INTRODUCTION

This section of the Long Term Planning Framework summarises Transnet’s port development plans.

It provides an introduction to the ports and the port system, describes the planning principles used to derive the plans, and then provides updated demand forecasts for the major freight categories.

National summaries are then provided for each sector, focussing on containers, liquid, dry and break bulk, and vehicles. These provide an overview of capacity, demand and development plans per sector.

This is followed by summaries of the individual port development framework plans. These summaries include status quo port capacity and future demand forecasts, and list major development projects. Current layouts, as well as short, medium and long-term plans are provided for each port. These future views are not intended to be prescriptive, but rather provide a framework for development which will ensure capacity can be provided to meet demand, but retain the flexibility to respond to future changes.
COMPLEMENTARY PORTS AND HINTERLANDS

The primary role of a port is to provide adequate safe and efficient facilities for maritime freight activities. The older South African ports are geographically positioned to service their immediate hinterlands - Cape Town providing for the Western Cape, Port Elizabeth and East London serving the eastern and central Cape regions, and Durban serving KwaZulu Natal, Gauteng, and more distant neighbouring states. In this role they have developed as general cargo ports providing a wide range of services, with the more recent development of increasingly important container handling facilities.

The newer ports were developed primarily to provide for the handling of bulk cargoes with Saldanha Bay providing export facilities for iron ore from the northern Cape, Richards Bay handling exports from the coal mines, and Ngqura planned to handle dry and liquid bulk cargoes.

The regional grouping of old and new ports has resulted in a complementary ports system that maximises on advantages of scale, avoids duplication, and provides a logical distribution of port facilities to meet the national need.
Inland transport connectivity

Each port has well developed rail infrastructure providing rail connectivity to the hinterlands, and to adjacent regional ports. Rail infrastructure within the port limits is generally owned by TNPA and operated by TFR. This includes in-port rail lines, yards and terminals. The Sishen-Saldanha heavy haul line terminates at the iron ore export terminal at Saldanha Bay. The Port of Cape Town is linked to Gauteng by the Cape Corridor. This handles a range of general freight cargoes and containers.

Port Elizabeth and Ngqura are similarly linked to the Gauteng hinterland by the Central Corridor, which also handles a range of general freight and containers. The export of manganese ore from Hotazel in the Northern Cape also uses this corridor. East London is connected to the corridor at de Aar.

The Natal Corridor serves to connect the Port of Durban with Gauteng, with the North Coast line connecting Durban to Richards Bay. The Richards Bay Corridor is a heavy haul line used primarily for the export of coal.

The port rail corridors meet in Gauteng, where a planned rail ring will separate freight trains from commuter traffic, and allow for a seamless connectivity between corridors and to City Deep and other inland terminals, including in future Sentrarand.
Cross-border rail corridors to Namibia, Botswana, Zimbabwe and Mozambique also connect to the Gauteng rail ring, ensuring that the ports are integrated into a comprehensive regional rail network. The new Swazi rail link will increase capacity and provide flexibility for freight moving through both Richards Bay and Maputo.

The ports are generally well served by and connected to the National and Regional road infrastructure. The N2 links all the ports from Cape Town to Richards Bay along the coastal route. The N1 from Gauteng to Cape Town and the N3 from Gauteng to Durban are the primary port road corridors. PE and Ngqura connect to the N1 via the N10, and East London via the N6. Planning is being undertaken with local, provincial and national road agencies to ensure alignment of port, rail and road planning.
PORT PLANNING PRINCIPLES:

The following general planning principles have informed the development of the port plans:

- Optimise capital investment across the ports system to meet the long-term national demand for freight throughput, and to meet the requirements of Transnet, the National Ports Act, and South Africa, and to ensure capacity meets demand
- Develop a complementary ports system with a regional grouping of old and new ports to provide a rational range of facilities to meet local and hinterland demand, and avoid duplication of investment
- Integrate and align port and rail capacity planning
- Ensure a sustainable response to environmental opportunities and constraints
- Align with the planning initiatives of stakeholders, including local, provincial and national government, industry, and other key roleplayers
- Utilise available port space for berths, freight handling and back-of-port logistics to maximise freight capacity
- Improve infrastructural and operational efficiencies and reduce transport and logistics costs.
manner

- Align with the planning initiatives of local, provincial and national government and other key stakeholders
- Align port development planning with trends in shipping and equipment technology
- Zone port functions according to cargo types, and maximize available port space for berths, freight handling and operations
- Develop back-of-port logistics areas to increase port capacity
- Improve infrastructural and operational efficiencies and reduce transport and logistics costs.
- Maintain the flexibility to respond to changing technological and economic conditions
NATIONAL PORT DEMAND FORECASTS:

Port demand forecasts derived from the Freight Demand Model are used as the basis for an annual update of the port capacity requirements and development plans.

The forecasts are summarised per cargo handling category: containers, dry bulk, break bulk, liquid bulk and vehicles. Additionally, major dry bulk export commodities: coal, iron ore and manganese are reflected separately.

The graphs and tables summarise the national demand forecasts over the 7 year period (as per the Corporate Plan), followed by the 30 year forecast broken into ten year intervals.

The top line on the tables gives the forecast volumes; the second line is the annualised average growth rate for each period.

The short to medium forecasts for the major dry bulk exports show aggressive growth. National container volumes also reflect strong growth, with more moderate growth rates predicted for break and liquid bulk, and automotive volumes.
Individual port forecasts are shown in the port development plans which follow. These forecasts have been used to determine the capacity expansion plans for each port.
THE ROLES OF THE CONTAINER PORTS:

The container plans are based on the Transnet Container Strategy, which defines the roles of Durban, as the premier gateway port for the Gauteng hinterland, and Ngqura, as a secondary gateway and Southern African transshipment hub.

Each of the container ports will continue to serve their respective local hinterlands, and Richards Bay and East London will continue to handle containers through their multi-purpose terminals until volumes justify dedicated facilities.

The diagram shows the spatial basis for the container strategy, with red circles representing the respective sizes of the ports, in terms of the container volumes handled and the blue lines representing the distances and relative importance of the inland transport connections to the Gauteng hinterland, the major economic hub. The importance...
of Durban, in terms of the size of its own hinterland and its proximity to Gauteng, is evident in the two-thirds market share Durban continues to maintain.
CONTAINER CAPACITY AND DEMAND:

This slide compares the demand and capacity for containers at the three container ports: Durban, Cape Town and Ngqura (with PE).

Drawn to a similar vertical scale, the graphs show the relative size of each terminal.

The red line indicates forecast demand in TEU; the coloured bands reflect the timing and capacity gain of successive development plans.
CONTAINER SUMMARY:

The Port of Cape Town is currently undertaking a project which entails the reconfiguration of landside activities to increase stacking capacity, the provision of new equipment, and the deepening of existing berths. A second phase of the project will provide additional landside capacity, bringing the total to 1,4m TEU.

In the medium term, the capacity of the terminal can be further increased to 2,0m TEU through a seaward expansion which will create a larger stacking area. In the long-term, an outer basin could be constructed to give an additional five new container berths and a total terminal capacity of 5,0m TEU.

Port Elizabeth’s Container Terminal has two berths with a capacity of 0,5m TEU. It is anticipated that the Port Elizabeth terminal will continue to operate at a capacity of around 0,5m TEU in a complementary relationship with the new terminal at Ngqura. Should the PE car terminal be relocated to the southern side of the port, the PE container terminal could incorporate an additional berth and include the landside stacking areas.

Development in the new Port of Ngqura has seen a two berth container terminal
operational in 2009, with a capacity of 0.7m TEU. The quaywall for two additional berths has been completed, which with dredging and terminal equipment will increase the capacity of the terminal to 2.0m TEU. The potential to expand both Ngqura and Port Elizabeth provides for the long-term requirements for container handling in the central region.

The Port of Durban currently has a total capacity of 3.0m TEU at the Durban Container Terminal and the adjacent Pier 1 Container Terminal.

Current projects to increase capacity in the short-term are the Pier 1 Phase 2 extension which involves the conversion of a portion of Salisbury Island to provide an additional 1.4m TEU, and the continued re-engineering of DCT to provide a further 0.6 m TEU, taking Durban’s container handling capacity to about 5m TEU. In addition a number of containers are handled at multi-purpose terminals in the Point and at Maydon Wharf. The capacity of these terminals is currently being increased with new equipment and operating methods.

The new dig-out port at the former Durban International Airport Site could provide a sixteen berth container terminal with a capacity of 9.6m TEU.

In the long Bayhead dig-out basin makes provision for a ten berth container terminal on the site of Bayhead rail yards, with a capacity of 6.0m TEU.

