non-compliant.

Figure 13: **Terminal Operators per B-BBEE Turnover Category**



In the Port of Cape Town 57% of the terminal operators were LEs; 14% EMEs; 29% QSEs and there were no B-BBEE non-compliant terminal operators.

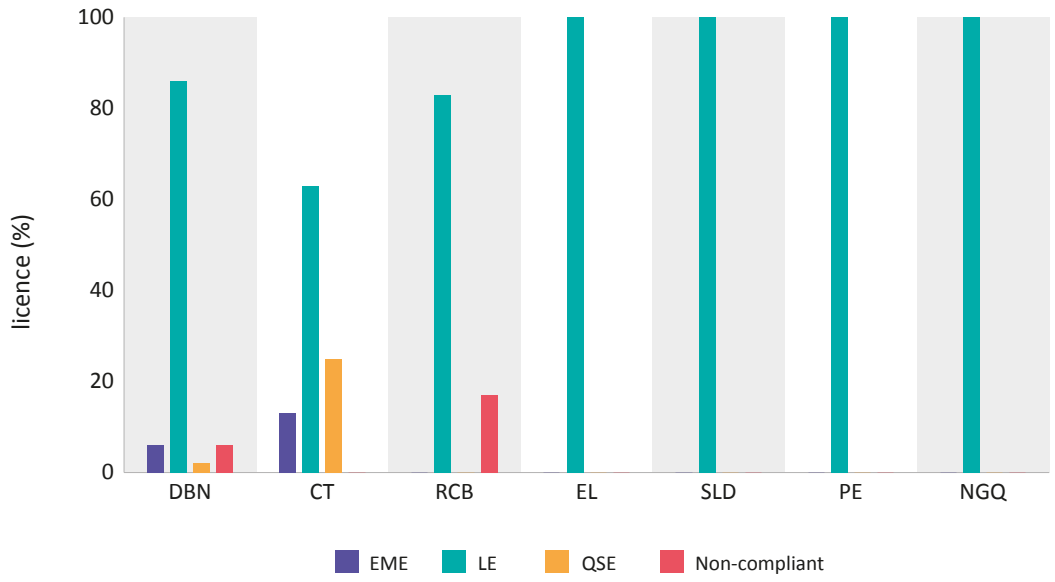
In the Port of Richards Bay 80% were LEs and 20% were B-BBEE non-compliant. There were no EMEs or QSEs.

The ports of East London, Saldanha Bay, Port Elizabeth and Ngqura only had LEs and all the terminal operators were B-BBEE compliant.

Terminal Licences per B-BBEE Turnover Category - All Ports

Figure 14 shows the percentage of terminal operator licences in the hands of each B-BBEE category in all the ports.

Figure 14: Percentage of Terminal Licences per B-BBEE Turnover Category



In the Port of Durban 86% of the terminal licences were in the hands of LEs, 6% in the hands of EMEs, 2% were in the hands of QSEs while the remaining 6% were in the hands of B-BBEE non-compliant terminal operators.

In the Port of Cape Town 63% of the terminal licences were in the hands of LEs, 25% in the hands of QSEs and only 13% in the hands of EMEs. In the Port of Richards Bay 83% of the terminal licences were in the hands of LEs and the remaining 17% of the terminal licences were in the hands of B-BBEE non-compliant companies.

The ports of East London, Saldanha Bay, Port Elizabeth and Ngqura only had terminals operated by LEs and therefore 100% of the terminal licences were in the hands of LEs.

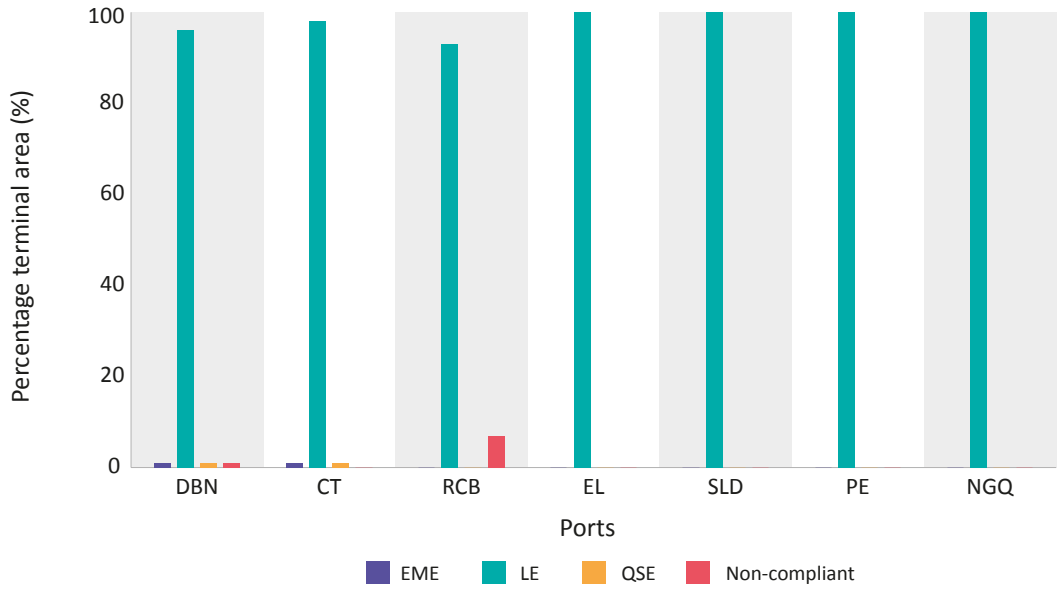
Percentage Terminal Area per B-BBEE Turnover Category- All Ports

Figure 15 shows the total percentage of all terminal area that was occupied by B-BBEE turnover category per port.
At the Port of Durban 96% of the terminal area was occupied by LEs while the remaining 4% was shared between EMEs, QSEs and B-BBEE non-compliant companies.
LEs occupied 98,27% of the terminal area in the Port of Cape Town, QSEs occupied 0,90% and EMEs occupied 0,83% of the terminal area.

As much as 92,72% of the terminal area in the Port of Richards Bay was occupied by LEs and the remaining 7,28% was occupied by B-BBEE non-compliant companies.

The ports of East London, Saldanha Bay, Port Elizabeth and Ngqura only had LEs and therefore, in these ports, 100% of the terminal area was occupied by LEs.

Figure 15: **Percentage Terminal Area per B-BBEE Turnover Category- All Ports**



Summary: Terminal Operators

The main purpose of section 2 of this document is to analyse and report on the state of transformation within terminal operations in South African ports and this was achieved by analysing the B-BBEE certificates of the terminal operators and reporting on the extent of involvement by each terminal operator using 2015/16 data.

The section profiled the 37 terminal operators into EMEs (turnover of below R10 million), QSEs (annual turnover more than R10 Million but below R50 million) and LEs (annual turnover more than R50 million) based on their annual turnovers. A significant number of companies (73%) with terminal operating licences were LEs. The remainder were QSEs (8%), EMEs (8%) and B-BBEE non-compliant terminal operators at 11%.

Our review of the extent of terminals operated by each category shows a bias in favour of LEs which accounted for 96,87% of the terminal area with the QSE and EMEs occupying negligible terminal operating space at less than 1%, comparing unfavourable even to the 2,18% of port terminal area under non-compliant operators.

Looking at the actual number of terminal licences we found that LE held 86%, QSE and EME 4% each and non-compliant operators 6%.

In terms of ownership of terminal operators it was found that 13 of 37 had an element of foreign ownership; 19% were JSE listed companies; 38% were private unlisted companies and 5% were state-owned enterprises. Consequently, a third (33%) of the terminal operator licences were in the hands of foreign owned companies followed by 23% in JSE-listed companies and 20% in private unlisted companies. The two SOEs held 24% of the terminal operator licences.

Londy Ngcobo, Africa's first female dredge master in front of the Ilembe dredger. She is now Marine Compliance Manager at NPA Dredging Services.

The majority of terminal operating companies (74%) had a level 4 or above B-BBEE rating, which translate to 80% of terminal operating licences being level 4 and above. The levels of black and women ownership in terminal operations were not significant with only 10 out of 37 terminal operators having black ownership of 50% or more. The role played by such companies in the port space was found to be even more limited, as on average they held one licence and/or less than 3% of the terminal operator area.

Only two terminal operators have women ownership that is more than 30% and these two companies operate two terminals. Four terminal operators have women ownership that is between 25% and 30% and these terminal operators operate 10 licences between them. Fifteen terminal operators have women ownership that is below 20% but above 0% and have 32 licences while the remaining terminal operators have 0% women ownership and operate 31 licences.

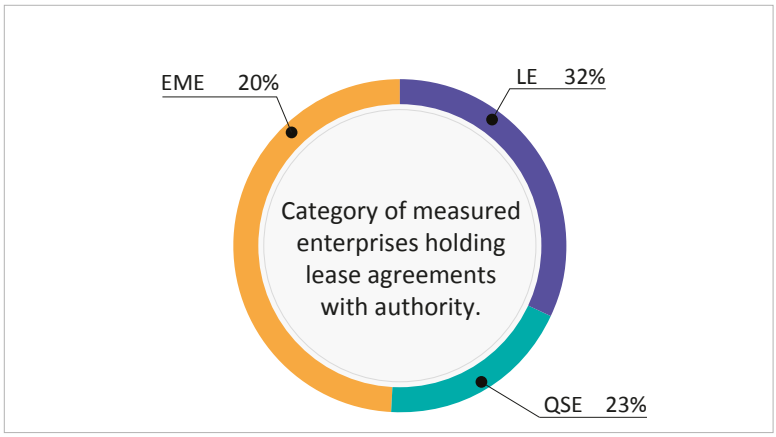
B-BBEE Analysis - Commercial and Terminal Leases

This section presents an analysis of the B-BBEE in commercial and terminal leases that were entered into by the Authority during the 2015/16 period. Terminal leases are those leases that are as a result of a section 56 terminal agreement while commercial leases are any other leases other than terminal leases that the Authority enters into.

Measured Enterprises

Figure 16 shows that of the 37 2015/16 new commercial and terminal leases, 49% were Exempt Micro Enterprises (EMEs), 32% were Large Enterprises (LEs) and 19% were Qualifying Small Enterprises (QSE).

Figure 16: Category of Measured Enterprises Holding Lease Agreements with Authority.



Secondly, due to lack of information when it came to variables such as the size of leased area, type of lease, and the duration of lease we could not conduct an analysis on the extent of these companies participation in the lease holding space of the port system

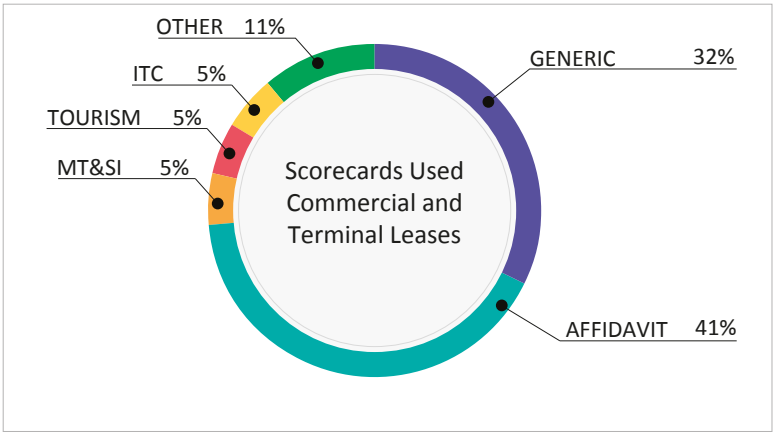
Scorecards Used for Commercial and Terminal Leases

Figure 17 shows that the majority of the companies in this section submitted affidavits declaring their black ownership, women ownership, that their turnover was below R10 Million and that, as

a result, they do not fall under any scorecard as they need not have B-BBEE certificates. Because of the dominance of EMEs in this sector, a significant proportion (42%) of the 37 lessees used affidavits. A third (33%) used the generic scorecards and only 5% used the Maritime Industry and Services Industry (MI& SI) scorecards. Interestingly, 5% used ITC sector scorecards and a similar proportion used the Tourism Sector Code with 11% falling in the "other" category.

What is glaring is the low utilisation of MI& SI codes. The use of other scorecards may be attributed to the lack of homogeneity in the services for which lease holders lease space in SA's ports, which is an indication that their revenue is generated from activities outside of core port businesses. This is especially so when we take into account that companies use scorecards in the sectors from which they draw more than 50% of their revenue.

Figure 17: **Scorecards Used: Commercial and Terminal Leases**



B-BBEE Levels - Commercial and Terminal Leases

In this section the percentage of the Authority's lease holders per B-BBEE level and the percentage of lease agreements per B-BBEE level across all the country's commercial ports were looked at.

