

# CHAPTER 7

## CAPITAL PLANNING

## LONG TERM PLANNING FRAMEWORK 2017



# ACRONYMS AND ABBREVIATIONS

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

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# CAPITAL PLANNING

## 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 2017 to 2046.

### 1.1. 30-YEAR EXPANSION CAPITAL REQUIREMENTS SUMMARY

An amount of R209 billion capital expenditure has been approved by the Board in the Corporate Plan, R88 billion of the R209 billion is for expansion projects.

The LTPF highlights the expansion capital requirements up to 2046. It indicates that R771 billion (un-escalated) will be required up to 2046. Of the R771 billion, R233 billion (escalated) will be required over the next seven years.

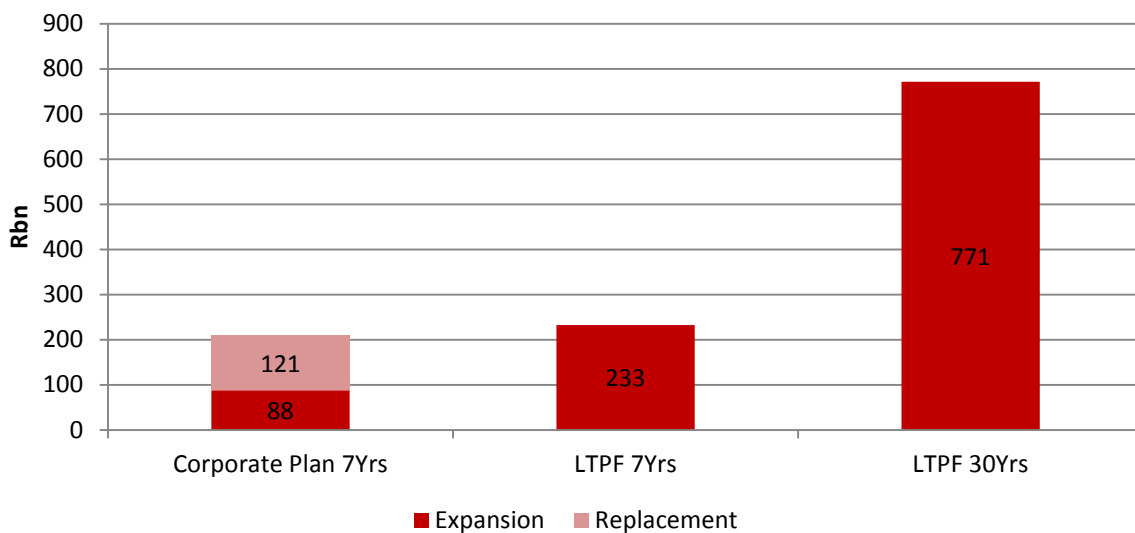


Figure 1: 30-year expansion capital requirements



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## 1.2. CHANGES IN THE LTPF FROM 2016 TO 2017

In this comparison the cash flows (cradle-to-grave) of the thirty years, in both the LTPF 2016 (2016-45) and LTPF 2017 (2017-46), have been compared. The expansion requirements are in 2016 and 2017 base values and include study cost of R26,4 billion and R26,9 billion respectively. The total rolling 30-year expansion requirements cost estimate has increased from R775 billion in the 2016 LTPF to R798 billion in the 2017 LTPF.

The main difference between 2016 and 2017 is the escalation in the base prices from 2016 to 2017. Growth forecasts have been kept in line with the 2016 forecast, reflecting the lowered economic growth expectations for the next 10-years. The higher “catch-up” expansion requirements as assumed for the 2016 LTPF were also kept in line for the 2017 LTPF (2037-2046). As for the 2016 LTPF the earlier part of the 30-year period of the 2017 LTPF greater emphasis was placed on operational changes to increase capacity before infrastructure expansion is considered.