Richards Bay currently handles a small number of containers at the multi purpose terminal. The Port Development Framework shows that the port has the potential to develop extensively to the west, and provision can be made for container handling facilities in the 600 series basin in the medium term, and in subsequent basins in the longer term, if justified by growing volumes.
AUTOMOTIVE SUMMARY:

- TPT operates car terminals handling Ro-Ro cargoes in Durban, East London and Port Elizabeth. There is adequate capacity to serve forecasted volumes, and only limited investment is planned in the short term.

- Current initiatives include an Integrated Automotive team to enable port/rail contracts for the entire supply chain, and to review tariffs and pricing structures. The Automotive Production and Development Program has given OEMs the confidence to invest locally.

- Targeted operating efficiencies to reduce vessel TAT are 120 units/hour in Durban, 160 in EL, and 170 in PE.

- The Durban Ro-Ro Terminal has 3 berths with a capacity of 480000 units, and handled 370000 units in 2011.

- The East London Car Terminal has one berth with a capacity of 139000 units, and handled 61000 units in 2011.

- The Port Elizabeth terminal has one berth with a capacity of 150000 units, and handled 150000 units in 2011.

- All three terminals have the ability to expand in their current locations to handle demand in the short to medium term.

- There is the potential to relocate the PE terminal to the southern side of the port once the PE bulk terminals have been decommissioned, at a cost of R1bn.

- There is the potential to relocate the Durban terminal to a new position at the Airport Site dig-out. This will address the limited road and rail capacity of the existing Point terminal. The estimated cost of this new three berth terminal would be R3.0bn.
BREAK BULK SUMMARY:

- Break bulk cargo volumes of approximately 1 0,4mt were handled across the port system in 2011, mainly at Richards Bay and in Durban. These volumes are forecast to increase to 15mt by 2018, and to 23mt over a 30-year horizon.

- TPT Break bulk and multi-purpose terminals are located in all ports, handling a range of generally palletised and skiptainer cargoes and mineral and agricultural products. TPT has 65% market share in break bulk cargoes, and faces increasing competition from private terminals. Initiatives to increase market share include efficiency improvements, focus on neo bulk, sustainable handling methods, and pricing initiatives. Efficiency targets have been set for Richards Bay of 100 tons/h, and for Durban of 20 TEU/h.

- The break bulk facilities in the older ports and terminals are operating at below capacity, and there are proposals to rationalise these and to increase container handling. Provision of mobile handling equipment will raise capacity in Durban from 120000 TEU to 300000 TEU.

- The shallow older berths and limited landside space restricts their effectiveness for modern port operations. The Maydon Wharf quaywall is being rebuilt to address this issue.

- The Richards Bay MPT terminal is being modernised and expanded as an outcome of the Eastern Catchment Integrated Corridor Study.

- Growth of the IDZs in Saldanha Bay and Ngqura will generate break bulk and neo bulk cargoes, although the exact nature of the infrastructure required is not presently known. Provision has been made in the port development plans for this, and the development of a general cargo terminal in Ngqura is progressing.
DRY BULK SUMMARY:

The Iron Ore Terminal at Saldanha Bay currently has two berths and stockpiles with a capacity of 58mtpa. Expansion projects will increase this capacity in increments to 82.5mtpa and then to 115.5mtpa. This expansion would add an additional two berths to the terminal and increase the landside stockpile area from 73ha to 195ha.

The Cape Town dry bulk terminal in Duncan Dock has two berths with a current terminal capacity of 1.4mtpa. There is sufficient capacity to handle the predominantly agricultural products, and no development plans are being considered.

The Port Elizabeth manganese export terminal has a single berth and a current capacity of 5.5mtpa. This will be decommissioned once a new terminal is built in Ngqura in 2017.

A new manganese export terminal is planned for Ngqura, with a capacity of 16mtpa. The Development Framework Plan makes provision for dry-bulk facilities in the longer term on berths in the river basin, to meet the future requirements of the IDZ and hinterland.
There are currently plans to develop a coal export terminal in the Port of East London, consisting of a single berth and terminal with a capacity of 4mtpa.

In Durban, Bulk Connections on the Bluff has a capacity of 4,8mtpa, handling sized coal and manganese. In Maydon Wharf bulk cargoes are handled at Rennies Bulk Terminals and grain and woodchip products being handled at the Agriport terminal. Additional dry bulk commodities are also handled by Durban Bulk Shipping at the Island View complex.

Richards Bay is South Africa’s premier dry bulk port, with the coal export terminal, dedicated woodchip export berths, and a general purpose Dry Bulk Terminal.

Development plans for the coal export terminal show an increase in capacity from the current 72mtpa to 95mtpa, through the addition of berths 306 and 307, giving a total of seven berths and the provision of additional stockpile areas.

In order to meet other dry bulk demand, the Richards Bay Port Terminals Capacity Expansion Project is planned to increase capacity from 14mtpa to 23,7mtpa. This will include new port, rail and terminal infrastructure, and an extension to the existing finger jetty to provided two additional dry bulk berths 802 and 803, and a potential new coal export terminal at South Dunes, with a start-up capacity of 14mtpa going to 32mtpa.
LIQUID BULK SUMMARY:

- South Africa accounts for 28% of Sub-Saharan refined market, and 53% of total oil consumption. Privately operated liquid bulk terminals are located in each port. Total volumes of liquid products are forecast to grow from 22m m$^3$ to 48m m$^3$.

- Durban handled the majority of liquid bulk volumes in 2011 with 26m m$^3$ handled, of which 8,6m m$^3$ was handled through the port, with the remainder being crude imports via the SBM.

- Saldanha Bay handled 5,7m m$^3$ in 2011, with Richards Bay and Cape Town each handling approximately 2m m$^3$. Smaller volumes of imported refined fuels were handled in Port Elizabeth and East London.

- Prefeasibility studies are being conducted on LNG terminals in Saldanha, Ngqura and Richards Bay.

- The section 56 process for the Ngqura liquid bulk terminal is progressing, with...
a new berth and tank farm planned. These will replace the PE facility, which will be decommissioned once Ngqura is operational.

- Imports through Island View in Durban to feed the coastal terminal of the NMPP will require ongoing upgrades to the loading and storage facilities of the existing Island View berths.

- The new port at the Durban Airport Site has the capacity to include deepwater berths in the port entrance to replace the current SBM, which will have to be repositioned to allow for the construction of the new entrance channel.

- New berths are planned in Richards Bay in support of an expanded landside petro-chemical cluster.
SA PORTS – CURRENT LAYOUTS:

This slide shows the eight commercial ports drawn to the same scale, to indicate the relative sizes of each port. The difference in size between Mossel Bay, the smallest, and Richards Bay, the largest, is apparent.

The total landside area of the ports is 5445 ha, and there is 34 km of quaywall across the port system.

The land use colouring of the plan indicates the fully developed older ports (Cape Town, PE, EL and Durban) and the large amount of developable land in the newer ports (Saldanha, Ngqura and Richards Bay).
SA PORTS: FUTURE POTENTIAL LAYOUTS:

This slide shows all the ports in their fully developed states, with the inclusion of the new dig-out port in Durban.

The slide indicates the massive development potential of the newer ports, as well as ambitious options for the landward or seaward expansion of the more established ports.

The total port landside area is now 9218 ha, a long-term growth with a quaywall length of 92 km, a growth over 170%.
TNPA operates as a landlord port authority, planning, providing and maintaining port land and infrastructure. Port land is defined by the port limits. The Port Development Framework Plans show the development of the ports from their current status, through short, medium and long-term plans.

Land within port limits is zoned according to port land use categories. The principle land uses are those relating to freight activities: containers, break bulk, dry bulk, liquid bulk and vehicles. Other non freight land uses include fishing, ship repair, maritime commercial, all of which require waterfrontage, and commercial/logistics, open space and TNPA other – a land use category used for unspecified land for port authority use or for future expansions.

Current initiatives related to the landlord function include the preparation of a Land Use Plan (LUP) aligned to the PDFs, a national plan to commercialise priority leases, and a Facilities Maintenance and Management Plan.

The land use summary based on the updated PDFs shows the total area of port land growing from the current 5445ha to 6991ha over a 30-year period. The plans also show a further increase to 9218ha is possible if all ports are fully developed.

The summary shows Richards Bay as the largest port by area, followed by Ngqura and Durban.
### Vessel Sizes and Port Capabilities

This slide shows a range of vessels typically visiting South African Ports. It gives the critical dimensions of the vessels, and indicates the ports that are able to accommodate each vessel.