Figure 18: **B-BBEE Levels: Commercial and Terminal Leases**

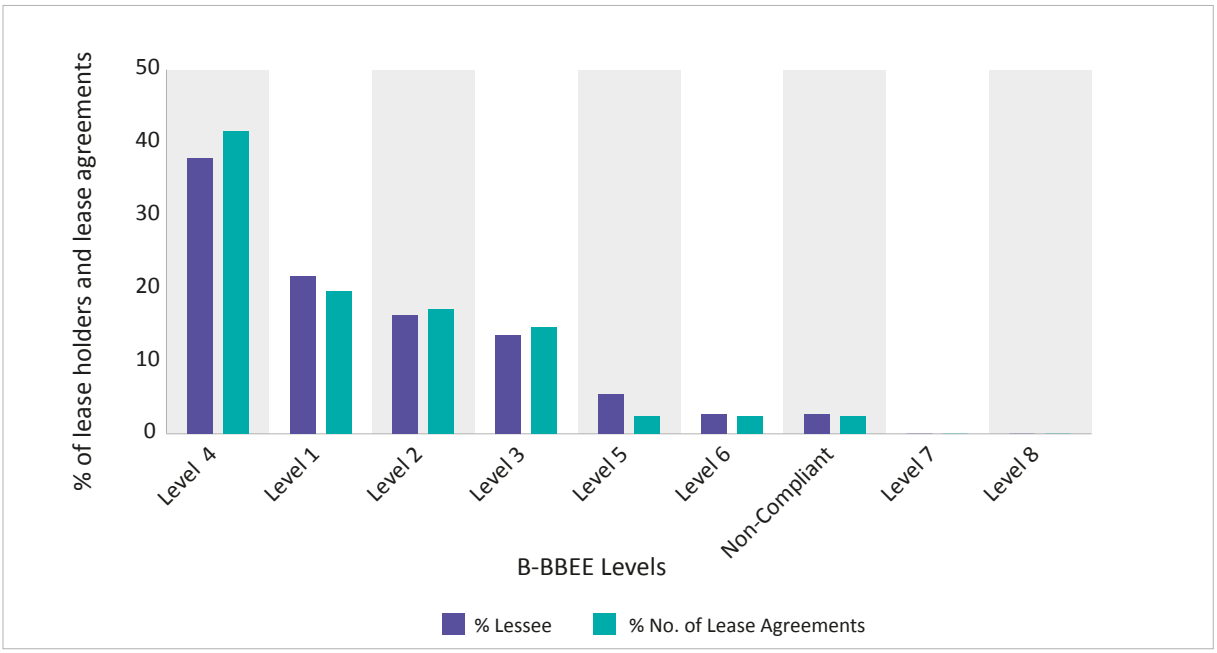
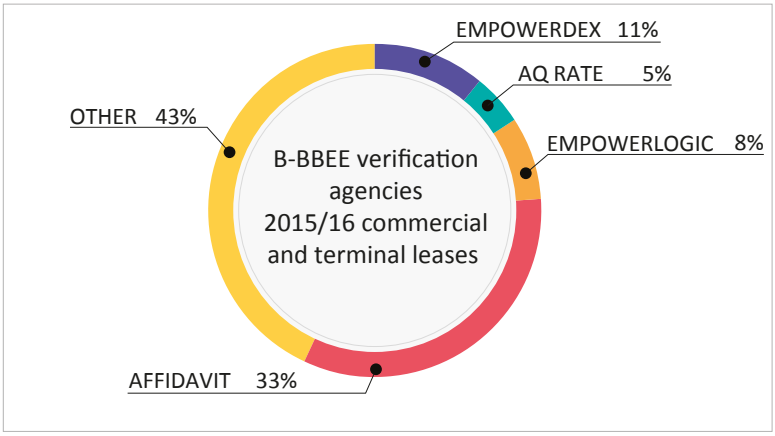


Figure 18 shows that the majority (38%) of lease holders were rated level 4 or better and 41% of lease agreements were awarded to companies rated level 4. This means that 89% of companies in this section have a B-BBEE rating of level 4 or better, which is notable.

B-BBEE Verification Agencies: Commercial and Terminal Leases

Figure 19 summarises the rating agencies used by companies with commercial and terminal lease agreements. Notably, most companies did not use common agencies with almost half (43%) the ratings coming from different agencies followed by the use of affidavits and the reported agencies minimally.

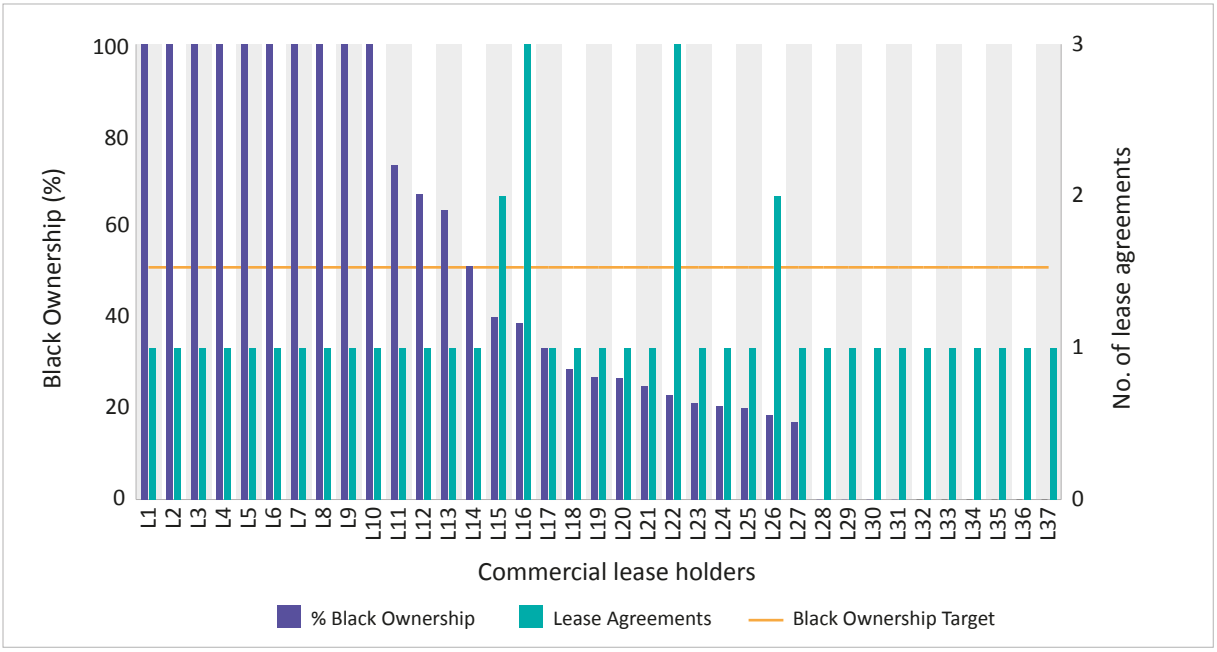
Figure 19: **B-BBEE Verification Agencies 2015/16 Commercial and Terminal Leases**



Black Ownership: Commercial and Terminal Leases

Analysis of the black ownership amongst lease holders relative to number of leases held shows that most lease holders held one lease and they account for a level of black ownership.

Figure 20: **Black Ownership and Number of Lease Agreements**



Notably, this is the one category where 10 licence holders individually have 100% Black Ownership, notwithstanding that they individually hold one licence. The Regulator's reporting requirements on the Authority has been adjusted to ensure that a breakdown of commercial leasing activities is provided. This will be covered in the future reports.

Figure 21 shows that there were only 5 lease holders with women ownership that is higher or equal to the 30% target and each held one lease agreement.

Figure 21: **Women Ownership and Number of Lease Agreements**

Summary: Commercial and terminal leases

- EMEs were dominant in the commercial and terminal leases section at 49% followed by LEs at 32% and QSEs at 19%.
- A small percentage of companies with commercial and terminal leases (5%) used the Maritime Transport and Services Industry codes; a third (33%) used the Generic Codes and the majority of the lease holders used affidavits. This was expected since 49% of companies in this section were EMEs.
- The B-BBEE levels of lease holders relative to the number of lease agreements held showed that 38% of the 2015/16 lease holders were rated level 4 and held 41% of the lease agreements. One of five (20%) of lease holders were rated at level 1 and also held a fifth of the lease agreements.
- Lease holders with a black ownership above the targeted 51% each held one lease agreement whereas lease holders with more than 1 lease agreement were found to have percentage black ownership below 51%.
- The majority of the lease holders had below 30% women ownership.

The MT Lefkas provides off-shore bunker services in Algoa Bay Port Elizabeth.

B-BBEE Analysis – Port Activity Licences

The previous sections analysed the section 56 activities of the National Port Authority (NPA) i.e. terminal operators and commercial and lease holders. This section will focus on the same for section 57 licences. These are licences issued in terms of those services for which the NPA defines port rules and requirements as well as where service providers are required to be registered or issued with permits. As was the case with terminal operators the licences were analysed together as a category and then separately by type of licence issued to the different categories of measured entities.

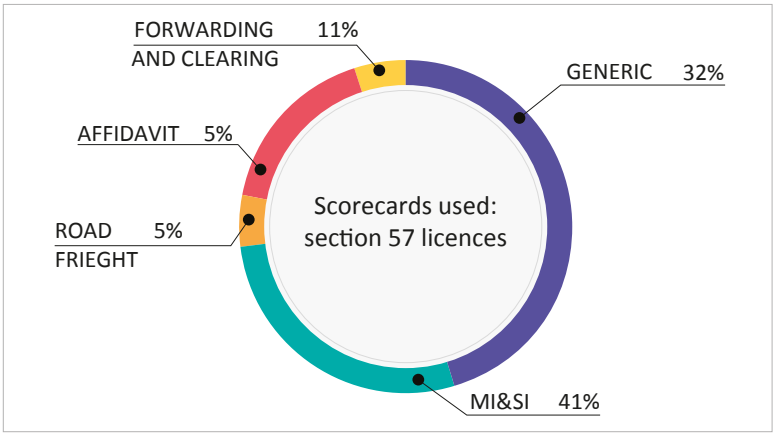
Port activity licences that are issued by the NPA in line with section 57 of the Act are for the following:

- Stevedoring
- Diving
- Waste Disposal
- Bunkering
- Vessel Registration Agents

Scorecards Used: Section 57 Licences

In total 150 companies were issued with section 57 licences. Figure 22 shows that 17% of these companies submitted affidavits declaring their black ownership, women ownership and that their turnover was below R10 million, and as a result, they do not fall under any scorecard as they do not have B-BBEE certificates.

Figure 22: Scorecards Used: Section 57 Licences



The majority of companies (46%) used generic scorecards, while 28% used the Maritime Transport and Services Industry (MT&SI) and the remaining 9% used the Road Freight and the Forwarding and Clearing scorecards. The use of the MT&SI score card is the highest in this sector with only 16% of terminal operators reported to have used the MT&SI scorecard.

Measured Enterprises Category - Port Activity Licences

Companies were categorised according to their measured entity status and assessed for each licenced activity i.e. bunkering, diving, stevedoring, waste disposal and registered vessel agents. Figure 23 shows port activity licences were dominated by EMEs (39%) and LEs (36%) with a quarter (25%) being QSE.

Figure 23: Measured Enterprises (Category) Section 57 Licences

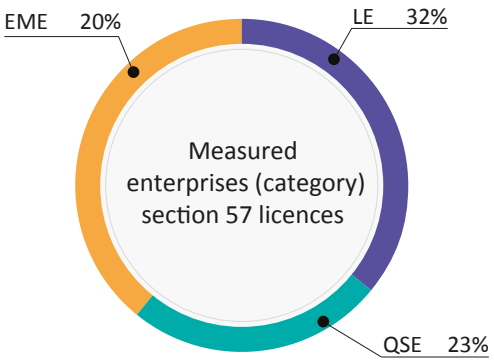


Figure 24: Section 57 Licences per B-BBEE Measured Entity Category

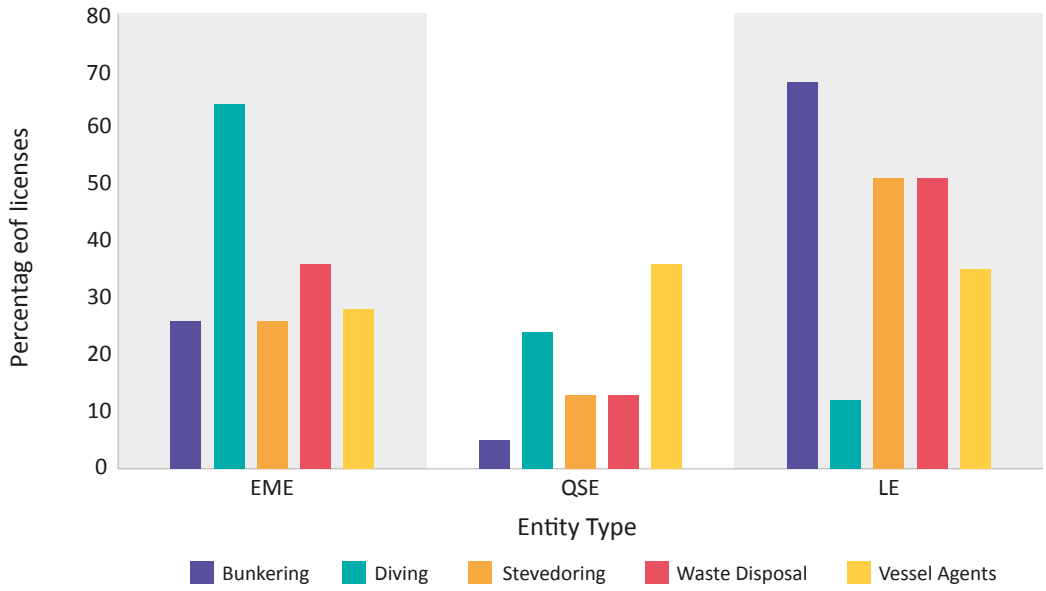


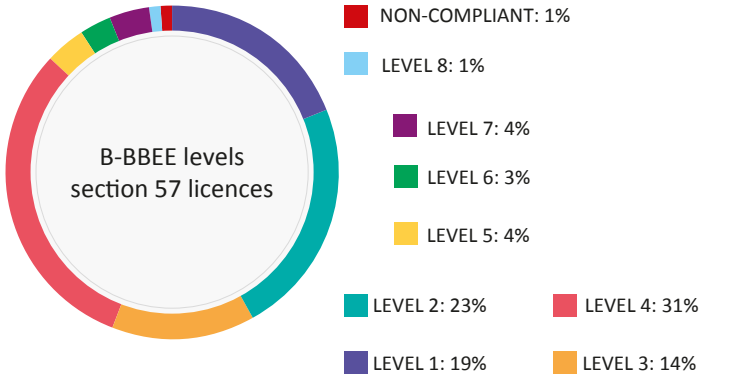
Figure 24 shows that the majority of section 57 licences were in the hands of LEs except for diving which was dominated by EMEs who held 64% of diving licences. QSEs held 24% and LEs held 12% of the diving licences.

