CHAPTER 8
CAPITAL PLANNING
## ACRONYMS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTPF</td>
<td>Long-Term Planning Framework</td>
</tr>
<tr>
<td>PLP</td>
<td>Project Lifecycle Process</td>
</tr>
<tr>
<td>FEL</td>
<td>Front End Loading</td>
</tr>
<tr>
<td>FER</td>
<td>Front End Research</td>
</tr>
<tr>
<td>TFR</td>
<td>Transnet Freight Rail</td>
</tr>
<tr>
<td>TNPA</td>
<td>Transnet National Ports Authority</td>
</tr>
<tr>
<td>TPT</td>
<td>Transnet Port Terminals</td>
</tr>
<tr>
<td>TPL</td>
<td>Transnet Pipelines</td>
</tr>
<tr>
<td>TGC</td>
<td>Transnet Group Capital</td>
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<tr>
<td>PICC</td>
<td>Presidential Infrastructure Coordinating Commission</td>
</tr>
<tr>
<td>SIP</td>
<td>Strategic Integrated Projects</td>
</tr>
<tr>
<td>IP</td>
<td>Intellectual Property</td>
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<tr>
<td>MPP</td>
<td>Multi-Product Pipeline</td>
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1. INTRODUCTION

The Long-term Planning Framework (LTPF) provides a practical framework for a series of interventions to increase capacity in a closed system of rail, port and pipeline infrastructure to match the projected demand. It provides an unconstrained view to guide strategic infrastructure investment and offers a neutral way on capacity requirements not impacted by affordability, profitability or other business constraints.

The capital chapter of the LTPF quantifies and summarises the interventions identified in the individual Port, Rail and Pipeline Chapters and thereby completes the capital planning process which forms the basis for the capital budgeting process where the viability and affordability of the capital investments are tested and the long-term sustainability of Transnet is ensured. The module summarises the 30-year capital requirements from 2016 to 2045.

1.1. 30-YEAR EXPANSION CAPITAL REQUIREMENTS SUMMARY

The Transnet Operating Divisions have submitted an expansion and replacement capital requirement of R277 billion over the next seven years. An amount of R273 billion capital expenditure has been approved by the board in the Corporate Plan, R109 billion of the R273 billion is for expansion projects. Due to the prolonged subdued economic climate the 7-year constrained portfolio cashflow forecast has been reduced by R62 billion to R239 billion (not reflected in the graph).

The LTPF highlights the expansion capital requirements up to 2045. It indicates that R759 billion (un-escalated) will be required up to 2045. Of the R759 billion, R239 billion (escalated) will be required over the next seven years.

![Figure 1: 30-year expansion capital requirements](image-url)
1.2. CHANGES IN THE LTPF FROM 2015 TO 2016

In this comparison the cash flows (cradle-to-grave) of the thirty years, in both the LTPF 2015 (2015-44) and LTPF 2016 (2016-45), have been compared. The expansion requirements are in 2015 and 2016 base values and include study cost of R27.6 billion and R26.4 billion respectively. The total rolling 30-year expansion requirements cost estimate has decreased from R821 billion in the 2015 LTPF to R786 billion in the 2016 LTPF.

The main difference between 2015 and 2016 is that growth forecasts have been lowered further to reflect the lowered economic growth expectations for the next 10-years. Some higher “catch-up” expansion requirements were assumed in the latter years (2037-2045), whilst in the earlier part of the 30-year period of the 2016 LTPF greater emphasis was placed on operational changes to increase capacity before infrastructure expansion is considered.

Figure 2: LTPF 2015 and 2016
1.3. CHANGES IN THE 30-YEAR ROLLING FORECASTS OF THE LTPF OVER THE PAST 5 MDS-YEARS

In the 2012 LTPF economic recovery was expected within the first 7-years in line with economist’s consensus forecasts. Over the past five years these forecasts have consistently been deferred as it became evident that the world economy is taking longer to recover than anticipated.

Over the past five years Transnet’s investment continued in line with the MDS and the Government’s Growth Path Strategy to create capacity ahead of demand and lowering capacity constraint pressures on future years. The MDS investment commitments are maintained, but delivery thereof are delayed to align capacity requirements with projected demand forecasts.