<table>
<thead>
<tr>
<th>Vessel Type</th>
<th>Dimensions (LOA x Beam x Draft)</th>
<th>SR</th>
<th>CT</th>
<th>PE</th>
<th>Ng</th>
<th>EL</th>
<th>Air</th>
<th>Dur</th>
<th>RB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container: Feeder</td>
<td>3,000 TEU</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Container: Panamax</td>
<td>4,500 TEU</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Container: Port Panamax</td>
<td>6,600 TEU</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Container: Ultra Large</td>
<td>15,000 TEU</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Dry bulk: Handysize</td>
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<tr>
<td>Dry bulk: Panamax</td>
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<td>Dry bulk: Cape size</td>
<td>180,000 t</td>
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<td>Liquid bulk: Handymax</td>
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<tr>
<td>Liquid bulk: Suezmax</td>
<td>175,000 t</td>
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<td>✓</td>
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</tr>
</tbody>
</table>
WATERSIDE CAPACITY SUMMARY:

This summary of waterside capacity is based on the current, medium term and long-term development plans of each port. It categorises shallow, medium and deep berths, measured in metres of quay length.

Current capacity is 34km of quaywall, of which more than 50% is shallow berths in the older ports. The existing 6km of deepwater berthing is confined to the newer ports of Richards Bay, Saldanha and Ngqura.

The medium term plans show the total length of quaywall growing to 57km, with the percentage of deepwater berths now rising to about 50%.

The long-term future plans show a major potential increase to 92km of quaywall, two thirds of which are deepwater berths.

The dual challenge of deepening existing berths, and providing ever deeper new berths, is a major component of the port development framework plans.
VESSEL SIZES AT THE NEW DIG-OUT PORT:

Port waterside capacity, measured in terms of size and number of berths, or quaywall lengths, is the most basic component of the port capacity plans. The port development plans are premised on growth in waterside capacity to provide for growing freight demand, planned in conjunction with growth in landside capacity, for both terminal freight handling operations as well as back-of-port and support activities, and inland transport capacity by road, rail and pipeline.

Two major challenges face the port planners – the requirement to adapt existing port waterside capacity to meet new and larger vessel types, and the requirement to expand to new areas to provide new waterside capacity.

The first challenge naturally 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. And even the newer ports of Saldanha, Ngqura and Richards Bay have environmental and social constraints to further expansions of their port limits.
The new dig-out port on the Durban Airport Site will be designed to accommodate 15000 TEU container vessels with a draft of -16m, and very large crude carriers with a draft of -22m.
INCREASING VESSEL AND EQUIPMENT SIZES:

This slide illustrates the dramatic increase in size of container vessels and ship to shore cranes since the introduction of containerisation in the 1970s. This is the challenge facing port planners in the older ports of Durban, Cape Town and Port Elizabeth, where the existing berths were built in the 70s to suit small vessels and cranes. This has resulted in the important berth deepening projects in Cape Town CT and at DCT, and currently under consideration in PE.

The existing North Quay has a current depth of -12.8m. After deepening the berth will be to -16.5m. This will enable the Port of Durban to handle the 9200 TEU container vessels that are at the limit of the entrance channel. All new container berths in the port system are being designed to the standard -16,5m, although consideration is being given to accommodating even larger vessels in the new Dig-Out Port.
**Trains serving the South African ports**

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ore train: Sishen to Saldanha Bay</td>
<td>4 X 9E and 5 X 34D locos, 342 CR14 wagons, 34280 ton payload, 3547m long</td>
</tr>
<tr>
<td>Coal train: Ermelo to Richards Bay</td>
<td>4 X 11E locos, 200 X CCR11 wagons, 16800 ton payload, 2496m long</td>
</tr>
<tr>
<td>Manganese train: Hambela to Port Elizabeth</td>
<td>4 X 18E locos, 104 X CR9 wagons, 6380 ton payload, 1085m long</td>
</tr>
<tr>
<td>Container train: Durban to Gauteng</td>
<td>3 X 6E locos, 50 X 5MLJ wagons, 2480 ton payload, 773m long</td>
</tr>
<tr>
<td>Car train: Durban to Gauteng</td>
<td>2 X 6E locos, 36 X 5CL wagons, 576 ton payload, 760m long</td>
</tr>
<tr>
<td>Tanker train: Durban to Gauteng</td>
<td>4 X 6E locos, 50 X XPLJ wagons, 2635 ton payload, 931m long</td>
</tr>
</tbody>
</table>

**TRAINS SERVING THE SOUTH AFRICAN PORTS:**

The slide gives a graphic overview of typical trains servicing the South African ports.

The contrast between the specialised bulk trains carrying iron ore exports to Saldanha Bay and coal exports to Richards Bay, and the container, car and tanker trains on the general network, is immediately apparent.

From a special planning perspective, there is a critical need for the ports to provide efficient rail facilities to allow access to competitiveness rail transportation which will support the move from road to rail.
TNPA FLEET REQUIREMENTS:

TNPA’s fleet plan consists of an assessment of current fleet, 7 year plans for expansion and sustaining fleet, and a projection of the 30 year expansion fleet requirements based on port expansions from the Port Development Framework Plans.

The fleet types under consideration include tugs, dredgers, helicopters, and pilot boats. Lesser harbour craft (workboats etc) are excluded.

The table is a preliminary summary of the current fleet plan.
TRANSNET PORT TERMINALS:

Transnet Port Terminals operates 16 terminals across seven ports.

These are in four major freight handling sectors: containers, bulk, break bulk and automotive terminals.

The map shows the location of the various terminals around the port system, illustrating how each region’s requirements are met by a combination of TPT terminals.

TPT’s strategic initiatives include: optimised capital spend to improve productivity and efficiency, growing revenue through new business opportunities, and the creation of capacity ahead of demand.
ROLE OF THE PORT

• The Port of Saldanha Bay is South Africa’s deepest port, with the iron ore export jetty providing berthing for large dry bulk and liquid bulk vessels. It has iron ore stockpiles on reclaimed land, a multi-purpose terminal and facilities for offshore rig servicing and fabrication.

• Currently focussing on bulk ore exports, the port has the potential for expansion to support the adjacent industrial development zone, and in the long-term to handle overflow cargoes once the Port of Cape Town reaches its full capacity.

• Future port expansion will require extensive land acquisition, as well as limited reclamation.
CURRENT LAYOUT

Waterside
The port is characterised by the iron ore export jetty which projects some three kilometres into the bay. There are two dry bulk berths and a liquid bulk berth on the jetty, capable of handling vessels in excess of Capesize. An existing MPT terminal on the Small Bay side of the jetty has four berths. Berth depths at the MPT range from -12 to -13.4m, and the jetty oil and bulk berths are -21.25m deep. The Admin Craft Basin is on the town side of the bay, adjacent the fishing harbour and navy base.

Landside
There is 538ha of land within the port limits. 73ha is occupied by dry bulk operations, 20ha by break bulk, and 22ha by the ship repair activities. A large proportion of port land is undeveloped, and is zoned as open space or for other NPA usage. This comprises 420ha of the total, and provides a basis for future port expansions and terminal development.

Inland transport
The port is linked to the interior by the Sishen – Saldanha rail corridor, giving
access to the Northern Cape iron ore mines. There is a rail line to Cape Town and to the Cape Corridor and the Gauteng hinterland. The N7 gives access to the national road network, and liquid fuel pipelines connect the port to the off-site SFF storage facilities and to the Cape Town refinery.

**SHORT TERM LAYOUT**

The current Industry – Transnet Ore Line expansion project is considering expanding export capacity on the corridor and though the port to achieve 80mt of iron ore. This will require additional iron ore stockpiles and two additional berths, with associated rail capacity expansions,

An additional 500m of quaywall is being added to the Mossgas quay to provide capacity for oil and gas activities, as a privately funded development.
MEDIUM TERM LAYOUT

Medium-term plans for the port will include strategic land acquisitions to ensure that the future growth of the port is not restricted on the landside, improvements to the port access corridor, and the development of a port logistics park. A major energy cluster is being considered in association with the adjacent IDZ, initially requiring extensive landside storage infrastructure. In the medium term this could result in a new liquid bulk basin on the Big Bay side of the jetty, with bunker and LPG berths.

Depending on whether new cargoes are identified, there are plans to extend the Multi Purpose Terminal, and provision has been made for a container expansion of three berths should demand justify this.

LONG TERM LAYOUT

The long-term plan for Saldanha indicates the development potential of this deepwater port. This very long-term view should be seen from the perspective of the finite limitations to the future development of the Port of Cape Town, which could be made more extreme if seaward expansion is not permitted. In this
scenario Saldanha could eventually develop as the premier western port.