**30-year cumulative capital cash flows: 2016 - 2017**

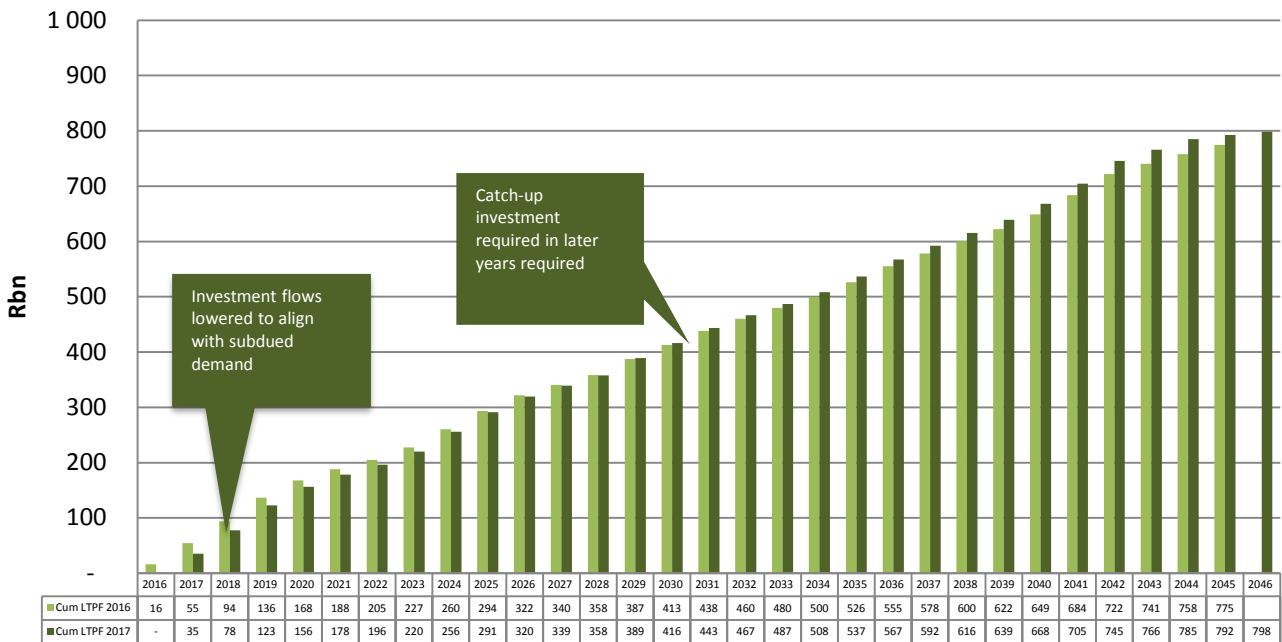


Figure 2: LTPF 2016 and 2017



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## 1.3. CHANGES IN THE 30-YEAR ROLLING FORECASTS OF THE LTPF OVER THE PAST 6 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 six years these forecasts have consistently been pushed out as it became evident that the world economy is taking longer to recover than anticipated.

Over the past six 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 validated projected demand forecasts.