Figure 3: Changes in the 30-year forecasts

1.4. TOTAL RAIL, PORT AND PIPELINE EXPANSION CAPITAL REQUIREMENTS

Figure 4 below depicts the total rail, port, and pipeline expansion capital required over the next 30-years and totals R759 billion. The rail capital component is the biggest, totalling R467 billion and representing 61% of the total capital requirement.

The average annual rail capital requirement remains fairly constant at about R17 billion per annum. This includes:

- Rail infrastructure;
- Rail hubs and terminals; and
- Rolling stock comprising of locomotives and wagons.

Port expansion capital of R226 billion is required up to 2045. Of this capital, Transnet Port Authority requires R138 billion and Transnet Port Terminals R88 billion. Substantial port developments/investments are required until about 2032, declining thereafter.

The pipeline requirement of R67 billion is predominantly for the different Multi-Product Pipeline (MPP) expansion phases. The individual operating division investment categories are analysed in more detail below.
### PROVINCIAL CAPITAL REQUIREMENTS

The capital expenditure distribution amongst the provinces is based on an estimation/ratio of how much of the physical infrastructure is located in each province. The capital for each intervention is then distributed to each province based on this ratio. Capital which cannot be allocated to a specific province has been classified under National, and investments linked to neighbouring countries e.g. Botswana, Zimbabwe, Swaziland etc. have been classified separately.

An analysis of the 30 year expansion capital requirements indicates that Transnet will be a major economic growth enabler in the provinces. KwaZulu-Natal will require R216 billion (un-escalated) which represents 28% of the total R759 billion investments over the next 30 years. National receives the largest investment at R297 billion (39%) due to the rolling stock capital requirements. Locomotives and wagons function across provincial boundaries.

The Western Cape Province will require R72 billion (10%) of the capital expansion over the 30 years, in mainly Cape Town Seaward expansions and investments in the Port of Saldanha.

The provinces of Gauteng and the Eastern Cape will each require 6% of the total expansion capital requirements, this is between R43-R48 billion per province over the next 30 years. This is mainly to facilitate the investments in the Gauteng freight ring and Gauteng terminals as well as the investment to facilitate the manganese ore exports through the port of Ngqura.
The Mpumalanga (R29 billion – 4%), Limpopo (R21 billion – 3%), Northern Cape (R13 billion – 2%), North West (R10 billion – 1%), and Free State (R3 billion – 0.4%) provinces complete the bottom end of the expansion capital requirements. Investments into neighbouring countries account for R8 billion (1%) of the capital requirements.
1.6. TRANSNET INVESTMENT IN THE PICC STRATEGIC INTEGRATED PROJECTS

Transnet is responsible for SIP 2 and involved in several of the PICC’s SIPs. Transnet is involved and reports on progress in the following SIPs:

1.6.1. SIP 1: UNLOCKING THE NORTHERN MINERAL BELT

Investment in rail, water pipelines, energy generation and transmission infrastructure to tap Limpopo’s rich mineral reserves.

1.6.2. SIP 2: DURBAN-FREE STATE-GAUTENG LOGISTICS AND INDUSTRIAL CORRIDOR

Linking the industrial hubs in Durban, the Free State and Gauteng, and improving access to Durban’s import/export facilities.

1.6.3. SIP 3: SOUTH-EASTERN NODE AND CORRIDOR DEVELOPMENT

Upgrade of port and rail capacity, construction of a new dam in Umzimvubu in the Eastern Cape, construction of rail infrastructure to transport manganese from the Northern Cape to Port Elizabeth, construction of a manganese sinter facility in the Northern Cape and a smelter in the Eastern Cape.

1.6.4. SIP 5: SALDANHA-NORTHERN CAPE DEVELOPMENT CORRIDOR

Expansion of rail and port infrastructure in the Saldanha area; construction of industrial capacity at the back of these ports (including a possible industrial development zone); strengthening maritime support for the gas and oil activities along the West Coast; expansion of iron ore mining production.