The plan shows the increased port limits, and a greatly expanded waterside infrastructure, which includes further development in the liquid bulk basin with breakwater and six berths, an expanded MPT, a twelve berth container terminal, and an established ship build capacity.
DEMAND FORECAST

Saldanha’s freight volumes are dominated by the iron ore export volumes through the IOT. These are forecast to grow from current volumes of 49mtpa to more than 120mtpa over a 30-year period.

Liquid bulk volumes of both crude and refined products will grow aggressively from 5.7m cm to 22m cm over the same period.

There is forecast to be only slow growth of smaller volumes of break bulk and dry bulk cargoes handled at the MPT.

No container or vehicle volumes are forecast in the 30-year planning period.

MAJOR PROJECTS

Major projects in the short-term include the expansion of the IOT to 80mtpa, and the expansion of the Multi Purpose Terminal.

It is anticipated that there will be significant private sector investment in both liquid bulk facilities – including LPG and LNG terminals, as well as in ship repair facilities with a new drydock in the medium term.
ROLE OF THE PORT

Cape Town is an established port in the western region, providing container, bulk and general cargo handling services to the Western Cape and its largely agricultural hinterland.

The port provides extensive ship repair services, and hosts local and foreign fishing fleets, and recreational users.

The older basins of the port have been developed into the Victoria and Alfred Waterfront, which falls outside of port limits, and which complements the commercial port by providing berthing for smaller vessels.

It is anticipated that Cape Town will continue in its existing role as primary container and general cargo port for the western region, complemented by the Port of Saldanha Bay, which will continue as the region’s primary bulk port.
**CURRENT LAYOUT**

**Waterside**

The port has two basins, the Duncan Dock with general cargo berths and bulk liquid dolphin berths, and the Schoeman Basin with container berths. The container berths in the Schoeman Basin are in the process of being deepened. Ship repair jetty berths and the Sturrock drydock are located on the eastern side of Duncan Dock. Tugs and admin craft are berthed in the V&A Waterfront. Local and foreign fishing vessels are berthed in various locations around the port. Recreational craft are moored in the Yacht Basin and Elliot Basin.

**Landside**

There is 234ha of land within the port limits. 69ha is occupied by container operations, 45ha by bulk and break bulk, and 25ha by the ship repair activities. Typically of older ports, Cape Town has very limited quayside land relative to its berth capacity, and limited opportunities for landward expansion of port limits. Although separated from the port by a transportation corridor, the old railway lands in Culemborg and Salt River have the potential to be incorporated into the port limits, to provide additional extensive back-of-port space.
**Inland transport**

The port is connected by rail to the hinterland via the Cape Corridor, and to Saldanha Bay by the west coast line.

Road connections are currently congested by CBD and peak hour traffic. An upgraded entrance to the container terminal and the northern side of the port is being provided on Marine Drive, which will allow for better movement of freight onto the N1 and N2 freeways.

**SHORT-TERM LAYOUT**

The reconfiguration of Cape Town’s container terminal is the only major project currently in execution. The reconfiguration includes a rationalisation of the landside of the terminal, as well as berth deepening. Planning is proceeding for a Cruise Liner Terminal at E Berth.
MEDIUM-TERM LAYOUT

Medium-term developments in the port are likely to be focussed on a further shift of operations from the older terminals in Duncan Dock to more modern and efficient operations around the Schoeman Basin. Medium-term container capacity expansion will entail seaward reclamation, without the addition of any berths to seaward. This can be seen as an interim solution leading to a future northern basin which would require a new breakwater. Medium-term developments for liquid bulk handling would entail the operationalisation of two dolphin berths on the eastern mole.

It is anticipated that growth in the ship repair industries will result in the medium term rationalisation of activities at the eastern end of Duncan Dock, with the filling of the two small basins, and relocation of recreational and fishing activities. The resulting precinct could also be served by the development of supportive industrial sites in the Culemborg area.

LONG-TERM LAYOUT

The long-term potential plan for the Port of Cape Town shows a new fully
developed northern basin, with new breakwater and added container and bulk liquid facilities. This conceptually drawn seaward expansion is seen to be the only practical long-term vision for the port.

If for environmental or other reasons this development could not take place, there will need to be an alternative vision with Cape Town losing cargoes to Saldanha Bay, again on the assumption that development will be permitted there.
### Demand forecast

Container volumes are forecast to grow from 0.7m TEU in 2011 to 1.0m TEU by 2018, and to 2.2m TEU by 2042.

Dry bulk volumes grow from 0.7mt to 1.7mt over the 30-year period.

Break bulk volumes show only limited growth over the 7 year period before rising to 0.7mt in 2042.

Liquid bulk volumes of 2.0m cm in 2011 of mainly petrochemical products grow to 4.2m cm over the 30-year period.

Small numbers of vehicles will continue to be handled at the MPT terminal.

### Major projects

Major projects in the short-term include the continuation of the container terminal expansion project, the incorporation of Culemborg land, and expansion of ship repair facilities. A passenger terminal is also planned for Duncan Dock.

In the longer term the seaward expansion through reclamation will be required.

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<table>
<thead>
<tr>
<th>Cargo</th>
<th>Project</th>
<th>Timeframe</th>
<th>Project cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containers</td>
<td>Current expansion</td>
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<td>Commercial logistics</td>
<td>Incorporation and development of Culemborg site</td>
<td>Short term</td>
<td>R533m</td>
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<tr>
<td>Ship repair</td>
<td>Ship repair expansion and dry dock</td>
<td>Short term</td>
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<tr>
<td>Containers</td>
<td>Seaward expansion</td>
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<tr>
<td>TNPA other</td>
<td>Outer basin expansion</td>
<td>Long term</td>
<td>R24.510m</td>
</tr>
</tbody>
</table>
ROLE OF THE PORT

- It is home to a local fishing fleet, and also serves recreational boaters.
- There is very limited freight handling in the port, and no infrastructure expansions are currently planned.
- There is a small waterfront, and it is planned to commercially develop vacant Transnet land adjacent the port and CBD.
CURRENT LAYOUT

1. Maritime commercial development
2. Facilities for offshore mooring service vessels
3. Fishing industry facilities and moorings
4. Mossel Bay CBD

MEDIUM-TERM LAYOUT

1. Commercial development of Transnet land between port and CBD
2. Expanded fishing, break bulk and ship repair facilities
ROLE OF THE PORT

Port Elizabeth is an established port in the central region, providing container and general cargo handling services, largely to the automotive and agricultural sectors in the Nelson Mandela Bay Metro and the Eastern Cape interior, as well as handling bulk manganese exports from the Northern Cape, and refined petroleum products for regional consumption.

There are facilities for the local fishing and boat repair industries, and for recreational boating.

With the operationalisation of the new port of Ngqura, the role of Port Elizabeth is changing from being the primary central port, to one providing niche services in support of Ngqura.
CURRENT LAYOUT

Waterside

The port has two container berths and one car terminal berth on the Charl Malan quay, four break bulk berths on number two jetty, a dry bulk berth on the Dom Pedro jetty, and a dolphin liquid bulk berth on the breakwater. There are jetties for harbour service vessels, and for fishing boats and ship repair purposes. Container berths are -12.2m deep, and bulk berths -12m deep.

Landside

There is 184ha of land within the port limits. 37ha is occupied by container operations, 44ha by bulk and break bulk, and 17ha by the car terminal. A fairly large percentage of port land is zoned as open space and TNPA Other, at 73ha.

Inland transport

The port is linked to the interior by the Central Corridor, giving rail access to Gauteng and the Northern Cape. There is a rail line to East London, and a new rail access to the Port of Ngqura. The narrow gauge branch line enters the port via Humewood station.
In-port rail infrastructure provides services to all the terminals, and the rail line linking the port to the mainline is routed on the foreshore to avoid the commuter rail lines.

**SHORT-TERM LAYOUT**

The most significant capacity expansion project recently undertaken in Port Elizabeth has been the expansion of the manganese export terminal to increase its capacity to 5,5mtpa. The utilisation of this capacity has been restrained by limited rail corridor capacity; however plans are in place to increase this to match that of the port.
MEDIUM-TERM LAYOUT

In the medium term, the development of the port will be influenced by the decommissioning of the bulk terminals in the southern port precinct. It is planned to clear and rehabilitate the manganese terminal and tank farm sites, and utilize the area for a multi-purpose terminal or for vehicle handling, using the manganese berth, and possibly decommissioning the liquid bulk dolphin berth.

Should the car terminal be relocated, this will allow expansion of the container terminal to occupy the entire Charl Malan quay and utilize all three berths.