**30-year cumulative capital cash flows: 2012 - 2017**

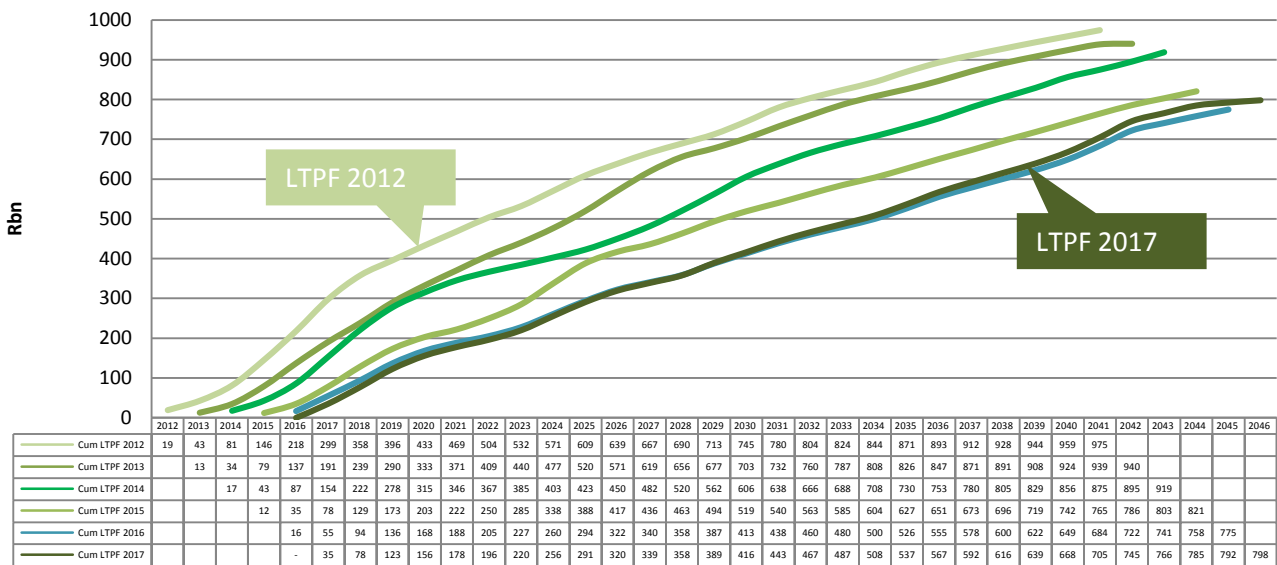


Figure 3: Changes in the 30-year forecasts

## 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 R771 billion. The rail capital component is the biggest, totalling R468 billion and representing 61% of the total capital requirement.

The average annual rail capital requirement remains fairly constant at about R16 billion per annum. This includes:  
 Rail infrastructure;  
 Rail hubs and terminals; and  
 Rolling stock comprising of locomotives and wagons.

Port expansion capital of R233 billion is required up to 2046. Of this capital, Transnet Port Authority requires R143 billion and Transnet Port Terminals R90 billion. Substantial port developments/investments are required until about 2032, declining thereafter.

The pipeline requirement of R70 billion consists of R29 billion (41%) for the different Multi-Product Pipeline (MPP) expansion phases, R22 billion (31%) for fuel terminals and R19 billion (27%) for the Coega, Saldanha bay, Botswana and Cape Town pipelines.

The individual operating division investment categories are analysed in more detail below.