Although the SIPs are aimed at development over the short to medium term, programmes and projects in the LTPF 2016 that could possibly be managed as part of the SIPs over the longer term are:

SIP 1: UNLOCKING THE NORTHERN MINERAL BELT

- Coal Expansion
- Port of Richards Bay Expansionary projects
- Swaziland Link
- Mozambique Link
- Zimbabwe Link
- Other North-Eastern System programmes

SIP 2: DURBAN-FREE STATE-GAUTENG LOGISTICS AND INDUSTRIAL CORRIDOR

- NATCOR
- Gauteng Freight Ring
- Gauteng Terminals
- Durban Terminals
- DDOP
- Other Port of Durban Expansionary projects
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SIP 3: SOUTH-EASTERN NODE AND CORRIDOR DEVELOPMENT
• Export Manganese Expansion Programme (Rail and Port)

SIP 5: SALDANHA-NORTHERN CAPE DEVELOPMENT CORRIDOR
• Export Iron Ore Expansion Programme (Rail and Port)
• Saldanha Bay to Atlantis Natural Gas Pipeline project
• Other Port of Saldanha expansionary projects

Figure 6: LTPF SIP capital requirements

More than half of the SIP attributable LTPF capital requirement is accounted for on the SIP 2 projects. Transnet is the official coordinator for SIP 2. The SIP 2 capital requirements make up 59% of the total 30 year LTPF SIP capital requirements.
2. 30-YEAR EXPANSION CAPITAL REQUIREMENTS

2.1. RAIL CAPITAL REQUIREMENTS

Rail capital requirements, comprising of rolling stock, infrastructure, hubs and terminals are considered for capacity expansion only. Rolling stock requirements totals R283 billion (61%) of the total rail capital requirements).

Substantial infrastructure investments (R167 billion) are required for the next 20 years to serve higher traffic levels and to compensate for the under investment of the previous few decades. No provision is, however, made for rail gauge changes or high speed passenger solutions.

Investments in hubs and terminals remain comparatively low (R16 billion), but forms an integral part of the total service solution. Capacity creation in terminals assumes significant contributions from the private sector and terminal operators.

![Figure 7: Rail capital requirements](image)

<table>
<thead>
<tr>
<th>Year</th>
<th>Incl FEL1&amp;2</th>
<th>Excl FEL1&amp;2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>283 413</td>
<td>283 413</td>
</tr>
<tr>
<td>2018</td>
<td>170 154</td>
<td>167 445</td>
</tr>
<tr>
<td>2020</td>
<td>16 799</td>
<td>16 210</td>
</tr>
<tr>
<td>Total</td>
<td>470 366</td>
<td>467 068</td>
</tr>
</tbody>
</table>
2.1.1. RAIL INFRASTRUCTURE REQUIREMENTS

An analysis of the R167 billion rail infrastructure investment requirements per rail system reveals that 48% of the infrastructure expansion requirements are needed on the Durban - Gauteng (R80 billion) and 27% on the Integrated Coal (R45 billion) systems. The Export Ore and the North Eastern systems account for a further 11% (R19 billion) and 9% (R15 billion) of the rail infrastructure investment requirements respectively.

The R80 billion for rail infrastructure development on the Durban - Gauteng system will be required to cater for the substantial volume growth expected over this system over the next 30 years. The capacity increase is required over the next 30 years, with investment peaks of R13 billion in 2034 and R17 billion in 2041.

The R45 billion for the Coal system is required over the next 10 years (2017 to 2026) with capacity creation requirements peaking at the end of the 7-year plan at R10 billion in 2024, R11 billion in 2025 and R8 billion in 2026.

The investment requirements on the Export Ore system (Iron Ore) are scaled down in line with the industry throughput requirements. Some of the R19 billion for the first phase of the Export Ore System is required over the next 5 years (2017 to 2021), peaking at R6 billion in 2019. The second phase of investment is from 2023 to 2026.

Expansion on the North Eastern system (R15 billion) is required within the next 7 years (2017 to 2021). Capacity creation peaks in 2019 at R7 billion.

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*Figure 8: Rail infrastructure capital requirements*
2.1.2. ROLLING STOCK REQUIREMENTS

Rolling stock requirements (R283 billion) over the 30 years are split between locomotives (53% - R150 billion) and wagons (47% - R134 billion). Major locomotive expansions are required in the short term (seven years - as per the 2 064 locomotive acquisition programme). Future rolling stock requirements are smoothed to ease acquisition and planning.

The long lead times applicable to ordering rolling stock, especially locomotives, and the smoothing of acquisition may result in over capacity provision in some periods, whilst under-provision/shortages might be experienced in other periods.