EMEs held 26%, QSEs held 5% and LEs held 68% of the bunkering licences. EMEs held only 26% of the stevedoring licences while QSEs held 25%, and LEs held 49% of the stevedoring licences. LEs held 51% of the waste disposal licences; EMEs 36% and QSEs only 13%. Registered vessel agents licences were almost evenly distributed between QSEs holding 37%, LEs 35% and EMEs 28% of the licences.

B-BBEE Levels - Section 57 Port Activity Licences

Figure 25 shows that 19% of the section 57 licence holders achieved the highest B-BBEE rating of level 1; 23% achieved the second highest rating of level 2; 14% attained level 3 and the majority (31%) achieved level 4. Four percent and 3% achieved level 5 and level 6 respectively, while another 4% were at level 7 with 1% at level 8, the lowest level, denoting these being least transformed. Another 1% were B-BBEE non-compliant companies. In total 87% of companies had a B-BBEE rating of level 4 or better which is well over the prescribed 75%.

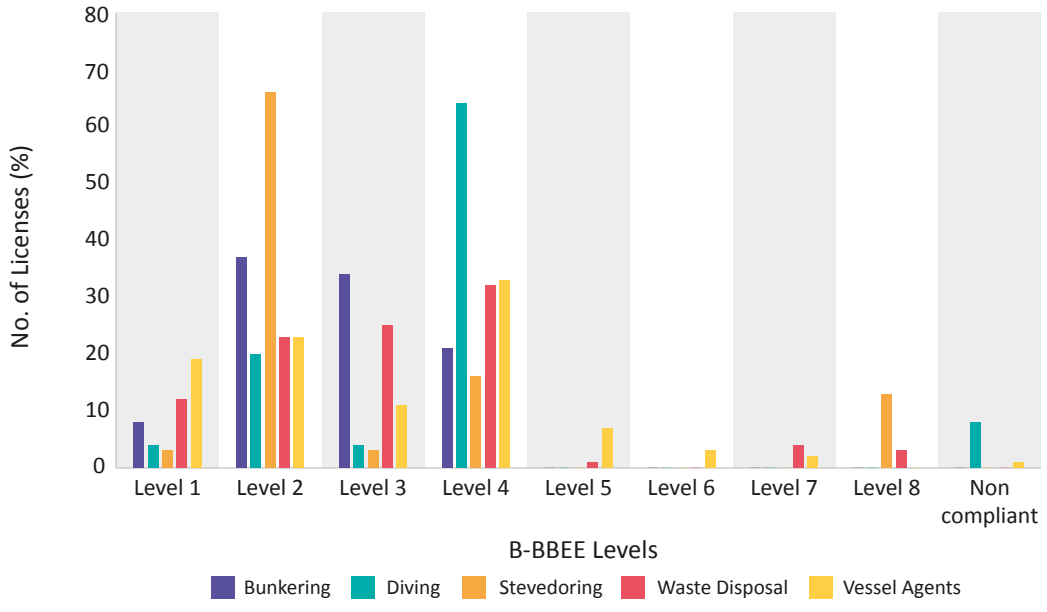
Figure 25: **B-BBEE Levels- Section 57 Licences**



Port Activity Licences per B-BBEE Level

As shown in Figure 26, the majority of licences for all sections were awarded to companies with B-BBEE ratings of level 4 or better. The majority of the stevedoring licences were in the hands of companies with a B-BBEE level 2 rating and the majority of diving licences were issued to companies with B-BBEE level 4 ratings.

Figure 26: **Section 57 Licences per B-BBEE Level**

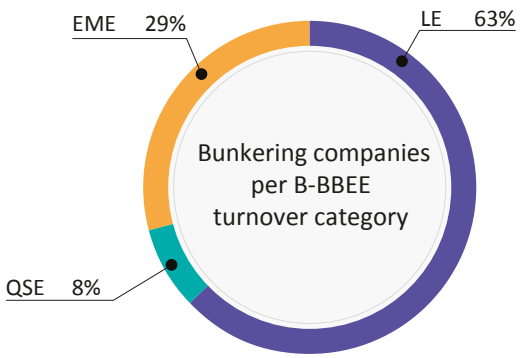


Assessment per Port Activity: Bunkering Licences

Bunkering Companies per B-BBEE Turnover Category

Figure 27 shows that 63% of the bunkering companies were LEs, 8% were QSEs and 29% were EMEs.

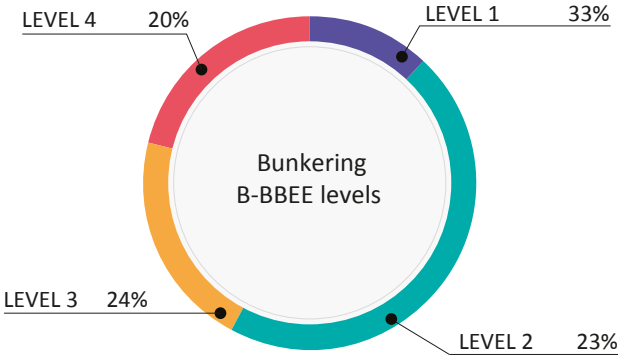
Figure 27: **Bunkering Companies per B-BBEE Turnover Category**



Bunkering Companies per B-BBEE Level

Figure 28 shows the number and percentage of bunkering companies, the B-BBEE levels that they achieved and that a majority of the bunkering companies had B-BBEE ratings of level 2. There were no companies licenced to provide bunkering services that were rated below level 4 with 12% of the companies rated level 1, 46% rated level 2, 21% rated level 3, and another 21% achieved a B-BBEE rating of level 4.

Figure 28: **Bunkering B-BBEE Levels**



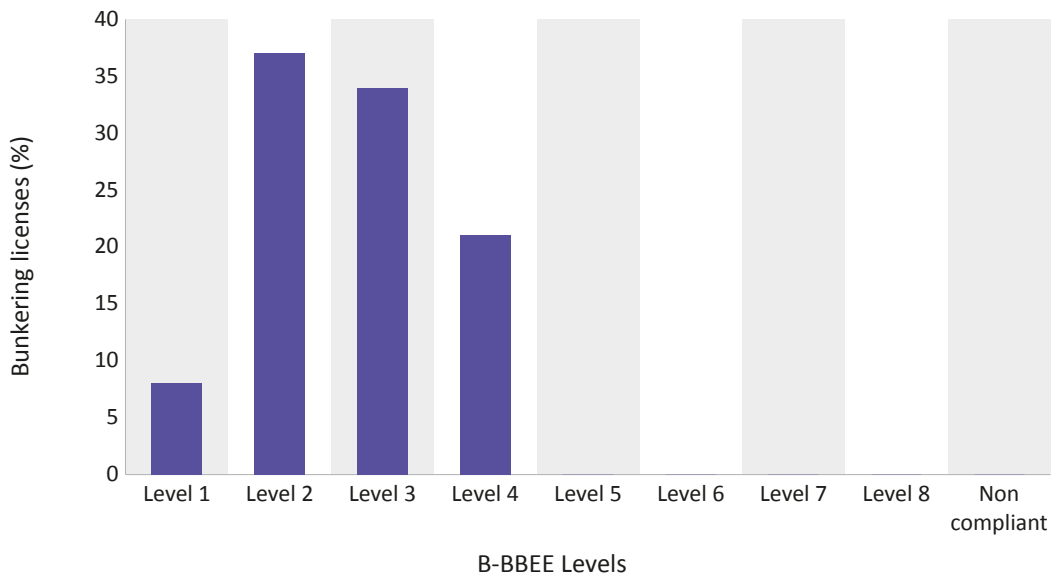
The composition of these companies in terms of ownership and women/youth participation will be reported on in a later section to provide a much clearer picture of the level of transformation in the sector.

Bunker barge belonging to one of SA's first black owned shipping companies delivering bunker services.

Bunkering Licences per B-BBEE Level

This section reports on the number of bunkering licences for different B-BBEE levels. There were 38 bunkering licences awarded to 24 bunkering companies and Figure 29 shows the percentage of bunkering licences under different B-BBEE levels. Only 7,89% of bunkering licences were in the hands of companies with the B-BBEE rating of level 1; 36,84% were in the hands of B-BBEE level 2 companies, 34% were in the hands of level 3 companies and 21% were in the hands of companies with B-BBEE rating of level 4. This implies that 100% of the bunkering companies were rated level 4 or better and there were no B-BBEE non-compliant companies.

Figure 29: **Bunkering Licences per B-BBEE Level**

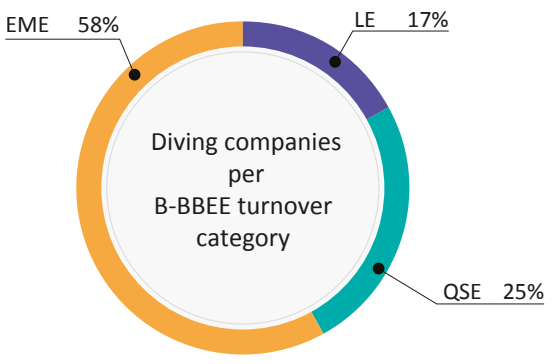


Assessment per Activity: Diving Licences

Diving Companies per B-BBEE Turnover Category

Figure 30 reports on the diving companies that were awarded diving licences by the Authority. Figure 30 shows that 17% of the diving companies were LEs, while 25% were QSEs, and 58% were EMEs.

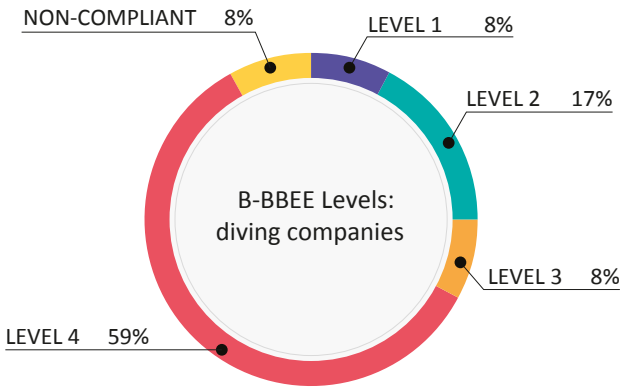
Figure 30: **Diving Companies per B-BBEE Turnover Category**



B-BBEE Levels of Diving Companies

Figure 31 shows the B-BBEE levels of the diving companies and that 92% of the diving companies achieved a B-BBEE rating of level 4 or better. Only 8% achieved a rating below level 4 and they were B-BBEE non-compliant.

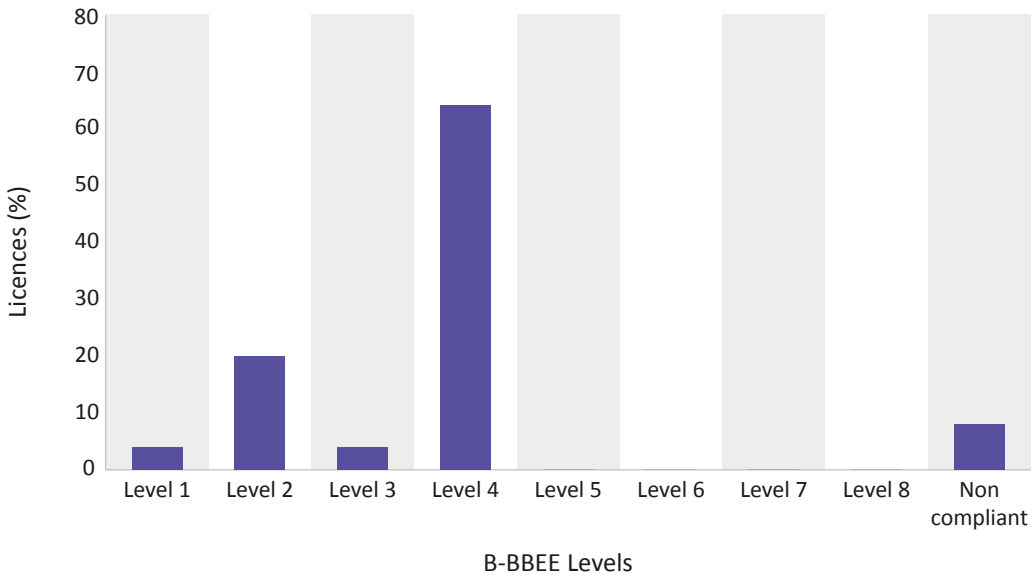
Figure 31: **B-BBEE Levels of Diving Companies**



Diving Licences per B-BBEE Level

Figure 32 reports on the diving licences that were awarded to each B-BBEE level. Figure 32 shows that only 8% of the diving licences were in the hands of companies with B-BBEE ratings below level 4. Figure 32 shows that 64% of the diving licences were in the hands of companies rated level 4, 4% were in the hands of level 3 companies, 20% were in the hands of level 2 companies, and only 4% were in the hands of companies rated level 1.