The ship repair and fishing precinct will also be consolidated and expanded.

LONG-TERM LAYOUT

The long-term potential plan for Port Elizabeth gives a view of a possible future port providing additional capacity once Ngqura reaches its limitations.

Whist this may appear improbably futuristic, particularly at a time when there is a challenge to identify cargoes for Ngqura, and to find new operations in Port Elizabeth to replace those relocated to Ngqura, it is intended to show the importance of retaining the option to further expand the existing port. The plan shows the addition of a new seaward basin, providing eight new container
berths.
DEMAND FORECAST

Port Elizabeth’s demand forecasts show the impact of the relocation of bulk cargoes to the new Port of Ngqura, and with growing container and automotive volumes relacing these lost cargoes.

Container volumes will grow as the terminal expands, from 0.3m TEU to 1.1m TEU.

Automotive import and export volumes grow from 150,000 to 250,000 units.

Dry bulk volumes drop from 4.8mtpa as manganese exports are relocated to Ngqura.

Break bulk volumes retained at 150,000t.

Liquid bulk volumes of 1.0m cm of mainly petroleum imports relocated to Ngqura and the terminal decommissioned.

MAJOR PROJECTS

Major projects in the short-term include the decommissioning of the manganese terminal, and expansions to the container terminal, including deepening and new equipment.
Medium-term projects include the relocation of the automotive terminal to the southern precinct, and limited commercial development of surplus land.
NMBM CONTEXT:

The slide shows the twin ports in Algoa Bay, serving the Nelson Mandela Bay Metro and the Coega IDZ.

The two ports are being planned in a complementary manner to ensure the best positioning of freight activities and best utilisation of new and old port infrastructure.
ROLE OF THE PORT

Ngqura is sited in Algoa Bay, some twenty kilometres from Port Elizabeth, and is the newest port in the South African ports system. The port became operational in 2009, and is intended to provide complementary services to the central ports of Port Elizabeth and East London.

The intended role of the Port of Ngqura has been through a number of developments since its inception. Its relationship to the Coega IDZ, as deepwater port to service IDZ tenants, has remained constant, as has its role of providing cargo handling capacities beyond the limitations of the existing ports of PE and East London.

Originally planned as a bulk port, it was then adapted for container handling. Recently it was the focus of Transnet’s Container Hub Strategy. Currently it is planned that Ngqura will handle container cargoes for the local hinterland, and be positioned to handle overflow Gauteng cargoes should capacity in Durban be exceeded. Ngqura is also targeting transshipment cargoes, both for east and west African ports, as well as for inter-continental transshipments.

Two other categories of potential cargo handling operations will add to the role of the Port of Ngqura.

The first is the relocated bulk operations from Port Elizabeth, which will catalyse
Ngqura’s role as a bulk port. These are the manganese export terminal, and the refined fuel import terminal.

The second is the IDZ generated projects, none of which has been finalised, but which collectively indicate a significant role for Ngqura as a bulk port servicing the CDC’s tenants. These projects include a manganese smelter, PetroSA refinery, LNG power station, and a range of other smaller but significant operations.
CURRENT LAYOUT

Waterside
The port has five completed berths – two container berths, and three bulk and break bulk berths on the jetty. The construction of two additional container berths is also complete, with dredging in progress.

Future container berths are planned in a seaward expansion to create a new basin with eight berths, possibly followed by a second phase with a further basin. This represents the natural limit to Ngqura’s seaward expansion.

Expansion up the Coega River valley is planned to create additional bulk and break bulk berths.

Landside
There is an area of 1128ha within the port limits. While Ngqura’s landside development potential is considerable, it is also limited. It is therefore critical that waterside expansion of the port is planned to ensure that IDZ land adjacent the port limits is reserved for activities that provide back-of-port services.

Inland transport
A new rail link to the port has been constructed, with a rail corridor from the
mainline to the container terminal. This includes a container rail yard in the IDZ, and a rail terminal behind the container terminal.

Development of a Ngqura manganese terminal will require a manganese yard alongside the container yard. TFR is also considering a rail buffer stack on this site, and future container terminal expansions will require additional yards. A detailed assessment of in-port rail is required to ensure that current developments do not limit future rail operations.

The N2 freeway forms the northern boundary of the port, with access to the port via free flow intersections to Neptune Road serving the western side of the port. Provision has been made for conveyor and pipeline servitudes linking the port to the IDZ on both sides of the valley. These will provide for the needs of the smelter, tank farm, refinery, power plant, manganese terminal and other future operations.

**SHORT-TERM LAYOUT**

The construction of the first phase of the Ngqura container terminal has delivered a two-berth terminal with all associated infrastructure and equipment, an additional two berths for future usage, rail access, rail yard and terminal, and other port infrastructure, fleet and buildings, including a port control facility. The terminal will have an initial capacity of 0.7m teu per annum, growing to 2.0m teu per annum once all four berths are operational and equipped.

TNPA is finalising the selection process for potential tank farm and liquid bulk terminal operators, in anticipation of the relocation of the Port Elizabeth after 2014, when the current leases expire. This initiative would utilize one of the existing jetty berths, with a new tank farm sited on high ground to the east.

A new manganese export terminal is planned for Ngqura, to be operational in 2017. It will have a start up capacity of 16 mtpa. A number of current IDZ projects could generate short-term berth requirements which may also compete for usage of the existing jetty berths. These include bio-fuel and chemical operations.
MEDIUM-TERM LAYOUT

The medium term projects that may result in further development of the port include the following major initiatives:

Completion of the four berth container terminal, with associated terminal superstructure and equipment, and rail infrastructure and rolling stock will bring capacity to 2,0m teu per annum.

Construction of an Admin Craft Basin, and procurement of additional tugs.

Start of the dig-out basin in the river valley to provide a range of bulk berths and back-of-quay space for the refinery, manganese export terminal, and other IDZ projects. As stated previously, the extent of the dig-out would be determined by the number of projects and their timing.

Development of the refinery in the IDZ, requiring six liquid bulk berths and a single break bulk berth, and extensive tank farms and pipeline servitudes. The magnitude of this project would suggest that the eastern side of the river basin be reserved for bulk liquid berths and operations.

LONG-TERM LAYOUT
The long-term potential plan for the Port of Ngqura shows the port developed to its natural spatial limits. The form of the development is the outcome of a plan that maximises on the provision of berths, with balanced back-of-quay handling areas.

The two development axes are seaward to the west, and up the river valley. The seaward expansion shows an additional container basin constructed as a cut-and-fill reclamation, with extended breakwater. This yields eight additional deepwater berths, and significant landside space for operations.

The river basin dig-out yields nineteen additional berths, with limited but adequate back-of-quay space on the western side, and berths suited to bulk handling on the eastern side. A turning basin completes the dig-out.

The plan has been zoned to reflect a range of cargo operations, with the spatial location of the various terminals arranged to ensure operational efficiencies and compatibility. Scenario planning exercises have shown this long-term layout to be flexible enough to accommodate a range of changing port requirements based on differing demand forecasts, but robust enough to retain its zoning and operational logic.
### DEMAND FORECAST

Ngqura’s demand forecast is conservative in that a number of IDZ initiatives are omitted due to lack of certainty on timelines. This includes freight resulting from the proposed refinery.

The export of manganese through the new terminal will result in volumes of 22mtpa moving through the port.

The new liquid bulk terminal is forecast to handle over 1m cm of mainly imported refined products.

Container volumes are forecast to grow from 0,54m TEU in 2011 to 1,2m in 2018, and then to 4,7m over a 30-year period. This significant growth is based on new transshipment containers attracted to the hub.

### MAJOR PROJECTS

Major projects in the short-term include the continued expansion of the container terminal, to a full 4 berth operation, the development of the liquid bulk and general freight terminals, as well as a new manganese export terminal and small craft basin, all with associated rail infrastructure.

#### Table: Cargo and Project Forecast

<table>
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<th>Cargo</th>
<th>Project</th>
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<td>Containers</td>
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<td>Admin craft basin, phase 1</td>
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<td>Liquid bulk</td>
<td>LNG terminal</td>
<td>Short term</td>
<td>R1 500</td>
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<tr>
<td>TPPA other</td>
<td>LNG power station</td>
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<tr>
<td>Liquid bulk</td>
<td>PetroSA facilities</td>
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<td>TPPA other</td>
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<td>TPPA other</td>
<td>Outer basin expansion</td>
<td>Long term</td>
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#### Diagram: Ngqura Demand Forecast and Major Projects

**DEMAND FORECAST**

- Ngqura’s demand forecast is conservative in that a number of IDZ initiatives are omitted due to lack of certainty on timelines. This includes freight resulting from the proposed refinery.
- The export of manganese through the new terminal will result in volumes of 22mtpa moving through the port.
- The new liquid bulk terminal is forecast to handle over 1 million m$^3$ of mainly imported refined products.
- Container volumes are forecast to grow from 0,54m TEU in 2011 to 1,2m in 2018, and then to 4,7m over a 30-year period. This significant growth is based on new transshipment containers attracted to the hub.