Figure 9: Rolling stock requirements

<table>
<thead>
<tr>
<th></th>
<th>Incl FEL1&amp;2</th>
<th>Excl FEL1&amp;2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locomotives</td>
<td>149 902</td>
<td>149 902</td>
</tr>
<tr>
<td>Wagons</td>
<td>133 511</td>
<td>133 511</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>283 413</strong></td>
<td><strong>283 413</strong></td>
</tr>
</tbody>
</table>

2.1.2.1. Locomotives capital requirements
Figure 10: Future locomotive fleet and capital requirement

Figure 11: Locomotive fleet by traction
2.1.2.2. Wagon capital requirements

<table>
<thead>
<tr>
<th>Traction Type</th>
<th>Requirements (Rbn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel</td>
<td>45</td>
</tr>
<tr>
<td>50kV AC</td>
<td>1</td>
</tr>
<tr>
<td>Dual Voltage</td>
<td>104</td>
</tr>
<tr>
<td><strong>Total (Rbn)</strong></td>
<td><strong>150</strong></td>
</tr>
</tbody>
</table>

Figure 12: Locomotive fleet capital requirements by traction
Future Wagon Fleet Composition

Wagon Capital Requirements

Figure 13: Future wagon fleet and capital requirements

2.2. PORT CAPITAL REQUIREMENTS (TNPA & TPT)
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Transnet National Port Authority is basically the landlord of port infrastructure and responsibilities include marine services, activities such as tugs, pilot boats and pilot helicopters, port control, etc. Transnet Port Terminals’ responsibilities include the loading and offloading of trains, road vehicles and vessels, as well as the conveyance and storage of products within the port. Major investments in the ports include:

- Durban Dig-out Port developments;
- Durban Pier 1 Phase 2 Infill (Salisbury Island);
- Cape Town Seaward expansion; and
- Port Elizabeth container terminal expansions.

TNPA investment requirements (R138 billion – 61%) are significantly more than that of TPT (R88 billion – 39%) for the 30-year period. Common to the nature of port infrastructure investments, substantial expansion investment is required upfront to create basic port infrastructure. Port furnishings and terminal investments can be better phased to align to market demand.

![Figure 14: Port capital requirements](image)

<table>
<thead>
<tr>
<th></th>
<th>Incl FEL1&amp;2</th>
<th>Excl FEL1&amp;2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port - Authority</td>
<td>139 697</td>
<td>137 648</td>
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<tr>
<td>Port - Operations</td>
<td>89 385</td>
<td>88 173</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>229 082</strong></td>
<td><strong>225 821</strong></td>
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</table>

*Figure 14: Port capital requirements*
2.2.1 CAPITAL REQUIREMENTS PER PORT

An analysis of the capital requirements per port highlights the ports of Durban (R105 billion), Ngqura (R36 billion) and Richards Bay (R27 billion) as the main port capital investment destinations. The expansion requirements of all the major ports, over the 30-year period, are indicated below.

Durban will attract 47% of the port investments to cater for consistently strong service demand. Large investments are required for Phase 1 of the Durban airport site port development to start in 2029 and continuing into the 2040's. An estimated R67 billion is needed by TNPA and the Terminal operator for phase 1. Another major project in the port of Durban include Pier 1 Phase 2 Infill (Salisbury Island) at an estimated R23 billion.

In the port of Richards Bay R27 billion is required for expansion projects over the 30-year period. Major projects include land acquisitions for future port development; ship repair facilities and a dry dock; as well as a facility for Liquefied Natural Gas (LNG). Expansion capital requirements in the port of Saldanha Bay totals R19 billion, of which a large portion (75%) is required within the next seven-year period.

Significant expansions are also required in the port of Ngqura (R36 billion) to accommodate the move of the manganese facility from the port of Port Elizabeth and to increase container terminal capacity to align with transhipment demand and TNPA capacity.

Predominantly container terminal capacity is required in the ports of Cape Town and Port Elizabeth, and the 30-year expansion capital requirements in these ports are R20 billion, and R13 billion respectively. Capacity expansion investment requirements in the ports of East London (R4 billion) and Mossel Bay (R1.4 billion) are comparatively small.
2.3. PORT CAPITAL REQUIREMENTS PER CARGO CATEGORY

When the capacity expansion requirements are summarized per cargo category, it is apparent that R123 billion (55%) of port investments are for container traffic expansions due to the strong growth in this sector and current capacity constraints.