Figure 32: **Diving Licences per B-BBEE Level**

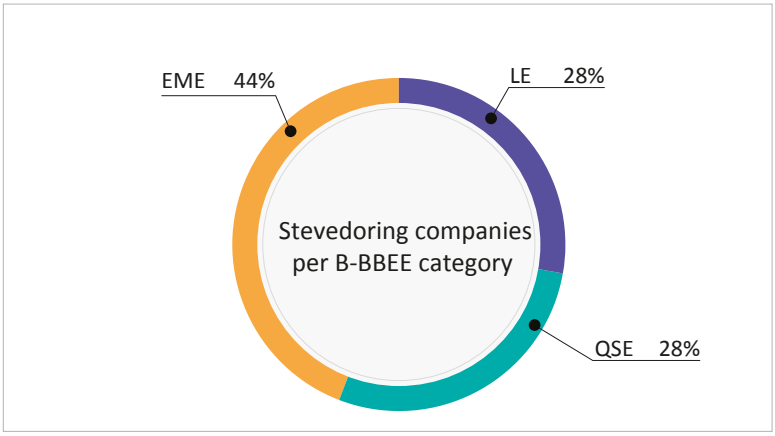


Assessment per Activity: Stevedoring Licences

Stevedoring Companies per B-BBEE Turnover Category

Figure 33 reports on the companies that were awarded stevedoring licences by the Authority between 2013 and 2016. Figure 33 shows that 28% of the stevedoring companies were LEs, while 28% were QSEs, and 44% were EMEs.

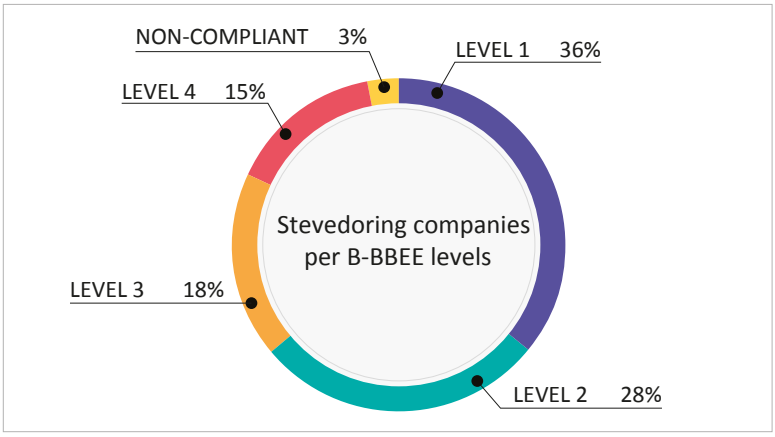
Figure 33: **Stevedoring Companies per B-BBEE Category**



Stevedoring Companies per B-BBEE level

Figure 34 shows the B-BBEE levels of the stevedoring companies and that only 3% of the stevedoring companies attained a rating below level 4 while the other 97% of the stevedoring companies were rated level 4 or better.

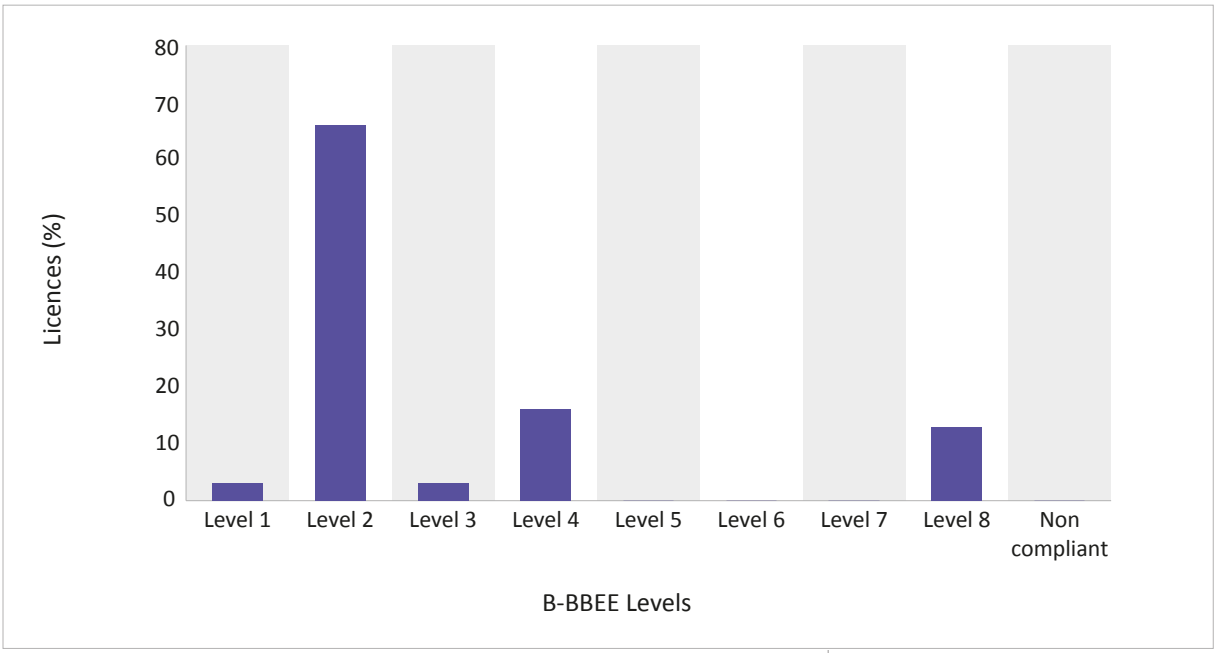
Figure 34: **Stevedoring Companies per B-BBEE level**



Stevedoring Licences per B-BBEE Level

Figure 35 shows the stevedoring licences that were awarded to each B-BBEE level. Figure 35 shows that only 13% and the remaining 87% of the licences were awarded to stevedoring companies who had B-BBEE ratings of Level 4 or higher. Over 65% of the stevedoring licences were in the hands of companies who were rated level 2; 15,79% were with companies rated level 4 and 2,63% were with companies rated level 1.

Figure 35: **Stevedoring Licences per B-BBEE Level**

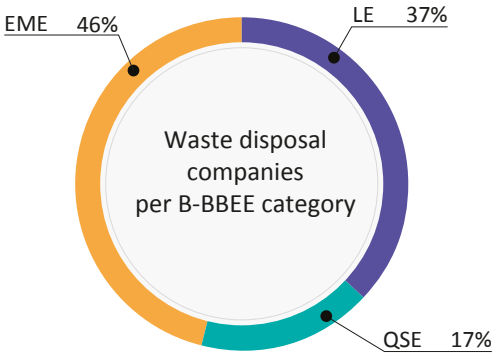


Assessment per Activity: Waste Disposal Licences

Waste Disposal Companies per B-BBEE Category

Figure 36 shows the percentage of waste disposal companies per B-BBEE category for the 2013 to 2016 period. Figure 36 shows that 37% of the waste disposal companies were LEs, 17% were QSEs, and 46% were EMEs.

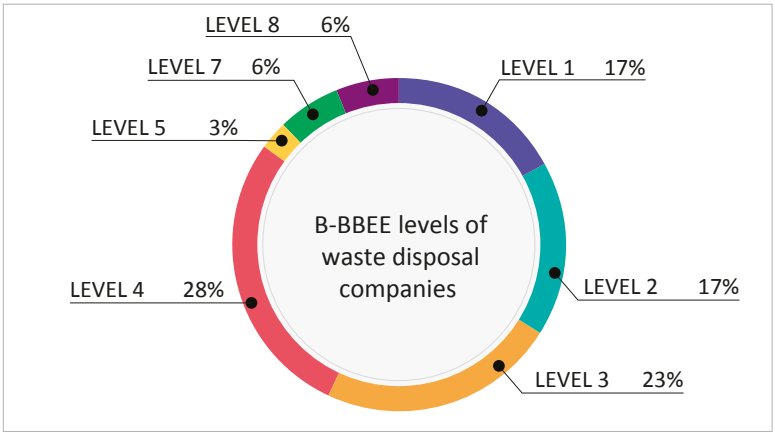
Figure 36: **Waste Disposal Companies per B-BBEE Category**



B-BBEE Levels of Waste Disposal Companies

Figure 37 reports on the B-BBEE levels of waste disposal companies and it shows that 85% of the waste disposal companies had B-BBEE ratings of level 4 or above. Figure 37 shows 17% of the waste disposal companies had ratings of level 1, while another 17% of waste disposal companies were rated level 2; 23% were rated level 3, 28% were rated level 4, 3% were level 5, 6% were level 7 and 6% had the lowest rating of level 8.

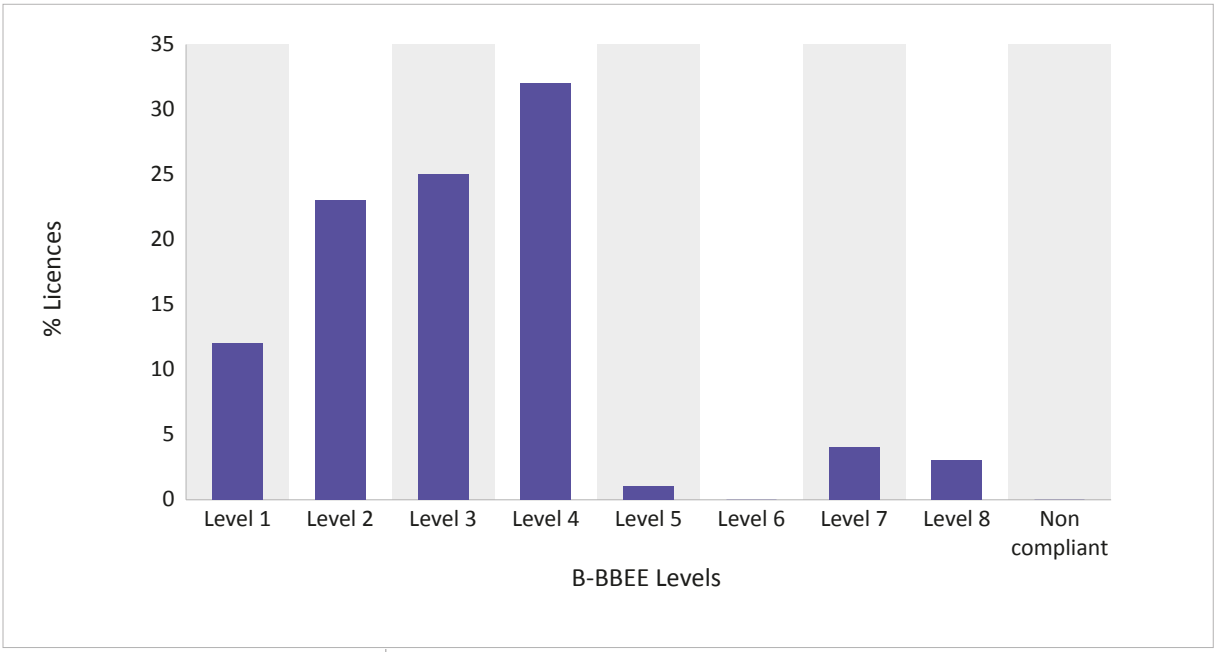
Figure 37: **B-BBEE Levels of Waste Disposal Companies**



Waste Disposal Licences per B-BBEE Level

Figure 38 shows the percentage of waste disposal licences that were awarded to each B-BBEE level and that 91,3% of the waste disposal licences were in the hands of companies who were rated level 4 or better.

Figure 38: **Waste Disposal Licences per B-BBEE Level**

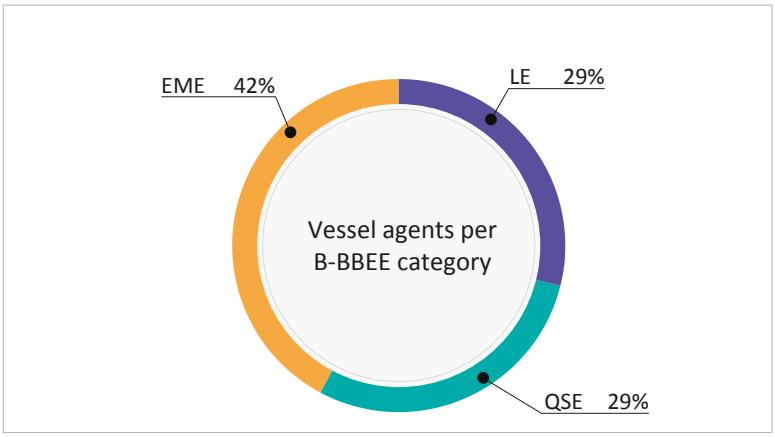


Assessment per Activity: Registered Vessel Agents

Vessel Agents per B-BBEE category

Figure 39 shows the percentage of registered vessel agents per B-BBEE category and it shows that 29% were LEs, while 29% were QSEs, and 42% were EMEs.