**MAJOR PROJECTS**

- Major projects in the short-term include the continued expansion of the container terminal, to a full 4 berth operation, the development of the liquid bulk and general freight terminals, as well as a new manganese export terminal and small craft basin, all with associated rail infrastructure.
- Private sector involvement in LNG facilities is also planned, and potential refinery-related development in the medium term.
Private sector involvement in LNG facilities is also planned, and potential refinery-related development in the medium term.
ROLE OF THE PORT

East London is an established port serving a relatively specialised Eastern Cape hinterland, handling primarily industrial and agricultural cargoes, with a particular focus on servicing the local motor industry.

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 30-year planning horizon.
CURRENT LAYOUT

Landside
The area of land within the port limits is currently 131ha, making East London the smallest port after Mossel Bay. This area includes narrow land on both sides of the river, and an off-site liquid bulk tank farm.

The steepness of the surrounding topography and restrictions caused by the upstream bridges mean that there is very limited opportunity to acquire additional quayside area. Seaward expansion through reclamation on the outside of the breakwater is possible but is not considered financially viable.

73ha of port land is zoned as open space or for other TNPA usage, this high percentage of the total area confirming the extent of steeply sloping ground. 10ha is used for the MPT operation, 18ha for liquid bulk operations, and 9ha for vehicle handling.

Waterside
There are currently two container berths and two break bulk berths on the east bank, and a vehicle berth, a dry bulk berth and a tanker berth on the west bank.

Potential exists to relocate the break bulk berths to increase the number of container berths, and to build an additional vehicle berth, although demand does not justify this at present.
Consideration has been given to building two container berths capable of accommodating post-panamax vessels on the inside face of the breakwater, with seaward reclamation for stacking area, and a new turning basin in the river mouth.

SHORT-TERM LAYOUT

The export of coal through East London, initially in skiptainers through the MPT terminal, and later through a dedicated dry bulk terminal on the west bank, is the main expansion project being considered in the short term.
MEDIUM-TERM LAYOUT

The medium term plan shows a new breakwater and deepened entrance channel to accommodate larger vessels. This is complemented by expansions in capacities of all terminals, including a new coal export berth.

LONG-TERM LAYOUT

The long-term layout shows the potential for a new 2 berth container terminal on the breakwater, with reclaimed stacking areas. This allows the entire east bank to revert to multi purpose operations.
DEMAND AND CAPACITY

East London’s container forecast shows volumes growing from 0.052m TEU in 11/12, and reaching a total of 0.202m TEU in 2042.

Vehicle volumes are forecast to grow from the 11/12 total of 60 000 units to 89 000 units by 41/42. The capacity to handle this growth will be provided by incremental increases in the terminal stacking area.

Dry bulk volumes are shown to be less than 1mtpa at the existing terminal with its current 4mtpa capacity. From 14/15 potential coal exports are shown, growing from 2,3mtpa to 3,6mtpa in 41/42.

The current capacity of the liquid bulk terminal is at 2,4 million m³, which is forecast to be adequate to handle volumes up to 40/41.

Development plans for the port are limited to reconfiguration of existing infrastructure. Unless regional growth generates new cargo volumes, East London will continue to play an important but limited role in the port system.
ROLE OF THE PORT

Durban is South Africa’s premier container port, and the principle port serving KZN and the Gauteng region as well as the Southern African hinterland. Major growth areas for the port are seen to be in containers, vehicles and bulk liquid handling.

Although Durban is a mature port, with increasingly congested operations, there is potential to expand through the reconfiguration of existing precincts in the Point, Maydon Wharf and in Island View. The underutilised Bayhead rail precinct is ideally suited to a major port expansion, and the relocation of the Durban Airport to La Mercy has provided an opportunity for Transnet to secure the unique airport site for a new dig-out port.

The complementary regional grouping of Durban and Richards Bay allows the rational allocation of cargo between the two ports, with Richards Bay focussing on bulk and break bulk operations.

Durban will continue to provide a wide range of port infrastructure, operations and services, and with its well established logistics infrastructure and supportive local industrial base will continue to be the port of choice for high value Gauteng and inland cargoes.
DURBAN LANDSIDE CAPACITY

There is 968ha of land within the port limits. 185ha is occupied by container operations, 292ha by bulk and break bulk operations, and 39ha by the car terminal. 287ha of the land is zoned as open space and TNPA Other. Commercial and logistics activities occupy 110ha, and ship build and repair operations occupy 41ha. The port is surrounded by urban development, with limited options for landside expansion, and with further infill and reclamation within the Bay prohibited. The major opportunity for increasing the land area of the port lies in Bayhead to the south, where underutilised Transnet-owned land provides an extensive area that will be incorporated into port limits to allow for a future dig-out basin.

The second opportunity is the acquisition of a portion of the Salisbury Island naval base for incorporation into the Pier 1 container terminal, providing additional stacking area.

Inland transport

The port is linked to the interior by the Natcor rail corridor, giving rail access to Gauteng and the Southern African hinterland. The North Coast line provides a connection to Richards Bay and the northern and eastern interior.

In-port rail infrastructure provides services to all areas of the port, with a number of yards and terminals in the Point, Maydon Wharf, Bayhead, Kings Rest and in Fynnlands and Island View.

A range of measures are being jointly undertaken by the city and Transnet to address the road congestion in the short term, and to provide medium and long-term solutions to enable freight to move efficiently through the road network. Short-term projects include the widening of Bayhead Road and a new link road to Edwin Swales Drive. Longer term projects are evaluating near-port intermodal logistics nodes, and simulating port-related road traffic in order to identify and implement a package of infrastructural plans to meet road capacity requirements to complement port expansions.

Planning is continuing on the west – east freight road, and extensions thereof to the N2 and N3 freeways, and on mandatory and dedicated freight routes to Cato Ridge on various alignments. A north - south freight route is also planned to link the existing port to the new airport site expansion.

There are extensive pipeline connections between the port and the refineries in the Southern Industrial Basin. The Durban to Gauteng pipeline originates in a pump station in Island View, and the Coastal Terminal for the New Multi Products Pipeline has also been sited in Island View.
The entrance channel to the port has been widened and deepened, to allow safer navigation for vessels up to 9200 TEU. There is a current study in progress to address berth deepening in the Bay. This will recommend a sequence for deepening berths and channels to take advantage of the ability of the port to handle larger vessels resulting from the channel deepening.

There are ten container berths at DCT and Pier 1, and three car terminal berths in the Point. There are fourteen break bulk berths in the Point, T-Jetty and Maydon Wharf. N-berth is currently used for cruise liners.

There are nine liquid bulk and seven dry bulk berths at Island View and Maydon Wharf.

Berth depths at Durban range from the deepest berths at DCT, Pier 1, Point and Island View at -12.8m, to -9.9m in Maydon Wharf.

Ship repair berths, floating docks and the drydock are situated in Bayhead.

The small craft basin provides berthing for tugs and admin craft on the Victoria Embankment water front, which is also the site for the yacht mole and Wilson’s Wharf marinas. Fishing and recreational vessels berth in the Silt Channel.

The proposed dig-out port on the airport site will provide more than twenty new deepwater berths, for container, vehicle and liquid bulk operations. The new port
will require its own entrance channel and breakwaters, and a new turning basin and basin.

A major long-term challenge will be to provide a deep water channel to access new berths in the Bayhead dig-out basin. This will face environmental resistance due to the inevitable loss of inter-tidal sandbanks.

**SHORT-TERM LAYOUT**

The re-engineering project at DCT is nearing completion. This is concerned with the rationalisation of the landside of the terminal, which will increase stacking areas and improve operational efficiencies. The deepening of the North Quay at Pier 2 will provide the first deep water container berths in Durban, with new twin lift STS cranes.

The Pier 1 phase 2 container terminal expansion project includes the purchase of a portion of Salisbury Island, and the development of an additional 1,4m teu of capacity which will result from the expanded landside operational area and new deep berths. The project must be preceded by the rationalisation of the SA Navy base onto a smaller footprint.

Container capacity at the Point and Maydon Wharf MPTs will be increased to handle overflow volumes from DCT during deepening.

A feasibility study for the development of a cruise liner terminal and associated commercial development at A-B berths in the Point is proceeding.