During the first few years some dry bulk investments (R23 billion – 10%) are required at the ports of Richards Bay, Ngqura and Saldanha Bay to cater for the growth in the export commodities of coal, manganese and iron ore.

Significant liquid bulk investments (R34 billion – 15%) are required in mainly the ports of Saldanha, Richards Bay, Ngqura and Durban. These include investments for Liquefied Natural Gas (LNG) and Liquid Petroleum Gas (LPG).

Expansion investments in the cargo categories of break bulk (2%) and automotive (2%) are comparatively small. Provisions have also been made for expansions in ship repair (5%), and maritime commercial activities (1%) to facilitate project Phakisa.

Figure 16: Capital requirements per cargo category
2.4. PIPELINE CAPITAL REQUIREMENTS

The Multi-Product Pipeline (MPP) expansion requirements (R27 billion) make up 41% of the Total Pipeline’s expansion capital requirements of R67 billion. Four further phases are planned. The timing of the further phases is dependent on the timelines of the planned Mthombo Oil Refinery in the Ngqura Development Zone.

Two scenarios have therefore been listed for expansions on the MPP, i.e. where 1) a new Ngqura – Gauteng pipeline (NGP) is commissioned, and 2) where product from Mthombo gets shipped to Durban and pumped to Gauteng via the MPP. The two scenarios have different capacity requirements for the MPP.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Scenario 1 (Ngqura – Gauteng pipeline)</th>
<th>Scenario 2 (Shipping case)</th>
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<tbody>
<tr>
<td>Phase 1</td>
<td>2019</td>
<td>2019</td>
</tr>
<tr>
<td>Phase 2</td>
<td>2022</td>
<td>2021</td>
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<td>Phase 3</td>
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<td>2025</td>
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<td>Phase 4</td>
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<td>2029</td>
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<tr>
<td>Phase 5</td>
<td>2038</td>
<td>2031</td>
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Table 1: Mthombo oil refinery scenarios

Figure 17: Pipeline capital requirements per Scenario
2.5. GAS CAPITAL REQUIREMENTS

Provision has been made for investment in gas (LNG and LPG) infrastructure requirements in the ports and pipelines capital requirements. Due to the emphasis that has been placed on the importance of creating gas infrastructure, the proposed investments have been singled out and are reflected below. These investments form part of the ports and pipelines infrastructure and are not additional to that listed above.

<table>
<thead>
<tr>
<th>Year</th>
<th>TPL</th>
<th>TNPA</th>
<th>TPT</th>
<th>Total</th>
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<td>2044</td>
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*Figure 18: Gas capital requirements*
CAPITAL PLANNING

2.6. PROJECT STUDY FUNDING REQUIREMENTS

Project study requirements for the PLP process and the funding thereof follow the normal Transnet financial policy and procedure guidelines. FER, FEL-1, and FEL-2 studies are funded predominantly from the operating budget, whilst FEL-3 and FEL-4 is funded from the capital budget.

The cost for project studies, once again, varies based on the size and complexity of the project. A Generic study cost estimates for future projects are based on the following percentages of the projected total project cost:

<table>
<thead>
<tr>
<th>PLP Stage</th>
<th>Allocation of ETC</th>
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<tr>
<td>FEL-1</td>
<td>0.4%</td>
</tr>
<tr>
<td>FEL-2</td>
<td>1.25%</td>
</tr>
<tr>
<td>FEL-3</td>
<td>2.85%</td>
</tr>
</tbody>
</table>

Table 2: Study cost allocation per PLP phase

Over the 30-year period Transnet would need to make provision for approximately R26.4 billion in the operating budget and R22 billion in the capital budget for project study funding. Project study funding FEL1-3 totals only 6% of total project cost.

Figure 19: Transnet 30-year capital and study requirements

<table>
<thead>
<tr>
<th>FEL - 1</th>
<th>6 143</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEL - 2</td>
<td>20 246</td>
</tr>
<tr>
<td>FEL - 3</td>
<td>22 006</td>
</tr>
<tr>
<td>FEL - 4</td>
<td>737 408</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>785 803</strong></td>
</tr>
</tbody>
</table>
The project and study estimates over the 30 years are static and thus remain un-escalated. The study estimates and timelines in the LTPF 2016 are based on generic percentage estimates and timelines for the different PLP phases. Project timelines are dependent on the date the intervention is required and the construction period.