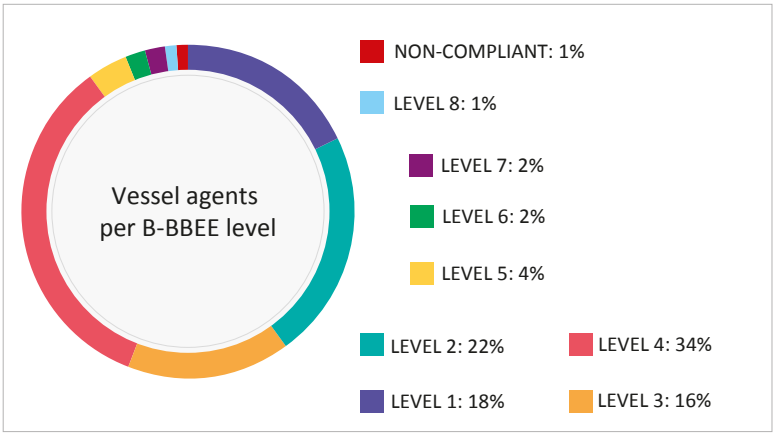
Figure 39: **Vessel Agents per B-BBEE Category**



Vessel Agent Companies per B-BBEE Level

Figure 40 shows the percentage number of registered vessel agents per B-BBEE levels and it shows that 90% of the companies had B-BBEE ratings of level 4 or higher. 18% of the vessel registered agents achieved the best rating of level 1, 22% were rated level 2, 16% were rated level 3, 34% were rated level 4, 4% were level 5, 2% were level 6 and level 7, 1% were rated level 8 and 1% were B-BBEE non-compliant.

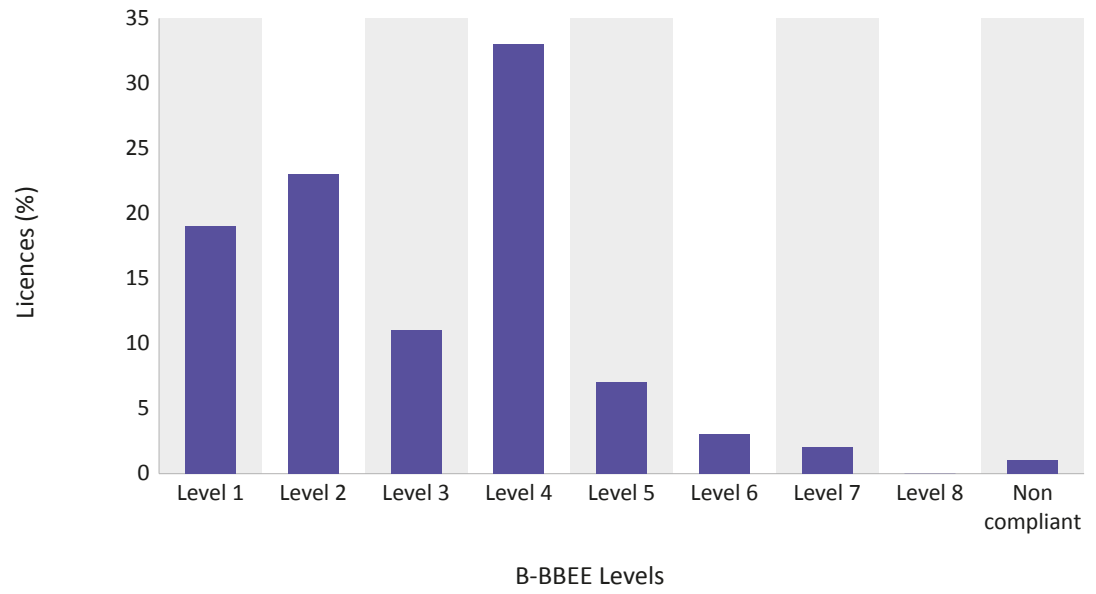
Figure 40: **Vessel Agents per B-BBEE Level**



Vessel Agents Agreements per B-BBEE Level

Figure 41 reports on the percentage of vessel agents licences that were awarded to each B-BBEE level and it shows that 86% of the licences were awarded to companies who attained a B-BBEE rating of Level 4 or higher. Figure 41 shows that 19% of the licences were in the hands of companies with a B-BBEE rating of level 1, 22,86% were in the hands of level 2 companies, 11% were in the hands of level 3 companies, and 32,86% were in the hands of companies rated level 4. 7% were in the hands of level 5 companies, 3% were in the hands of level 6 companies, and 1,07% were in the hands of B-BBEE non-compliant companies.

Figure 41: **Vessel Agents per B-BBEE Level**



Summary: Section 57 Licences

- The purpose of this section was to analyse and report on the B-BBEE certificates of the Authority's section 57 licence and permit holders and Figure 23 shows 39% of companies in this section were EMEs, 36% were LEs, and 25% were QSEs.
- EMEs were only dominant in the diving section as 64% of diving licences were in their hands and the EMEs held between 26% and 36% of licences in other section-57 licences and permits sections. LEs were dominant in all other licences in this section as they held between 35% and 68% of licences in this section except on bunkering as LEs only held 12% of bunkering licences. QSEs held between 5% and 37% of the licences in this section.
- The report shows that 46% of the companies in this section used the generic scorecards, 28% used the MI&SI scorecards, 17% submitted affidavits, and the remaining 9% used the road freights scorecards and the forwarding and clearing scorecards.
- The report shows 87% of the companies in this section were rated level 4 or higher and 1% of the companies were B-BBEE non-compliant.
- Majority of licences were in the hands of companies who were rated Level 4 or higher across all licences. It also shows that 64% of diving licences were in the hands of B-BBEE level 4 companies and 66% of stevedoring licences were in the hands of level 2 companies.

Summary Tables: Terminal Operators, Leases, and Section 57 Licences.

Table 1: B-BBEE Levels Summary: Terminal Operators

	Large Enterprises		Qualified Small Enterprises		Exempt Micro Enterprises	
B-BBEE Levels	Number	%	Number	%	Number	%
Level 1	0	0	1	33	0	0
Level 2	10	37	2	67	3	100
Level 3	7	26	0	0	0	0
Level 4	4	15	0	0	0	0
Level 5	0	0	0	0	0	0
Level 6	2	7	0	0	0	0
Level 7	2	7	0	0	0	0
Level 8	2	7	0	0	0	0
Totals	27	100	3	100	3	100
Non-compliant	4	100				

Table 2: B-BBEE Levels Summary: Commercial and Terminal Leases

Commercial and Terminal Leases						
	Large Enterprises		Qualified Small Enterprises		Exempt Micro Enterprises	
B-BBEE Levels	Number	%	Number	%	Number	%
Level 1	0	0	3	50	5	28
Level 2	3	25	2	33	1	6
Level 3	2	17	1	17	2	11
Level 4	4	33	0	0	10	56
Level 5	2	17	0	0	0	0
Level 6	1	8	0	0	0	0
Level 7	0	0	0	0	0	0
Level 8	0	0	0	0	0	0
Totals	12	100	6	100	18	100
Non-compliant	1	100				

Table 3: B-BBEE Levels Summary : Section 57 Licences

Section 57: Port Activities						
	Large Enterprises		Qualified Small Enterprises		Exempt Micro Enterprises	
B-BBEE Levels	Number	%	Number	%	Number	%
Level 1	1	2	18	46	11	19
Level 2	22	45	10	26	3	5
Level 3	10	19	3	8	8	14
Level 4	5	9	5	13	36	62
Level 5	6	11	—	0	—	0
Level 6	3	6	1	3	—	0
Level 7	5	9	—	0	—	0
Level 8	1	2	2	5	—	0
Totals	53	100	39	100	58	100
Non-compliant	1	100				

B-BBEE Average Scores: Applying New and Old Scorecards.

The promulgation of new score cards by the Department of Trade and Industry(dti) and the pending promulgation of a new score card by the Department of Transport(DoT) means that there is a transition period where companies can comply based on old score card of the DoT or the dti's new generic score card. This is reflected in the use of generic and old score cards as reported in previous section.

In this section the B-BBEE average scores attained by companies using old and new score cards are compared for terminal operating agreements as well as commercial and terminal licences and section 57 port activity Licences, all based on the dti's Generic Scorecards.

Table 4: B-BBEE Elements: Old 2007 Codes vs New 2013 Codes (dti)

B-BBEE Element	Average Score	Target Score
Equity Ownership	20	25
Management Control	10	15
Employment Equity	15	
Skills Development	15	20
Preferential Procurement	20	
Enterprise and Supplier Development	15	40
Socio-Economic Development	5	5

As reported in the background section of the report, LEs have different B-BBEE element requirements/targets to QSEs which also differs between old and new B-BBEE scorecards. The old B-BBEE codes in terms of the B-BBEE Act of 2007 Code of Good Practice had seven elements; equity ownership; management control; employment equity; skills development; preferential procurement; enterprise development; and socio-economic development.

LEs were rated on all seven elements whereas QSEs had an option to choose any four from the seven B-BBEE elements.

Whereas in the new 2013 B-BBEE codes, there are only five elements; ownership, management control, socio-economic development, skills development, and enterprise and supplier development, with ownership, skills development, and enterprise and supplier development as priority elements.

LEs are required to comply with all five elements whereas a QSE is required to comply with ownership as a compulsory element and either skills development or enterprise and supplier development.

The target and weighting on the elements were changed and the attainment of certain levels was changed. Attainment of level 2 increased by 10 points from 85 to 95 points and the minimum threshold for level 3 increased from 75 to 90 points whilst the attainment of level 4 increased from 65 to 80 points. The minimum threshold for level 8 was also increased from 30 points to 40 points. This summarised in Table 5 .

Table 5: B-BBEE Levels Scores: New vs Old

B-BBEE Status	2007 B-BBEE Codes	2013 B-BBEE Codes
1	100+	100+
2	85 —100	95 — 100
3	75 — 85	90 — 95
4	65 — 75	80 — 90
5	55 — 65	75 — 80
6	45 — 55	70 — 75
7	40 — 55	55 — 70
8	30 — 40	40 — 55

The result is that measured entities that are still using the 2007 codes will have to achieve higher scorecard points when using the 2013 codes to maintain their current B-BBEE levels.

B-BBEE Scores: Terminal Operators

Terminal Operators Scores on Old and New Score Cards

Of the 37 terminal operators 20 used old score cards. This section will report B-BBEE average scores for those terminal operating companies still using the old B-BBEE scorecards. The average scores scored by LEs is reported in Table 6 and it shows that LEs were doing well on all elements achieving between 60% and 114,80% against the targets. They achieved 81,60% against the target for equity ownership; 68,70% against the target for management control; 59,53% against the target for employment equity; 76% against the target for skills development; 91% for enterprise development and 114% for socio-economic development.

Table 6: **Terminal Operator B-BBEE Scores: Large Enterprises Old Scorecard**

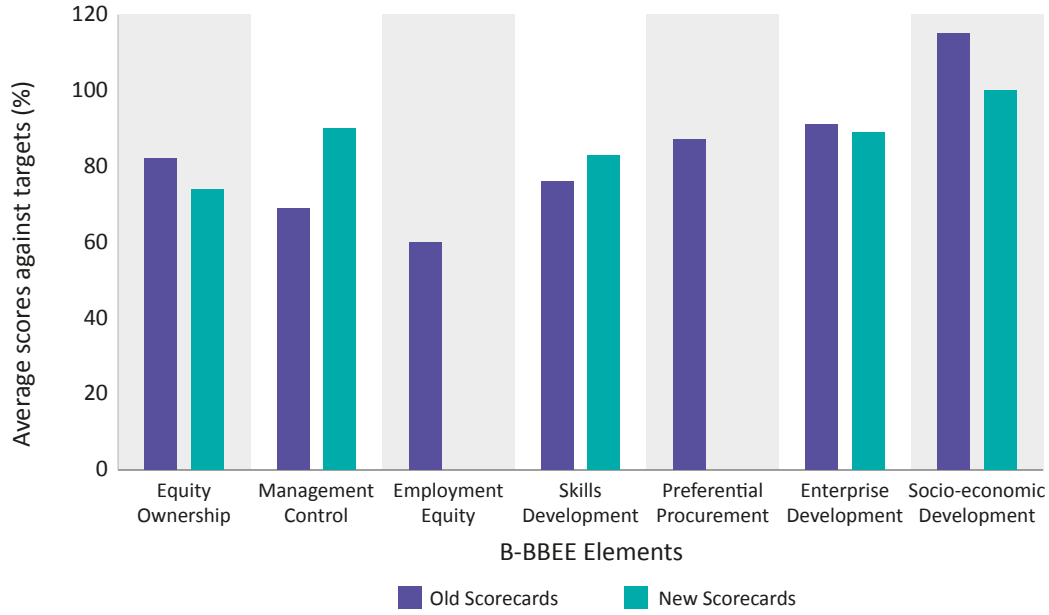
B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	16,32	20	81,60
Management Control	6,87	10	68,70
Employment Equity	8,93	15	59,53
Skills Development	11,4	15	76,00
Preferential Procurement	17,31	20	86,55
Enterprise and Supplier Development	13,71	15	91,40
Socio-Economic Development	5,74	5	114,80

Table 7 shows that when applying the new B-BBEE Codes the terminal operators which reported using the new scorecards achieved high averages of between 74% and 100% against the targets. They scored 74% against the target on equity ownership; 89,73% against the target on management control; 82,6% for skills development; 89% against the target for enterprise and supplier development with 100% against the targets for social-economic development.