# CAPITAL PLANNING

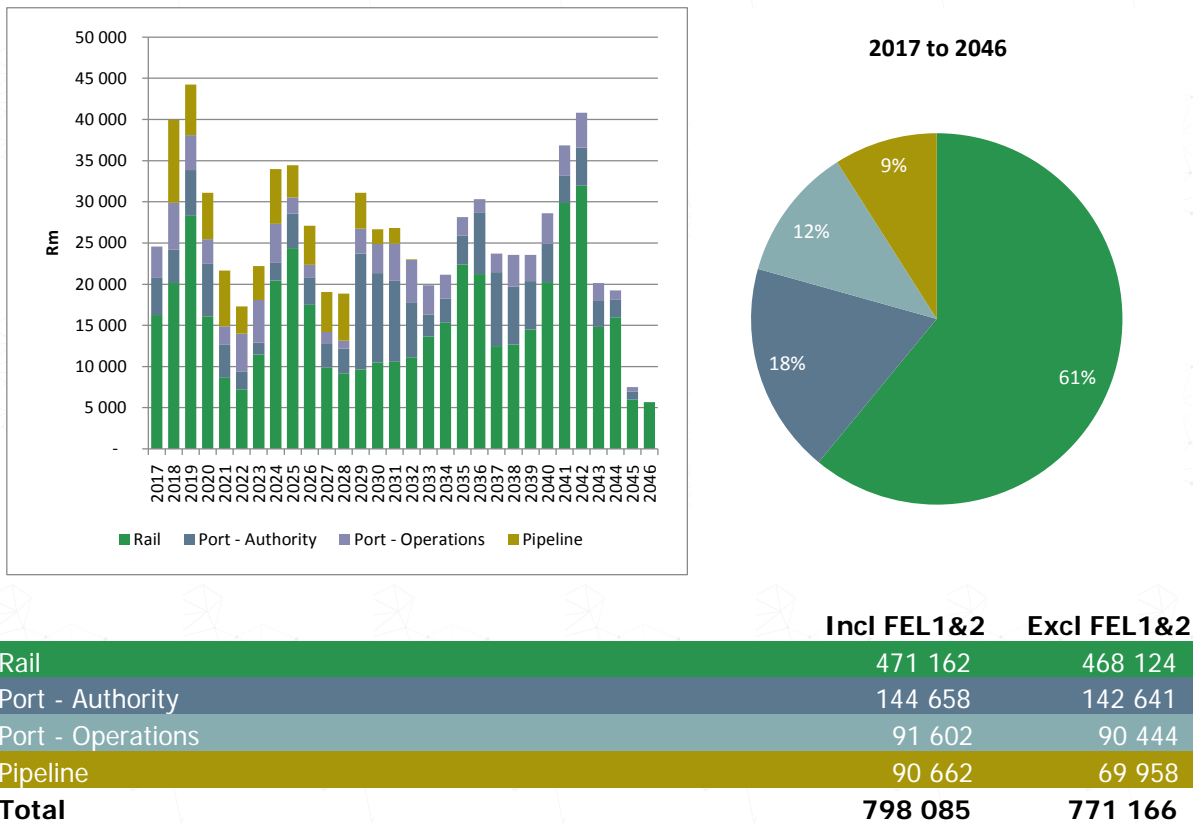


Figure 4: Total rail, port and pipeline expansion capital requirements

## 1.5. 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 also 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 R218 billion (un-escalated) which represents 28% of the total R771 billion investments over the next 30 years.

National receives the largest investment at R301 billion (39%) due to the rolling stock capital requirements. Locomotives and wagons function across provincial boundaries.

The Western Cape Province will require R73 billion (10%) of the capital expansion over the 30 years, in mainly Cape Town Seaward expansions and investments in the Port of Saldanha. 27% of the Saldanha investments are for the Iron Ore Terminal, which is currently placed on hold.

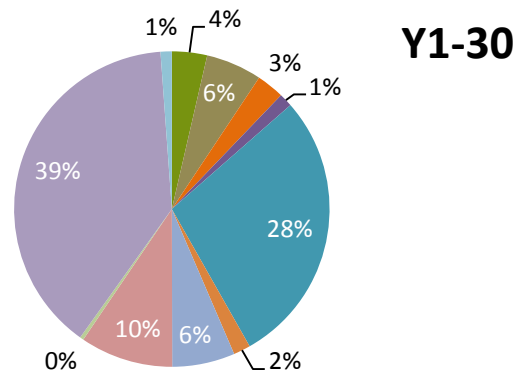
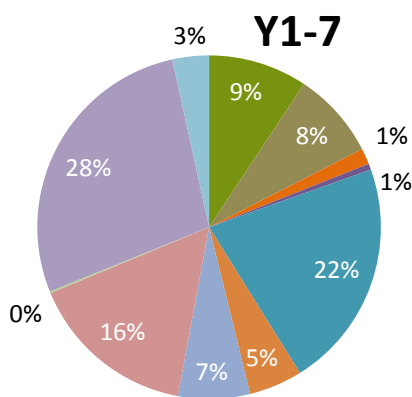
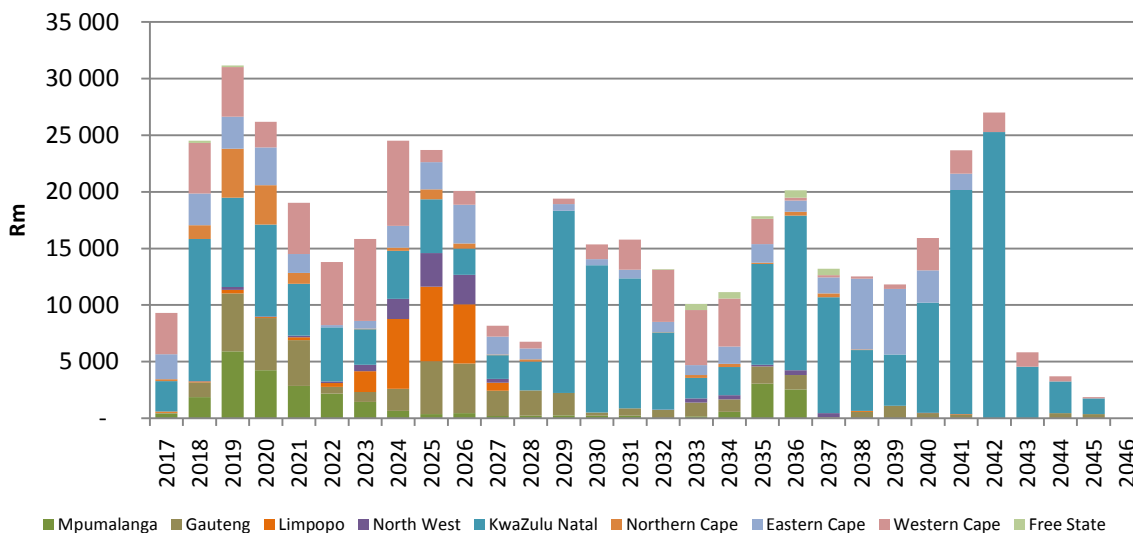
The provinces of the Gauteng and the Eastern Cape will each require 6% of the total expansion capital requirements, this is between R44-R50 billion per province over the next 30 years. This is mainly to facilitate the investments in the Gauteng freight ring and Gauteng terminals as well as the investment to facilitate the manganese ore exports through the port of Ngqura.