Study funding will require R26,4 billion from predominantly the operating budget for FER, FEL-1 and FEL-2 studies and R22 billion in the capital budget for FEL-3 studies over the 30 years.

Figure 20: 30-year capital and study funding per PLP phase
3. FUNDING

3.1. FUNDING SOURCES AVAILABLE TO TRANSNET

The objective of the funding plan is to ensure that the company has sufficient liquidity to meet all its requirements, without breaching the key financial ratios as agreed with the Shareholder through the Shareholder’s Compact, whilst exploring innovative funding solutions which seek to minimise any constraint that the increase in the investment plan might have on the balance sheet.

Some of the possible funding sources to be used include:

- International and domestic capital markets;
- Loan market (public and private);
- Development Finance Institutions (domestic and international);
- Export credit market;
- Structured leasing;
- Partial funding by customers and/or interesting parties of part of Transnet’s investment plan; and
- Project specific funding.

3.2. SEVEN-YEAR FUNDING REQUIREMENTS IN THE CORPORATE PLAN

External funding of about R97.4 billion, as identified in the corporate plan, will be required over the next seven years. The capital investment and funding requirements as per the corporate plan and long-term planning framework are depicted in Figure 22 below. Individual projects where external funding will be pursued are going to be identified.
### 3.3. CAPITAL STRUCTURE

Transnet has access to the debt capital markets for funding at appropriate cost levels. As an entity with commercial objectives, it is imperative for Transnet to retain and improve its financial strength. Transnet therefore has to remain within acceptable capital and debt structure parameters to ensure:

- Adequate reinvestment to maintain operations as well as to create capacity to meet market demand needs;
- Optimal cost of capital; and
- Optimal working capital.

To achieve the above objectives, the Transnet Board of Directors has set the following financial metrics to monitor performance:

- Maximum capital to debt (gearing ratio) structure of less than 50%;
- Generally maintain a cash interest cover of at least 3.0 times;
- Return on total assets (ROTA) of >6%; and
- Earnings before interest, tax, dividends, and amortisation (EBITDA) of >40%.

#### Affordability

- Investments over the next seven years have been committed.
- Funders in general require that Transnet maintains certain thresholds in terms of gearing and cash interest cover to safeguard their own investment in Transnet.
  - Gearing ratio at >50%;
  - Cash interest cover of more than 3.0 times.
  - ROTA of >6%;
  - EBITDA of >40%
- Funding affordability up to 2045 will be dependent on similar criteria as for the next seven years.
4. APPENDIX 1: ESTIMATING PRINCIPLES APPLIED

4.1. PROJECT LIFE CYCLE PROCESS (PLP)

Transnet developed and implemented the Project Life Cycle Process (PLP) in order to continuously and systematically improve the levels of consistency in the approach to the preparation and management of capital investment projects and thereby the reliability of the results received. The Project Life Cycle Process therefore provides a standardised, generic methodology in capital project execution.

4.2. FRONT END LOADING (FEL)

The concept of Front End Loading (FEL) phases is key to the successful implementation and execution of projects. The term “Front End Loading” is commonly used to illustrate the value and opportunity that may be realised by doing upfront work in the early study phases of the project life cycle when there is still the potential to influence the successful outcome of the project.

The following project phases are commonly used in the project terminology:

- FER Front End Research
- FEL-1 Concept
- FEL-2 Prefeasibility
- FEL-3 Feasibility
- FEL-4 Execution
- Close-out

FER
A basic need determination, based on future requirements.

FEL-1
A conceptual study in which the broad business concept is tested and a number of options are generated to implement the requirement.

FEL-2
A pre-feasibility study in which the options are evaluated. A preferred option is prioritised, selected and the viability of the project is more rigorously tested.

FEL-3
A feasibility study in which the selected option is more fully defined and its viability confirmed. The project to deliver the solution is defined in terms of cost, schedule, scope and other required disciplines.