Table 7: **Terminal Operator B-BBEE Scores: Large Enterprises New Scorecard**

B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	18,5	25	74,00
Management Control	13,46	15	89,73
Skills Development	16,52	20	82,60
Enterprise and Supplier Development	35,6	40	89,00
Socio-Economic Development	5	5	100,00

Figure 42: **Comparing Large Enterprise Targets on Old and New Score Cards**



From Figure 42 it is clear that employment equity and preferential procurement no longer feature prominently. It also suggests that at this stage the effects of increased score and therefore requirements for equity ownership, enterprise development and socio-economic development implies the reduction in the average scores on most elements. The new scorecards however results in higher scores on management control and skills development.

QSEs: Average B-BBEE Scores -Terminal Operators- Using Old Scorecards

In the 2007 B-BBEE codes, QSEs were only required to comply and report on four out of seven elements and as a result, their scores were only biased towards their best four elements, which resulted in elements such as management control and skills development being neglected. Table 8 shows that QSEs achieved average scores between 0% and 90%. Notable is the 90% for enterprise development and the 87% for preferential procurement. These elements hold the most potential in driving a transformation agenda.

Table 8: Terminal Operator B-BBEE Scores: QSE: Old Scorecards

B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	17,89	25	71,56
Management Control	0	25	0
Employment Equity	14,49	25	57,96
Skills Development	0	25	0
Preferential Procurement	21,72	25	86,88
Enterprise Development	22,5	25	90
Socio-Economic Development	13,75	25	55

Companies scoring high on these element are actively contracting with B-BBEE empowered companies (on procurement) and empowering emerging contractors in terms of their enterprise development initiatives. It is however not clear what type of procurement and enterprise development these companies are engaged in and whether these, in turn would lead to other enterprises emerging and conducting business any of the aspects of terminal operations in South African ports. There were no QSEs that reported using the new scorecards under the terminal operator section.

Average B-BBEE Scores for Commercial and Terminal Leases- Old and New Scorecards

LEs Average B-BBEE Scores - Old Scorecard

When using the old 2007 B-BBEE codes, Table 9 shows that the LEs under the commercial and terminal leases section were scoring fairly high in management control, enterprise development, and socio-economic development. However, the LEs achieved poor results on employment equity and skills development.

These enterprises scored an average of 61,30% against the target for equity ownership, 72,40% for preferential procurement, 72,60% enterprise development, achieving a higher average of 89,60% against targets for management control, and even higher 126,80% against the target for socio-economic development.

It seems that LEs in the commercial and terminal leasing space struggled to implement employment equity and skills development as they achieved very low averages of 39% and 38%, respectively.

Table 9: Large Enterprises Average B-BBEE Scores: Commercial and Terminal Leases: Old Scorecards

B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	12,26	20	61,30
Management Control	8,96	10	89,60
Employment Equity	5,9	15	39,33
Skills Development	5,79	15	38,60
Preferential Procurement	14,48	20	72,40
Enterprise and Supplier Development	10,89	15	72,60
Socio-Economic Development	6,34	5	126,80

LEs Average B-BBEE Scores: New Scorecards

Table 10 and Figure 45 shows that, when applying the new 2013 B-BBEE Codes the companies in this section achieved moderate results on all B-BBEE elements, with the exception of socio-economic development in which they scored an average of 77,80% against the target. LEs scored between 34% and 49% against the target on all other elements. They achieved 49,92% against the target for equity ownership, 37,63% against the target for management control, 42,80% against the target for skills development, and they achieved 34,28% against the supplier development target.

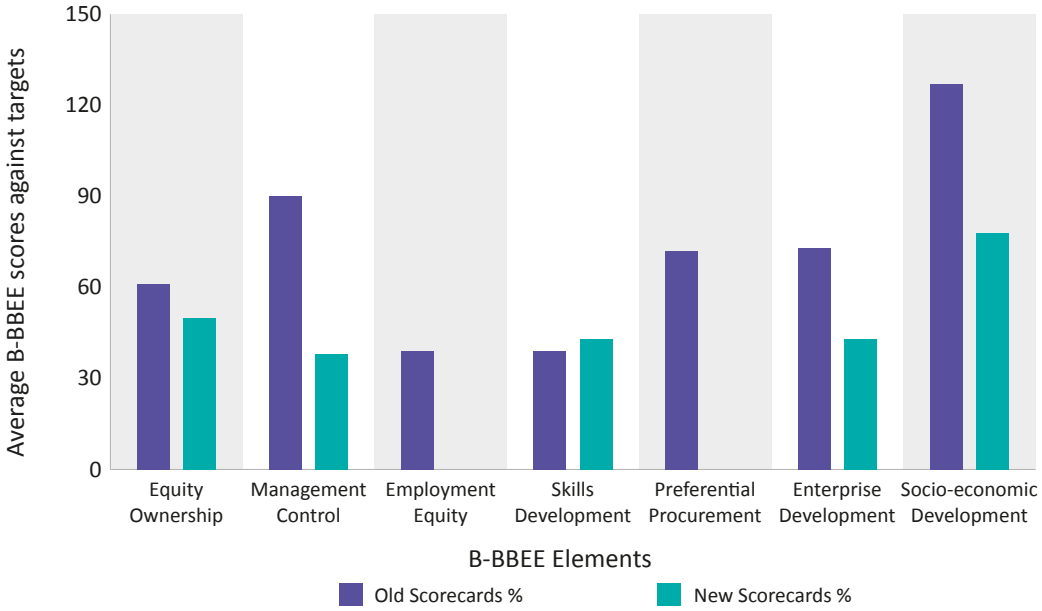
Table 10: Large Entities Average B-BBEE Scores: Commercial and Terminal Leases: New Scorecard

B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	12,48	25	49,92%
Management Control	7,15	19	37,63%
Skills Development	8,56	20	42,80%
Enterprise Development	13,71	40	34,28%
Socio-Economic Development	3,89	5	77,80%

The picture with regards to LEs commercial and terminal leases highlights a reduction in scores between the old and new scorecards almost across all elements as reflected in Figure 43.

These average scores show that LEs perform poorly on management control and enterprise and supplier development as they scored below 40% against the target on these two elements. Even the 49,92% and 42,8% achieved against targets for equity ownership and skills development are not commendable results. The only increase is in skills development.

Figure 43: **Comparison of B-BBEE Scores Amongst Large Enterprise Lease Holders: Old and New**



Leases provide a means by which other players can gain access to the port system and the reduction demonstrated suggests that more attention must be paid to the lease regimes of the NPA with a focus on the elements concerned.

QSE Average B-BBEE Scores Commercial and Terminal Lease - Old Scorecard

When using the old 2007 B-BBEE codes, Table 11 shows that the QSEs under the commercial and terminal leases section scored very high averages on most elements except employment equity and skills development. Scoring an average of 87% against the targets for equity ownership; an average of 108% for management control; an average of 90% for preferential procurement; an average of 95% for enterprise development and an average of 80% against the target for socio-economic development.

Table 11: **Qualifying Small Enterprises Average B-BBEE Scores: Commercial and Terminal Leases: Old Scorecard**

B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	21,75	25	87,00%
Management Control	27	25	108,00%
Employment Equity	10,99	25	43,96%
Skills Development	0	25	0,00%
Preferential Procurement	22,6	25	90,40%
Enterprise and Supplier Development	23,75	25	95,00%
Socio-Economic Development	20	25	80,00%

In contrast they achieved a very low average of 43,96% against the target for employment equity and even more concerning, QSEs under this section scored 0% against the target on skills development. This is largely because of the flexibilities of the old B-BBEE codes that allowed the QSEs to only comply with ownership as a compulsory element and then choose between skills development and enterprise development where they have achieved an average of 95%.

There was not a single company out of the seven QSEs that reported on the skills development element, suggesting that QSEs may find it difficult to implement this B-BBEE element.

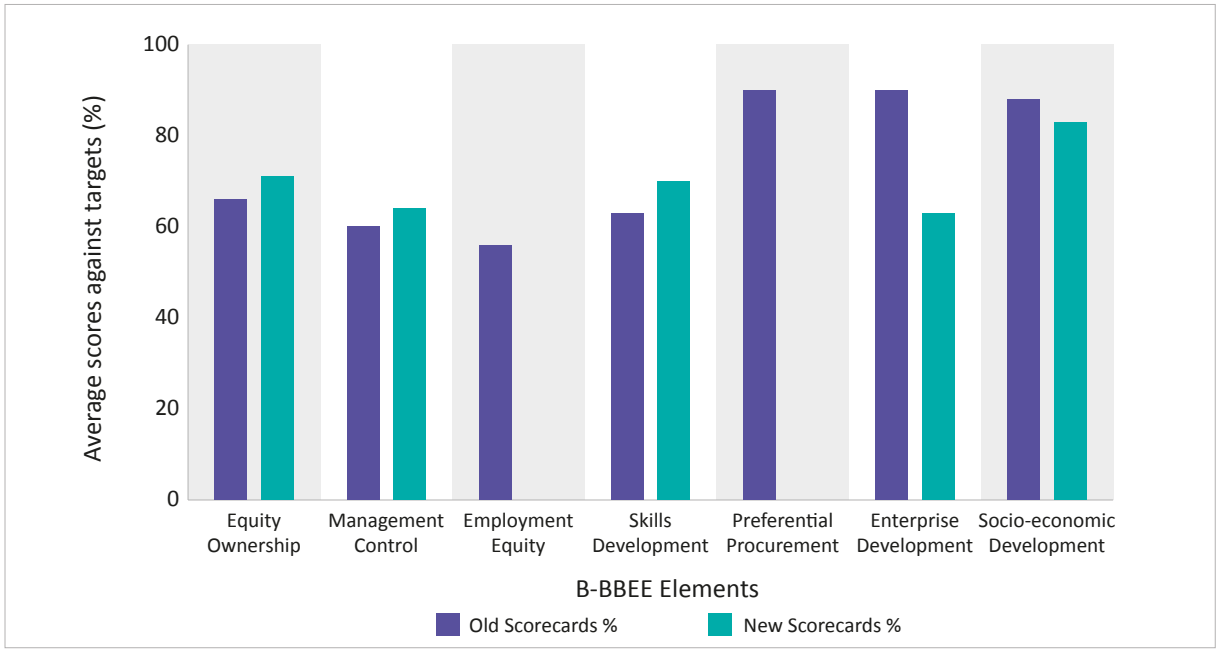
QSE Average B-BBEE Scores - Commercial and Terminal Leases - New Scorecard

Table 12 shows that QSEs scored poorly on most elements. They scored 58,68% against the target for equity ownership; 67,94% against the target for management control and 50% against the target for enterprise and supplier development. They scored very poorly on skills development and socio-economic development, scoring 0% against the targets on both elements as there was not a single QSE that reported on these elements.

Table 12: Qualifying Small Enterprises Average B-BBEE Scores: Commercial and Terminal Leases: New Scorecard

B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	14,67	25	58,68%
Management Control	10,19	15	67,93%
Skills Development	0	25	0,00%
Enterprise and Supplier Development	15,06	30	50,20%
Socio-Economic Development	0	5	0,00%

Figure 44: Leases: QSEs Old Scorecard vs New Scorecard



QSE lease holders also showed significant reductions in scores between old and new score cards. To start with, where previously none were measured on skills development, the new score card sees most QSE companies holding leases for terminals dropping on socio-economic development and preferential procurement; previously both elements had average scores of 80% and above. On the new score card the average scores do not go above 70% which again shows that compliance with this requirement of the score card is significantly reduced.

B-BBBE Average Scores - Section 57 Licences

LEs Section 57 Port Activities: Old and New Scorecards

When using the old B-BBEE codes, Table 13 shows that LEs under this section were scoring fairly high on all B-BBEE elements except employment equity and management control where they achieved an average of 59,5% and 56% against the targets on these two elements. They scored between 63% and 90% for the other elements.

They achieved 66,40% against the target for equity ownership, they achieved 63% against the target for skills development, 89,50% against the target for preferential procurement, they achieved an impressive average score of 90% against the target for enterprise development, and they achieved 88% against the target for socio-economic development.