The construction of the Coastal Terminal and pipeline for the NMPP is in progress in Island View, where the ongoing program of berth reconstruction is continuing. The reconstruction of the Maydon Wharf berths is also planned to begin in the near future.

Current road improvements include the widening of Bayhead Road from Langeberg Road, and preliminary work is proceeding on the dedicated freight routes.
MEDIUM-TERM LAYOUT

In the medium term, the planning for the development of the port will be dominated by the airport site expansion. The 2020 future layout plan shows the fully developed dig-out port, with a new port entrance with breakwaters and entrance channel, leading to an inner basin with turning basin. This allows for sixteen new container berths, four liquid bulk berths, and three car terminal berths, with their respective back-of-quay operational areas, and road and rail connections.

The development of the new port will allow for the reorganisation of port operations and activities across the two port locations. This has the potential to result in the transformation of the Southern Industrial Basin as a whole, and address issues of traffic congestion and incompatible land uses. It will catalyse urban renewal programs for the area, and result in more appropriate port-city interfaces. The freight handling operations of the ports will benefit from better relationships with their industrial bases, and from better inland transport connectivity.

LONG-TERM LAYOUT

In the longer term, expansion could take place in the Bay once sustainability matters have been addressed.

1. Bayhead dig-out basin, with ten container berths and new terminals
2. Reconfiguration of Durban Container Terminals with infill and new operating methods
The long-term potential plan for Durban shows a fully developed port within the spatial limitations of the Bay. Before the Bayhead basin can be built, the existing rail arrival and departure yards and other rail infrastructure will need to be relocated, and the rail lines linking the port to the main line realigned. The Bayhead road access to the southern port will be truncated by the new basin, necessitating new access roads on the southern perimeter. A large number of tenants will need to be relocated, and the ship build and repair sites will need consolidation.

The Bayhead project will thus require a long lead time, and an extensive program of relocation and rationalisation of existing port, rail, road and commercial infrastructure.

The plan shows the Bayhead dig-out basin with a ten berth container terminal, with a capacity of 6,0m teu. The Transnet Rail Engineering facilities have been retained, and a portion of Ambrose Park and the eastern side of the Bayhead rail yards converted into commercial and logistics areas. Ship repair facilities are retained, but on a smaller scale.

The plan also shows the widened and deepened access channel and new turning basin, and an expanded area allocated to the heritage site.

Although these are not illustrated on the plan, the Bayhead development will be undertaken in association with major rail and road relocations and capacity expansions.
DEMAND CAPACITY

Durban’s container volumes in this forecast are projected to grow from a peak of 2,7m TEU handled in 11/12, to 4,0m TEU in 17/18. Thereafter they will rise to 11,8m TEU in 41/42.

Containers in the Port of Durban are currently handled at the Durban Container Terminal (DCT) and at the Pier 1 Container Terminal, with a combined capacity of 3,6m TEU.

The extension of the existing Pier 1 container terminal onto Salisbury Island is the next capacity expansion project planned for the Port of Durban. The project entails the purchase by Transnet of a portion of the site, and the consolidation of the SA Navy base onto a smaller footprint. A new infill with realigned and deepened berths 101-103 will be used to provide additional capacity. This will increase the capacity of Pier 1 from 0,7m to 2,1m TEU, and will need to be operational by 2017.

Durban handled 381 000 vehicles through the Point ro ro terminal in 11/12. This figure is forecast to grow to 776 000 units by 41/42. The car terminal expansion project has increased the capacity of the terminal to 560 000 units. A second phase expansion will increase the landside parking areas, further increasing the...
terminal's capacity to 720 000 units. In the longer term the terminal could be relocated to the airport site port.

A small growth in the volume of break bulk cargoes handled in Durban is forecast, from 2,2mt handled in 11/12 to 2,5mt in 41/42. This is well within the capacity of the fourteen break bulk berths which are located in the Point, on T Jetty, and in Maydon Wharf and Island View, and no expansion projects are planned.

Dry bulk volumes are forecast to grow from 9mt handled in 11/12 to 16,8mt in 41/42. These volumes will continue to be handled on the Bluff, and at rationalised terminals in Maydon Wharf.

Liquid bulk volumes are forecast to grow from 8,0cm handled in 11/12 to 12,5cm in 41/42. The bulk of these volumes are petroleum products and chemicals handled at Island View, with smaller volumes handled in Maydon Wharf. Ongoing berth rehabilitation and operationalisation in Island View will provide the capacity to handle future volumes.

The Single Buoy Mooring off Reunion will continue to provide capacity for crude imports of around 22mtpa. The new port at the airport site could deliver four additional deepwater bulk liquid berths in close proximity to the refineries.
### Durban Project Investment List

<table>
<thead>
<tr>
<th>Cargo</th>
<th>Project</th>
<th>Timeframe</th>
<th>Project cost (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Containers</td>
<td>DCT Pier 2 North Quay deepening</td>
<td>Short term</td>
<td>R4 500</td>
</tr>
<tr>
<td>Containers</td>
<td>Straddle carrier replacement</td>
<td>Short term</td>
<td>R1 489</td>
</tr>
<tr>
<td>Containers</td>
<td>Pier 1 phase 2 CT</td>
<td>Short term</td>
<td>R9 000</td>
</tr>
<tr>
<td>Break bulk</td>
<td>Maydon Wharf berth deepening (Shoetphile)</td>
<td>Short term</td>
<td>R1 594</td>
</tr>
<tr>
<td>Liquid bulk</td>
<td>Island View berth 1 upgrade</td>
<td>Short term</td>
<td>R400</td>
</tr>
<tr>
<td>Liquid bulk</td>
<td>Island View berth 4 upgrade</td>
<td>Short term</td>
<td>R350</td>
</tr>
<tr>
<td>TNPA other</td>
<td>Maydon road upgrade</td>
<td>Short term</td>
<td>R1 200</td>
</tr>
<tr>
<td>TNPA other</td>
<td>Edwin Swales link road</td>
<td>Short term</td>
<td>R760</td>
</tr>
<tr>
<td>TNPA other</td>
<td>Acquisition of 2 replacement tug</td>
<td>Short term</td>
<td>R1 373</td>
</tr>
<tr>
<td>TNPA other</td>
<td>Permanent sand supply system</td>
<td>Short term</td>
<td>R436</td>
</tr>
<tr>
<td>Maritime commercial</td>
<td>Cruise liner terminal, berth A&amp;B</td>
<td>Short term</td>
<td>R670</td>
</tr>
<tr>
<td>Containers</td>
<td>Infill between Pier 1 and 2</td>
<td>Medium term</td>
<td>R7 600</td>
</tr>
<tr>
<td>Containers</td>
<td>Pier 2 stack reconfiguration</td>
<td>Medium term</td>
<td>R7 400</td>
</tr>
<tr>
<td>Containers</td>
<td>Airport site CT: Phase 1</td>
<td>Medium term</td>
<td>R40 397</td>
</tr>
<tr>
<td>Containers</td>
<td>Airport site CT: Phase 2</td>
<td>Medium term</td>
<td>R14 757</td>
</tr>
<tr>
<td>Containers</td>
<td>Airport site CT: Phase 3</td>
<td>Medium term</td>
<td>R11 954</td>
</tr>
<tr>
<td>Containers</td>
<td>Airport site CT: Phase 4</td>
<td>Medium term</td>
<td>R11 195</td>
</tr>
<tr>
<td>Vehicles</td>
<td>Relocate car terminal to airport site</td>
<td>Medium term</td>
<td>R3 000</td>
</tr>
<tr>
<td>Break bulk</td>
<td>Maydon Wharf berth deepening (5-11 and 15)</td>
<td>Medium term</td>
<td>R3 000</td>
</tr>
<tr>
<td>Containers</td>
<td>Bayhead container terminal</td>
<td>Long term</td>
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</tbody>
</table>

### DURBAN PROJECTS:

Major investment is planned for capacity expansion projects in the Port of Durban. A major portion of this investment is focused on container expansions, with short-term projects in the port, followed by the phased development of a new port at the airport dig out.

Other significant projects include berth reconstruction and deepening at a number of terminals, road improvement projects, a sand bypass system and a new cruise liner terminal in the Point.
Durban metro context:

**CURRENT LAYOUT**

This plan shows the existing Port of Durban in its Metro context, with port, rail, road and back of port land uses illustrated.
Durban metro context:

FUTURE LAYOUT

This plan shows the future Port of Durban with the fully developed new dig-out port in their Metro context, with future port, rail, road and back of port land uses illustrated. This view informs the long-term coastal development plans of the 2050 Vision for the Durban to Gauteng Freight Corridor initiative, which takes an integrated view of infrastructure development on the corridor as a whole.
ROLE OF THE PORT

The newer of the eastern ports, Richards Bay is South Africa’s premier bulk port.