FEL-4
Execution in which the final design is completed and the capital investment is made and the project is executed to deliver the defined outcomes in line with the scope, schedule, cost, quality and other defined parameters.

Close-out
The closing and evaluation process to terminate the PLP project phase and to ensure all deliverables are handed over in line with owner requirements.

Estimating capital requirements 30 years into the future requires clarification and standardisation to enable consistent application of principles.

4.3. PROJECT DURATION

Project timing is crucial in the planning framework. Required capacity is market driven, all projects are therefore planned to provide capacity when required (ahead of demand) regardless of short-term cyclical swings. The project’s future required date is therefore used as the base and all planning phases are planned accordingly.

The project duration will differ from project to project depending on the size and complexity of the project. The typical project duration (FEL-4 Execution) for Transnet projects can vary between one to seven years.
4.4. PROJECT TIMELINES

Working back from the project required date, allowing for the project execution, (FEL4), time must also be allowed for the planning phases of the PLP process, i.e. FEL 1-3. The duration of project studies varies, based on the size and complexity of the project. The duration of study phases are typically (in months):

**FEL-1** between 6 to 12 months

**FEL-2** between 6 to 12 months

**FEL-3** between 12 to 18 months

For long-term planning purposes, where the studies have not been committed, study durations have been standardised for FEL-1 and FEL-2 at six to twelve months each and for FEL-3 at twelve months per project.

4.5. PROJECT ESTIMATES

Each FEL phase is associated with a specific “class” of estimate corresponding to the level of work done during that phase. A cost estimate is a forecast of the cost of an engineered construction project, prepared in a systematic manner appropriate to the size and complexity of the project and to a level of accuracy commensurate with the available information and the intended use of the information developed.

The indicative accuracy of project estimates and the level of contingency included in the different PLP phases are as per the PLP manual and are:

<table>
<thead>
<tr>
<th></th>
<th>Indicative accuracy range</th>
<th>Level of contingency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FER</strong></td>
<td>&lt;-50% to &gt;+50%</td>
<td>&gt;30%</td>
</tr>
<tr>
<td><strong>FEL-1</strong></td>
<td>-50% to +50%</td>
<td>30% to 50%</td>
</tr>
<tr>
<td><strong>FEL-2</strong></td>
<td>-20% to +20%</td>
<td>20% to 30%</td>
</tr>
<tr>
<td><strong>FEL-3</strong></td>
<td>-10% to +15%</td>
<td>10% to 15%</td>
</tr>
<tr>
<td><strong>FEL-4</strong></td>
<td>-5% to +10%</td>
<td>up to 10%</td>
</tr>
</tbody>
</table>

*Table 3: Study accuracy and contingency per PLP phase*

Projects in the 30-year plan (LTPF) estimates are determined based on the following:

- Rail projects: estimates for rail projects included in the LTPF in the FER stage are based on a Unit Costing Model developed for Group Capital. This model provides estimates on a -30% to +50% accuracy (FEL-1).
- Port projects: estimates for port projects in the FER stage are based on best past experience and the knowledge and expertise of industry experts. Accuracy levels are as indicated above.
- Pipeline projects: accuracy levels are as per the above guidelines.
CAPITAL PLANNING

4.6. ESCALATION

Values included in the LTPF 2016 are non-escalated 2016 values. Although we recognise the critical role inflation can play in project cost estimation, the 30-year estimates are based on real cost projections and exclude escalation cost. Escalation is, however, considered in the FEL1-3 study estimates and included in the Corporate Plan estimates.

4.7. EXPANSION CAPITAL ONLY

Only expansion capital requirements are included in the 30-year plan. The fundamental starting point of developing the long-term planning framework is that the existing capacity and the capacity created by the various expansion interventions are maintained at the designed levels. Capital required to replace existing capacity and sustaining the current levels are therefore provided for by the individual operating divisions for inclusion in the Corporate Plan (CP) and the budget.

4.8. UNCONSTRAINED VIEW

All capacity requirements represent an unconstrained view and have not been verified and tested against profitability and affordability and cannot solely be funded off Transnet’s balance sheet.

4.9. LAND ACQUISITION COST

Land acquisition costs are not reflected in the rail capacity expansion estimates. Some strategic land acquisitions are however indicated in the port plans, but are not project specific and are excluded from the project cost.
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