Table 13: Large Enterprises Average B-BBEE Scores Port Activities : Old Scorecards

B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	13,28	20	66,40%
Management Control	5,95	10	59,50%
Employment Equity	8,45	15	56,33%
Skills Development	9,45	15	63,00%
Preferential Procurement	17,9	20	89,50%
Enterprise Development	13,54	15	90,27%
Socio-Economic Development	4,4	5	88,00%

LEs Average B-BBEE Scores - Section 57 Port Activities New Scorecards

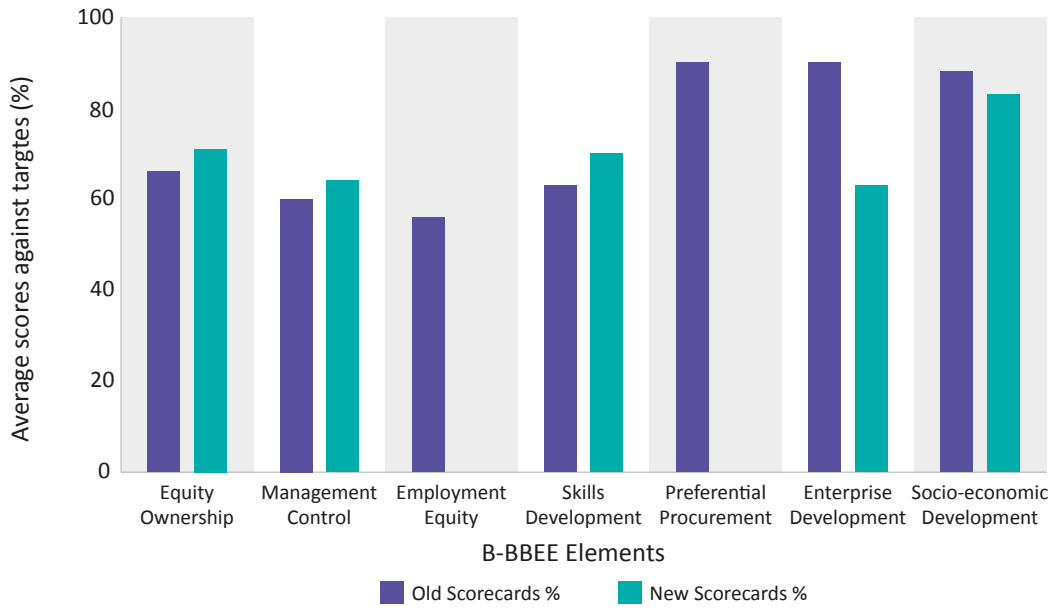
Table 14 shows that LEs in this section achieved acceptable averages against the targets as they scored between 63% and 83% on all 5 elements. LEs achieved 71% against the target for equity ownership, 63,67% against the target for management control, 69,70% against the target for skills development, 62,8% against the target for enterprise and supplier development, and they achieved a high of 83,40% against the target for socio-economic development.

A reverse trend emerges for large entries holders of section 57 licences. The new scorecards has resulted in slightly higher averages on equity ownership, management control and skill development. Enterprise development averages reduce from 90% to 63% which is of concern.

Table 14: Large Enterprises Average B-BBEE Scores: Section 57: New Scorecard

B-BBEE Element	Average Score	Target Score	Average Score as % of Target Score
Equity Ownership	17,82	25	71,28%
Management Control	9,55	15	63,67%
Skills Development	13,94	20	69,70%
Enterprise and Supplier Development	25,12	40	62,80%
Socio-Economic Development	4,17	5	83,40%

Figure 45: Comparison of B-BBEE Scores Amongst Large Enterprise Section 57 Licence Holders: Old vs New Scorecards



QSE Average B-BBEE Scores Section 57 Port Activity Licences: Old Scorecard

When applying the old codes, Table 15 shows that QSEs were achieving very impressive results as they scored 100% against the targets for all the four elements that they reported on. They achieved 100% against the target on equity ownership, management control, enterprise development, and socio-economic development. None of the QSEs reported on management control, employment equity, and preferential procurement and as a result they scored 0% against the targets for these three elements. This indicates that QSEs in this section may have found it difficult to implement these elements.

Table 15: QSE Average B-BBEE Scores: Section 57 Licences: Old Scorecards			
B-BBEE Element	**Average Score**	**Target Score**	**Average Score as % of Target Score**
Equity Ownership	25	25	100,00%
Management Control	25	25	100,00%
Employment Equity	0	25	0,00%
Skills Development	0	25	0,00%
Preferential Procurement	0	25	0,00%
Enterprise Development	25	25	100,00%
Socio-Economic Development	25	25	100,00%

QSE: Average B-BBEE Scores: Section 57 Port Activities Licences New Scorecards

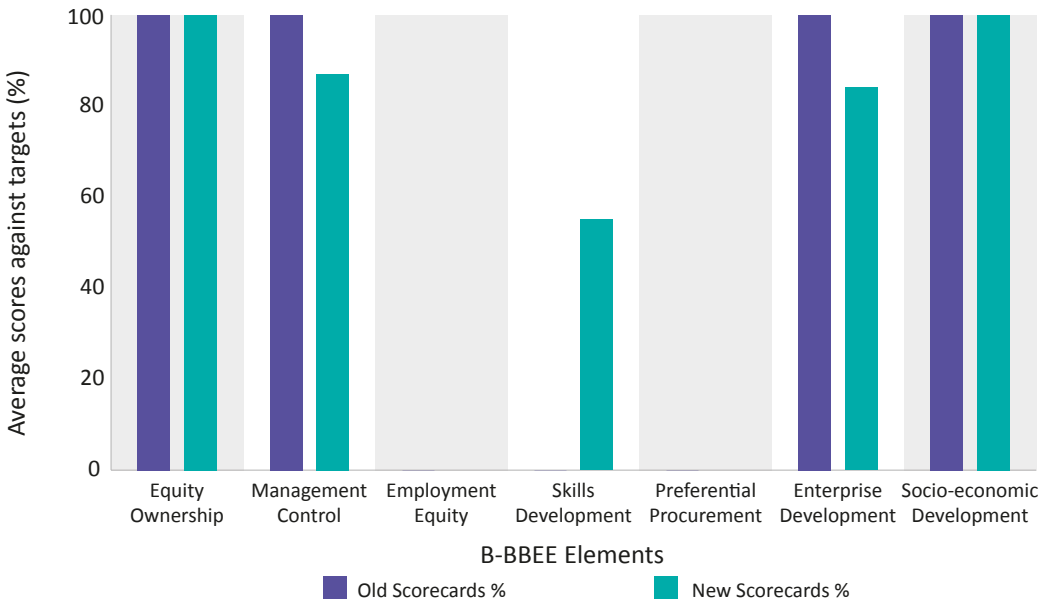
Table 16 shows that when applying the new 2013 B-BBEE Codes, the companies (section 57 licences) achieved impressive average scores on all B-BBEE elements, scoring between 83% and 100% on most elements. They achieved maximum points of 100% against the targets on equity ownership and socio-economic development, 87% against the target for management control, and 83,77% against the target for enterprise and supplier development.

Table 16: QSEs: Average B-BBEE Scores: Section 57 Licences: New Scorecards			
B-BBEE Element	**Average Score**	**Target Score**	**Average Score as % of Target Score**
Equity Ownership	25	25	100,00%
Management Control	13,08	15	87,20%
Skills Development	13,76	25	55,04%
Enterprise and Supplier Development	25,13	30	83,77%
Socio-Economic Development	5	5	100,00%

Companies under this section may have found it difficult to implement skills development as they scored 55% against the target for this element.

Last are the comparisons of old and new score cards for QSEs in section 57 port activities as shown in Figure 46. Where averages on equity ownership and socio-economic development have not changed, management control and enterprise development reduces just as in the other categories.

Figure 46: **Comparison of B-BBEE Scores Amongst QSE Section 57 Licence Holders: Old vs New Scorecards**



Sections Where B-BBEE Can be Enforced

This section will look at sections of the report where transformation (B-BBEE) can be accelerated and where the Regulator's next port transformation strategy can focus on. The recommendations and analysis will be in line with the recommendations of the Department of Transport's *Public Sector Participation of 2015* and the recommendations of the *Economic Review of Participation in Ports Operations and Services in South Africa* report commissioned by the Ports Regulator of South Africa (2010, p. 116; URBAN-ECON: Development Economists Consortium, 2010).

The purpose of this section is to report on the current state of transformation in those port activities that were reported as being suitable for private sector participation. Once the analysis has been done, sections where B-BBEE can be enforced, will be distilled.

This report has analysed the following sections:

- Section 56 & 65: Terminal Operations
- Commercial and Terminal Leases
- Section 57 Licences and Permits
- Bunkering Licences
- Diving Licences
- Stevedoring Licences
- Waste Disposal Licences
- Vessel Registration Agent

Categories Where Private Participation is Suitable as Specified in the Regulator's Economic Review

With respect to port services, the economic review report listed the following services as all suitable for participation by private entities, public entities or participation. (URBAN-ECON: Development Economists Consortium, 2010)

- Terminal Operations
- Stevedoring
- Waste Disposal
- Cargo Storage
- Ship Repair Facilities
- Bunkering
- Diving
- Pest Control

Current Status of the Categories Eligible for Private Sector Participation as Recommended in the Regulator's Economic Review.

Terminal Operations

Figure 5 of this report has shown that terminal operations were still dominated by LEs with 73% of the terminal operators being LEs; 8% being QSEs; only 8% of the terminal operators being EMEs and 11% of the terminal operators being B-BBEE non-compliant. Figure 5 also reported on the extent of involvement of each B-BBEE turnover category in terminal operations by reporting on the number of licences held by each category and the extent of terminal area occupied by each B-BBEE category. It shows that 86% of the terminal licences were in the hands of LEs; 4% with QSEs and the remaining 6% were in the hands of B-BBEE non-compliant companies. It further shows that 97% of the ports' available terminal area was occupied by LEs; 2,18% was occupied by non-compliant companies and less than 1% was occupied by QSEs and EMEs.

Stevedoring

Figure 33 shows that the majority of the stevedoring company in this section were EMEs at 44% and that both LEs and QSEs were at 28% each, but Figure 24 shows that LEs held 49% of the stevedoring licences, while EMEs only held 26% and QSEs held the remaining 26%. Figure 35 reported on the number of stevedoring licences that was awarded to each B-BBEE levels and it shows that the majority (65,79%) of the licences were in the hands of B-BBEE level 2 companies and that an amazing 87% of the licences were in the hands of companies who were rated level 4 or higher.

Dredger Italeni at work ensuring the harbour is kept to the correct depth.

Waste Disposal

Figure 36 shows that 46% of the waste disposal companies were EMEs, 37% were LEs, and 17% of the waste disposal companies were QSEs. Figure 24 shows that LEs held 51% of the waste disposal licences, EMEs held 36% and QSEs held 13% of the waste disposal licences. Figure 38 reports on the number of licences that were held by each B-BBEE level category and it shows that 91% of the waste disposal licences were in the hands of companies that were rated level 4 or higher.

Bunkering

Figure 27 shows that 63% of the companies under this section were LEs while 29% were EMEs and 8% were QSEs. Figure 28 shows that 46% of the companies achieved B-BBEE ratings of level 2 and that all companies were rated level 4 or higher. Figure 29 shows that all bunkering licences were awarded to companies who were rated level 4 or higher and no company in this section was rated below level 4.

Diving Licences

Figure 30 shows that this section was dominated by EMEs, with 58% of the companies in this section being EMEs, 25% being QSEs and only 17% being LEs. Figure 24 shows that 64% of the diving licences were in the EMEs, 24% were in the hands of QSEs, and only 12% were with LEs. Figure 32 shows that 82% of the diving licences were in the hands of companies with B-BBEE rating of level 4 or higher.

Average Black and Women Ownership (%)

Percentage Average Black Ownership in South African Ports

This section reports on the percentage average black ownership and women ownership for terminal operators, section 57 licences and permits, and commercial and terminal leases.

Figure 47 shows the percentage black ownership across all licences and agreements by the NPA across all South African commercial ports. It shows that the only LEs have a percentage average black ownership above the target black ownership of 51% were LEs in the bunkering business.

Large terminal operators (LEs) have an average black ownership of 32%; in the commercial and terminal lease section an average black ownership of 41%; in the diving section an average black ownership of 38,57% and in the stevedoring section an average black ownership of 49% which is closer to the black ownership target of 51%. LEs in the waste disposal section have an average black ownership of 32,52% while in the registered vessel agents section they have the lowest black ownership of 18,07%.

It shows that EMEs have a higher average black ownership across all sections except in the diving section where EMEs achieved an average black ownership of 0%. In the registered vessel agents section EMEs have an average black ownership of 22% while EME terminal operators have an average black ownership of 71,69% which is the highest average black ownership across all sections. EMEs in the leases section have an average black ownership of 49% which was just below the targeted black ownership of 51% and EMEs in other sections all have an average black ownership which is above the black ownership target.