Bulk operations in the port focus on four major activities: export coal, break bulk, dry bulk and liquid bulk. The port has a world class coal export terminal, a general purpose dry bulk terminal, a Multi Purpose Terminal, and a liquid bulk terminal. Other services include bunkering and minor ship repairs, and facilities for service and recreational craft.

In addition to providing bulk facilities for a broad South African hinterland, the port plays a significant role in the local economy of the City of Umhlatuze, with its growing industrial base.

The primary challenge to the port will be to accommodate growing bulk cargoes. This will be achieved through the continued development of infrastructure in the Die Duine, Umhlatuzi and Bayview precincts.

A second critical factor in determining the future role of the port will be linked to the future of Durban. If Durban’s freight handling potential is restricted by
environmental resistance to further expansion, Richards Bay is well placed to handle future volumes. Development framework plans for the port show a potential westward expansion to provide extensive future capacity.
**CURRENT LAYOUT:**

**Waterside**

Breakwaters and a dredged entrance channel provide access to a deepwater bay, with berths sited on both the north and south sides of the bay. A third development axis for future growth of waterside infrastructure is to the west in the direction of the N2 freeway.

The five 300-series berths at Die Duine are -18.7m, with the potential for two additional berths. A liquid bulk dolphin berth, with two additional berths planned, is located between the coal berths and the entrance channel.

Berths on the northern shoreline are the Umhlatuzi 600-series general cargo berths which are -14.2m deep, and the Bayview 700 and 800-series berths with depths ranging from -14.4 to -18.7m. Port administration craft and recreation and service vessels are berthed in the small craft harbour and adjacent waterfront.

**Landside**

The port has the largest land area within port limits of all the South African ports. The total area is 2220ha, of which 1550ha is zoned as open space or for other TNPA usage. Current operational zoning shows 372ha dedicated to dry bulk activities, 212ha for liquid bulk handling and storage, and 66ha for break bulk activities.
activities.
The long-term plan shows the total port area increased to 3279ha through the acquisition of land to the west.

Inland transport
The Richcor coal line runs along the southern boundary of the port and terminates in a rail balloon at Die Duine, serving RBCT. The northern port precincts are served by rail linked to the Swaziland and North Coast lines and the Nsezi yard.
The John Ross highway, which is currently being upgraded, provides direct rail access to the N2 freeway. While road connectivity to Durban on the N2 and then to Gauteng via the N3 freeways is good, a more direct high capacity road routing to Gauteng will need to be developed in future.

Short-term developments
The Richards Bay Capacity Development Plan is preparing plans which will guide future development of the dry bulk and multi purpose operations in the port. This intends to increase capacity from 14 to 24 Mtpa, with the provision of a rail balloon, new terminal equipment, storage areas, rail infrastructure, and rationalised terminal operations.
New coal export terminal, initially at 600 series berths, with potential to locate to new site at Die Duine, with new berths.
Liquid bulk capacity will be increased through the completion of berth 208 and additional storage area, providing an opportunity for a second operator.
MEDIUM-TERM LAYOUT

The capacity of the coal export terminal will be increased through ongoing corridor expansion and operational efficiencies. Dry bulk capacity will be increased in the medium term through an extension to the finger jetty to create two additional berths. Break bulk expansion will be at the 700-series, with berths 709 to 711, and then 712 to 714 providing for future needs.

A proposed deepening of the repair quay will enable its use for handling passenger vehicles and citrus exports.

The development of ship repair facilities, including a new graving dock, could take place in the medium term. This operation could be sited adjacent the small craft harbour, or on a preferred site on the opposite side of the bay, where the impact on the CBD and on other port expansions would be minimised.

LONG-TERM LAYOUT

The long-term layout for the port shows the potential for development through a series of new basins accessed by a new channel. The layout attempts to maximise on good founding conditions to the north of the channel, and avoid unbuildable areas of hippo mud to the south. This development will require
extensive realignment of both road and rail infrastructure, and careful consideration of environmentally sensitive areas.

This expansion will provide for the long-term requirements of all cargoes and port operations.

The long-term layout also shows the comprehensive development of the Die Duine, Bayside and Umhlatuzi precincts, and indicates a fully developed port capable of providing, in a complementary pairing with Durban, for the very long-term needs of the South African ports system’s eastern region.
DEMAND AND CAPACITY

Dry bulk volumes excluding RBCT coal exports are forecast to grow from 14mtpa to 24mtpa over the 30-year horizon. Coal exports through RBCT will grow to 81mtpa and then to 97mtpa.

Dry bulk volumes include coal, sulphur, petroleum coke and salt imports, chrome ore, titanium slag, woodchips, and other unspecified ore exports.

Break bulk and neo bulk volumes will grow from 8 mt in 11/12 to 18mt by the end of the 30-year horizon.

Liquid bulk volumes will grow from 2,0 to 4,3 m³ over the same timeframe.

Small volumes of containers will continue to be handled as MPT cargo, until such time as volumes justify a dedicated container terminal development.
Richards Bay metro context:

The slide shows the fully developed port at some long-term future date, illustrating the relationship of the port to the CBD and to Empangeni.
**Status quo:**

- The Transnet National Ports Authority owns and is responsible for port infrastructure in the nine ports around the coast of South Africa. Under the regulations of the Ports Act.
- The Port of Port Nolloth falls within the ambit of the definition of a “port”, as per the Act.
- Section 10 of the Act provides that all ports fall under the jurisdiction of the Port Authority. As a consequence all the provisions of the Act are applicable to the Port of Port Nolloth.
- This implies that Transnet National Ports Authority is legally responsible to manage, control and administer the Port of Port Nolloth and to ensure its efficient and economic functioning.
Current activities:

De Beers Group Services (Pty) Ltd:

The quay and back up facilities are leased to De Beers for a period of ten (10) years starting from 1 August 2005 for the operation of a Supply Chain Centre (SCC), a logistics service to the De Beers Namibia Marine fleet.

De Beers currently fulfills the role of the Harbour Master and undertakes the duties assigned to such a person under the Management and guidance of the Cape Town Harbour Master.

Current operations

• Current draft available at the quay is 4 meters
• A 40 Ton Crane is used for the loading of materials onto the ship
• Bunkers are transported to the quay by Tankers that are bright from Cape Town
• Current Supply vessels operated by Smit Amandla with near daily trips to the operating vessels
• Dredging is done by sand pumps transferring materials into the current that runs parallel to the beach

Current Infrastructure condition

• The Quay deck was refurbished by De Beers approximately 5 years ago and is in reasonable condition

Future Expectations and Improvements

• De Beers have no expectations for large infrastructure investment but will be installing a 60 000 liter tank farm for the supply of bunkers to ships operating from the quay

Fishing industry

Local small scale fishing of Crayfish and Snoek
**Boat repair Industry**

Due to lack of infrastructure in the Port Nolloth area, the boats used for fishing and diamond recovery are repaired on the beach.
Airport site dig-out port: current and future views

Currents site layout
Aerial photograph of the vacated DIA site. The existing Port of Durban can be seen some 20 km distant, at the top left of the photograph.

The site is bordered by the Umlaas Canal, the SAPREF refinery, the Prospecton industrial area, with the Toyota factory, and by the N2 freeway in the foreground.

The land assembly for the project requires the acquisition of 750 ha of ACSA, Municipality, government and private land.

Full development of the new port

The artist’s impression shows the fully developed port, including:
• Container terminals with 16 berths capable of handling 18 000 TEU vessels.
• Four berth Automotive terminal adjacent the Prospecton auto industries.
• Four berth liquid bulk terminal, with capacity to berth VLCC vessel which are currently restricted to offshore moorings.
• New rail and road access and infrastructure, aligned with the 2050 Vision for the Durban – Gauteng freight corridor project.
• Expanded back of port logistics areas and coastal intermodal hubs and terminals.
Reconfiguration options for Durban container terminals

The sequence of artist’s impressions show the potential to reconfigure Durban’s Pier 1 and Pier 2 container terminals in order to modernise facilities, improve efficiencies, and decongest road and rail linkages.

1. Existing photo showing outdated Z-shaped layout with mixed terminal operations, shallow berths, and congested back-of-quay areas.

2. Shows the north quay deepened and lengthened with the completed Pier 1 expansion with Salisbury Island infill.

3. Infill between Pier 1 and Pier 2, with entire terminal converted to Cantilever Rail Mounted Gantry (CRMG) operation.