The Mpumalanga (R28 billion – 4%), Limpopo (R22 billion – 3%), Northern Cape (R13 billion – 2%), North West (R11 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 R9 billion (1%) of the capital requirements



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	30 Y Total
Mpumalanga	27 808
Gauteng	44 140
Limpopo	21 841
North West	10 610
KwaZulu Natal	217 677
Northern Cape	13 484
Eastern Cape	49 511
Western Cape	73 441
Free State	2 939
National	300 854
Neighbouring Countries	8 860
<b>Total</b>	<b>771 166</b>

Figure 5: LTPF capital requirements per Province



# CAPITAL PLANNING

## 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

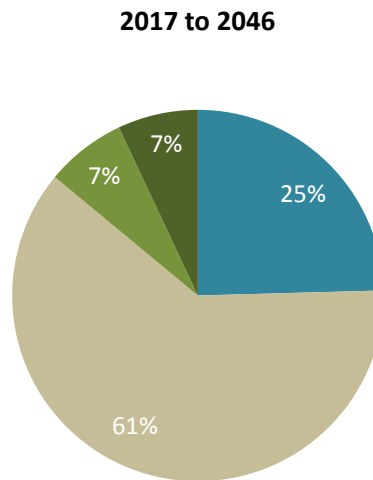
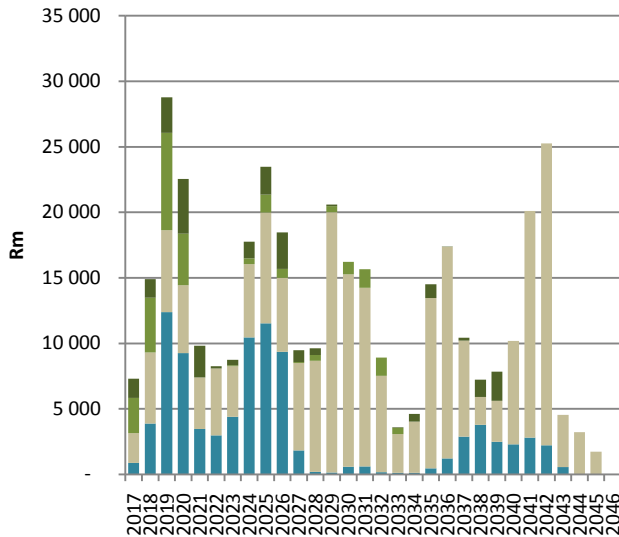
#### SIP 3: SOUTH-EASTERN NODE AND CORRIDOR DEVELOPMENT

- Export Manganese Expansion Programme (Rail and Port)

# CAPITAL PLANNING

## 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



	Incl FEL1&2	Excl FEL1&2
SIP 1	92 397	91 212
SIP 2	236 952	228 171
SIP 3	26 148	25 988
SIP 5	26 936	25 967
	<b>382 433</b>	<b>371 338</b>

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 co-ordinator for SIP 2. The SIP 2 capital requirements make up 59% of the total 30 year LTPF SIP capital requirements.