Figure 47: **Percentage Black Ownership in South African Ports**

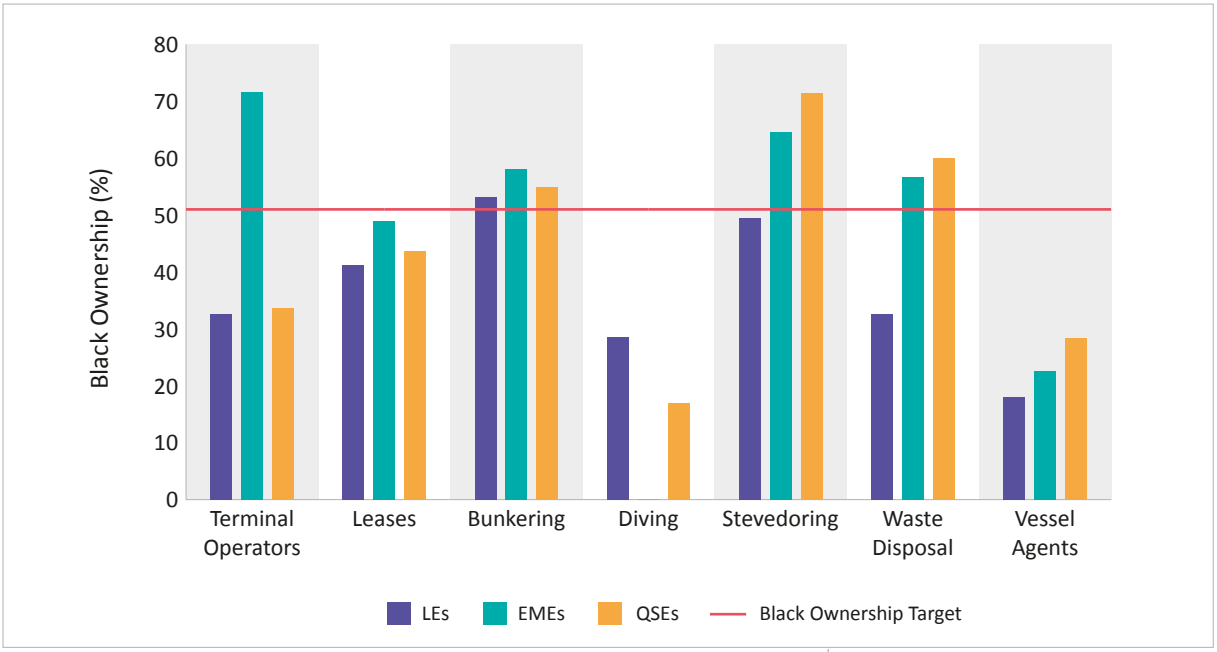


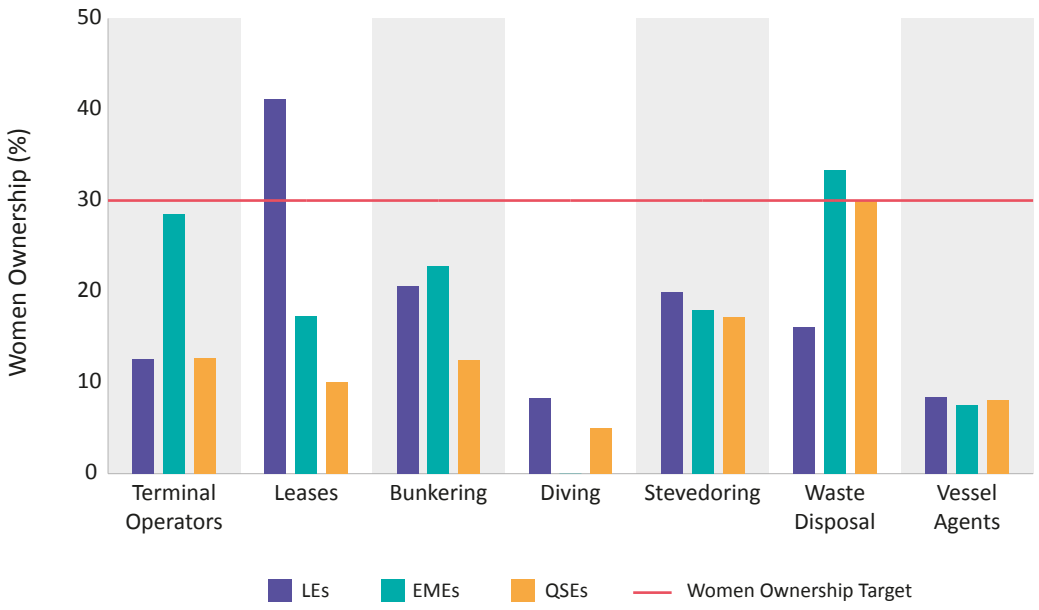
Figure 47 also shows that QSEs, in terminal operation have an average black ownership of 33%, in commercial and terminal leases section have an average black ownership of 43% and in the diving section a black ownership of 17%.

In the registered vessel agents section QSEs have an average black ownership of 28,31% while in bunkering, stevedoring, and waste disposal they all have an average black ownership that is above the 51% targeted black ownership.

Percentage Average Women Ownership in South African Ports

Figure 48 shows the percentage average women ownership in the South African port system and it shows that the type of enterprises that achieved an average women ownership that is greater than the 30% targeted women ownership were LEs in the commercial and terminal lease sections and the EMEs and QSEs in the waste disposal section.

Figure 48: Percentage Average Women Ownership in South African Ports



Percentage Average Black Ownership per Port

Table 17 shows average black ownership for different service provider in the port for the period 2015/16 and 2016/17. The results indicate that over the two-year period there is improvement on black ownership per port but very marginal. The last column on the table shows the overall average for each period. For example, the terminal operators' average performance has increased from 18,92% to 27,30%. The diving services also shows impressive improvement as it has increased from 5,98% to 24,91%. The other remaining services showed marginal improvements.

Table 17: Percentage Black Ownership Per Port 2015/16 vs 2016/17

Port	Terminal Operators %		Stevedoring %		Waste Disposal %		Diving %		Bunkering %		Vessel Registrations %	
	15/16	16/17	15/16	16/17	15/16	16/17	15/16	16/17	15/16	16/17	15/16	16/17
DBN	30,86	40,28	69,57	69,74	47,54	59,00	11,43	24,00	54,69	62,34	25,50	28,61
CT	36,95	37,12	60,56	62,77	32,25	32,37	0,00	34,64	41,51	48,68	20,62	24,19
MSB	SOE	0,00	0,00	0,00	24,00	24,00	0,00	18,00	39,32	51,34	31,65	34,69
SLD	SOE	SOE	51,29	43,59	41,77	36,38	0,00	26,00	62,55	51,42	14,73	20,80
EL	26,39	34,63	49,67	44,00	32,91	51,00	9,62	10,60	0,00	0,00	21,55	19,00
RBY	30,77	30,51	67,20	56,19	47,37	55,00	26,80	26,80	39,28	40,63	25,97	22,60
NGQ	0,00	48,00	33,50	33,50	44,00	44,00	0,00	27,26	29,59	29,59	13,51	13,51
PE	26,39	27,84	42,14	47,00	47,54	48,63	5,98	24,91	59,19	59,19	21,70	23,64
Average	18,92	27,30	46,74	44,60	39,67	43,80	11,43	24,91	40,77	42,90	21,90	23,38

Conclusions and Recommendations

Coverage

- The Regulator's access to information on transformation in the port sector is through the B-BBEE certificates submitted by the NPA as part of the legal compliance programme. The framework that was developed is evolving and addresses compliance on agreements entered into by/on behalf of the NPA as per various enabling sections of the National Ports Act 12 of 2005 i.e. section 56, 57, 65 and 79.

- The NPA spends in excess of R2,5 billion per annum on Capex projects and maintenance of infrastructure both of which represent a significant lever in creating and enhancing access in the provision of port facilities and services by designated groups. Procurement spend of the NPA on the delivery of Capex, outsourced services which are not part of the section the report focused on, may well represent a significant area for achieving transformation in the port sector which is not covered in this report.

- It is recommended that the NPA also report on B-BBEE or transformation projects related to the infrastructure and maintenance spend. A framework and/or template should be developed and agreed on with the NPA in this regard.

- The reported prevalent use of B-BBEE score cards outside of the Maritime Transport Scorecard by companies contracting on port raises concerns about the ability of the NPA to effect transformation through the Maritime Transport Scorecard.

Ownership and Management in Terminal Operator Licence

- There are 90 terminal operator licences held by 37 companies. Of these the sample for this report was 85 licences with four licences reported as inactive.

- Overall, 81% of terminal operator licences agreements are with companies with a Level 4 B-BBEE rating or better. The Port of Durban and Port of Cape Town were the only ports which had EMEs and QSEs in terminal operations and all other terminals in other ports were operated by LEs. However, the extent to which EMEs and QSEs are participating in port operations is very limited as evidenced by the small percentage of the terminal area they manage in the system, which is less than 2%.

- Section 2 of the report has shown that a number of terminal licences are in the hands of foreign enterprises, with 33% belonging to foreign owned terminal operators. Their black ownership collectively is below 30%. It is recommended that measures be put in place to ensure foreign owned enterprises compliance with B-BBEE including black people in the value chain, and that black ownership is increased.

- Section 67 of the Act empowers the NPA to take measures necessary to restructure and reform ports in relation to long-leases and the use thereof to ensure that historically

Sanette Robinson the first female marine pilot to obtain an open licence at the Port of Cape Town.

disadvantaged groups are included in the economic activities of the ports. Terminal licences of those terminal operators that are non-compliant on black/woman ownership and management may be reviewed under this provision. In the meantime, the expiry and renewal of terminal licences presents an opportunity for inclusion of new scorecard requirements from potential terminal operators that will address ownership and management in line with the transformation objectives.

Tug nudging a ship into berth.

Commercial and Terminal Leases in the Port

- There were 37 commercial lease holders of which 49% were EMEs, 32% LEs and 19% were QSEs. Even though commercial and terminal lease and the port activities sections are dominated by EMEs, the majority of these EMEs had no black ownership, as they were rated level 4 based on the annual turnover criteria. Measures should be taken by the NPA to ensure that the black and woman ownership and management elements of B-BBEE are enforced. To this extent the current regulations would accordingly require a review and amendments to include appropriate targets for the NPA to comply with and the Regulator to monitor.

- Most lease holders were awarded one lease with the exception of four who held more than one lease agreement in the 2015/16 period.

- All lease holders with black ownership above the 51% targeted black ownership held one lease. Measures should be taken to ensure that majority of the new leases are awarded to companies who are B-BBEE compliant and to comply with defined ownership targets (e.g. at least 51% black owned).

Key Recommendations

a. It is recommended that the NPA, with oversight by the Department of Transport, ensures that the participation of EMEs and QSEs in all South African commercial ports and activities is improved.

b. Measures to improve black and women ownership, management and participation in the country's ports must be addressed through a review, finalisation and promulgation of the new B-BBEE Maritime Transport Scorecards. Based on the findings, the scorecards should make provision for or set requirements for percentage black and woman ownership and management.

c. Accordingly, the current regulations should be revised to align with score card requirements on ownership and management to enable the NPA to comply.

d. A strategy through which the NPA can translate enterprise development into empowered companies that can access and participate in port operations or elements thereof is necessary.

e. The Department of Transport is encouraged to, as soon as is practicable, promulgate the new score card in a manner that will address gaps identified (e.g. lack of management and ownership) and ensure consistency of application of the MT&IS score card in the maritime sector whilst complying with the 50% turn-over requirement.

f. There must also be consideration of areas of alignment with scorecards in those sectors where there is concurrency e.g. Scorecard of the Department of Energy in relation to petroleum sector.

g. The compliance framework with the National Ports Authority must also be revised to include B-BBEE reporting on the Capex and maintenance programme.

h. The legal framework for increasing the participation of the private sector, including SMMEs, is provided for in section 80 of the National Ports Act which empowers the Minister of Transport to make regulations in respect of "(a) a framework for the economic participation and empowerment of historically disadvantaged groups in port operations" and "(f) a framework for economic participation in port operations and services by public entities, private entities and public-private partnerships". The finalisation and implementation of the Private Sector Participation Framework as per section 80 of the Act will assist in defining which sectors in the port system transformation can be pursued and monitored more rigorously.

i. Lastly, to further enhance and assure the independence of the information the Regulator relies on with regards B-BBEE compliance and related information, it is recommended that the Regulator enters into an Memorandum of Understanding with the B-BBEE Commission that will allow information sharing including B-BBEE certificates and related information, among others.

Panoramic view of facilities at the Durban Container Terminal.

Glossary and Definitions

Acronym/Term	Full word / Definition
B-BBEE	Broad-Based Black Economic Empowerment
BEE	Black Economic Empowerment
DoT	Department of Transport
dti	Department of Trade and Industry
E&SD	Enterprise and Supplier Development
ED	Enterprise Development
EE	Employment Equity
EME	Exempt-Micro Enterprise
JSE	Johannesburg Stock Exchange
LE	Large Enterprise
MT&SI	Maritime Transport & Services Industry sector codes
New MC	New Management Control (As per the new 2013 codes)
NPA/Authority	National Ports Authority
Old MC	Old Management Control (As per the old 2007 codes)
PP	Preferential Procurement
PRSA/The Regulator	Ports Regulator of South Africa
QSE	Qualifying Small Enterprises
SD	Skills Development
SOE	State Owned Enterprises
Bunkering	The transfer of "any hydrocarbon mineral" by any means, including but not limited to, MOD (Marine Diesel Oil), MFO (Marine Fuel Oil), MGO (Marine Gas Oil), AGO (Automotive Gas Oil), LNG (Liquefied Natural Gas) or lubricating oil used or intended to be used for the operation or propulsion of a vessel, and any residues of such oils
Diving	Diving refers to commercial diving activities, within port limits, that may impact on the maintenance of safety, security and good order in the port, pre-authorised in terms of the Harbour Master Diving Permit system
Stevedoring	Stevedoring work refers to working of cargo in the holds or on the deck of a vessel when such vessel is being loaded or unloaded in a port

Acronym/Term	Full word / Definition
Waste Disposal	Waste disposal refers to the temporary storage, collection, pick-up, transfer including ship to shore transfer and transportation of waste, (including scrap metal) as defined in the National Environment Management: Waste Act 59 of 2008, within or through port limits, amongst other things, for treatment, re-use, recycling, trading in waste or disposal at an appropriate and licenced waste disposal facility
Registered Vessel agents	In terms of the Port Rules, "vessel agent" refers to the agent of the owner of the vessel

eThekwini Maritime Cluster Youth regatta at the Port of Durban.

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To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication. The Regulator welcomes any input to assist in updating or correcting the information contained herein. Any comments and/or suggestions may be forwarded to *Jowiem@portsregulator.org*.

Notes

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