# CAPITAL PLANNING

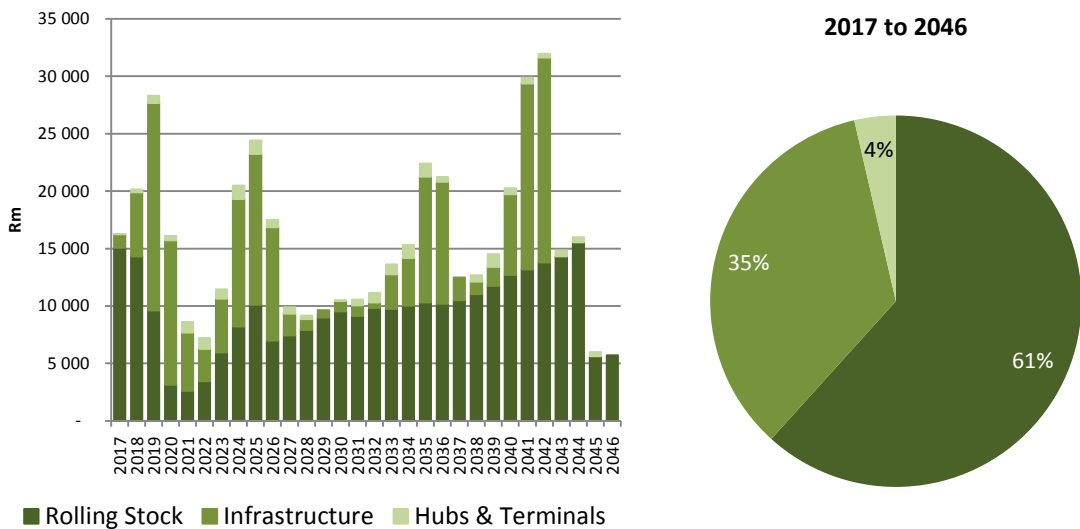
## 2. 30-YEAR EXPANSION CAPITAL REQUIREMENTS

### 2.1. RAIL CAPITAL REQUIREMENTS

Rail capital requirements, comprising of rolling stock, infrastructure, and hubs and terminals are considered for capacity expansion only. Rolling stock requirements totals R287 billion (61%) of the total rail capital requirements.

Substantial infrastructure investments (R164 billion) are required for the next 30 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 (R17 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.



	Incl FEL1&2	Excl FEL1&2
Rolling Stock	286 818	286 818
Infrastructure	166 689	164 254
Hubs & Terminals	17 655	17 052
<b>Total</b>	<b>471 162</b>	<b>468 124</b>

Figure 7: Rail capital requirements



# CAPITAL PLANNING

## 2.1.1. RAIL INFRASTRUCTURE REQUIREMENTS

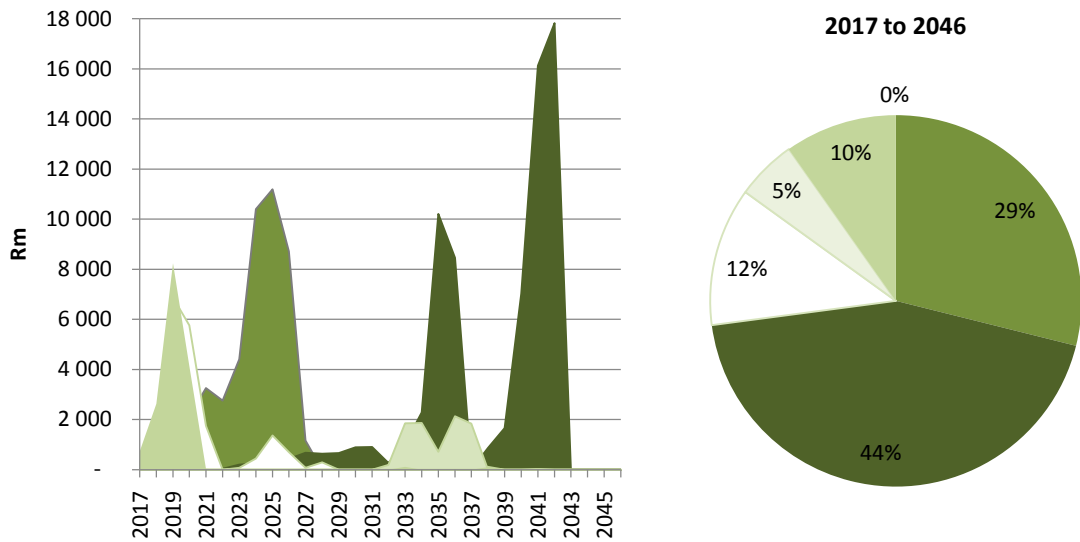
An analysis of the R164 billion rail infrastructure investment requirements per rail system reveals that 44% of the infrastructure expansion requirements are needed on the Durban - Gauteng (R72 billion) and 29% on the Integrated Coal (R47 billion) systems. The Export Ore and the North Eastern systems account for a further 12% (R20 billion) and 10% (R16 billion) of the rail infrastructure investment requirements respectively.

The R72 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 R10 billion in 2035, R8 billion in 2036, R16 billion in 2041 and R18 billion in 2042.

The R47 billion for the Coal system is required over the next 11 years (2017 to 2027) with capacity creation requirements peaking at the end of the 7-year plan at R10 billion in 2024, R11 billion in 2025 and R9 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 R20 billion for the first phase of the Export Ore System is required over the next 5 years (2017 to 2021), peaking at R7 billion in 2019. The second phase of investment is from 2023 to 2028.

Expansion on the North Eastern system (R16 billion) is required within the next 5 years (2017 to 2021). Capacity creation peaks in 2019 at R8 billion.



	Incl FEL1&2	Excl FEL1&2
Integrated Coal System	48 193	47 455
Durban - Free State - Gauteng Corridor	73 710	72 304
Export Ore System	19 938	19 790
Cape Town - Gauteng System	8 779	8 643
North Eastern System	16 070	16 062
Other Systems	-	-
<b>Total</b>	<b>166 689</b>	<b>164 254</b>

Figure 8: Rail infrastructure capital requirements

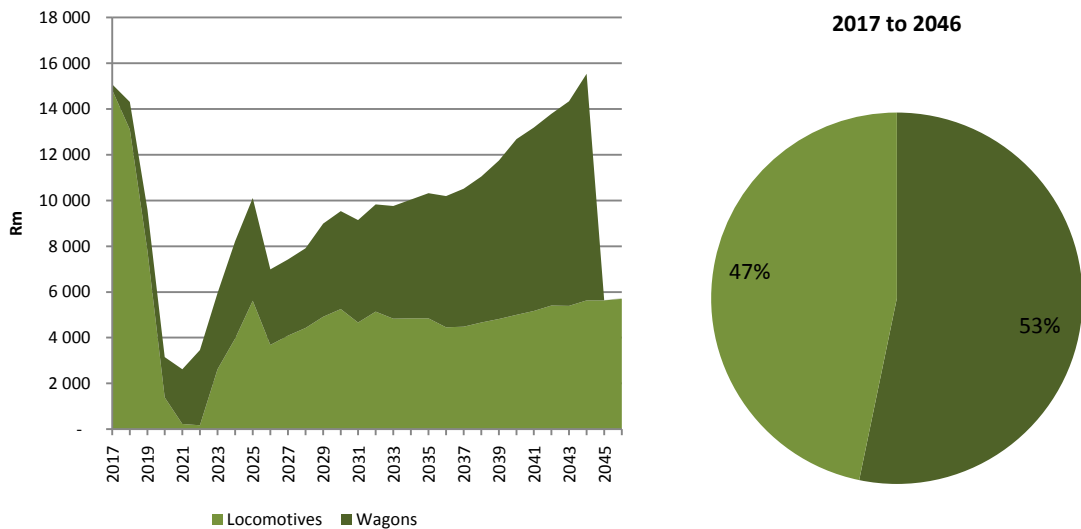


# CAPITAL PLANNING

## 2.1.2. ROLLING STOCK REQUIREMENTS

Rolling stock requirements (R287 billion) over the 30 years are split between locomotives (53% - R153 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 order times of 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.



	Incl FEL1&2	Excl FEL1&2
Locomotives	152 742	152 742
Wagons	134 076	134 076
<b>Total</b>	<b>286 818</b>	<b>286 818</b>

Figure 9: Rolling stock requirements



# CAPITAL PLANNING

## 2.1.2.1. Locomotives capital requirements

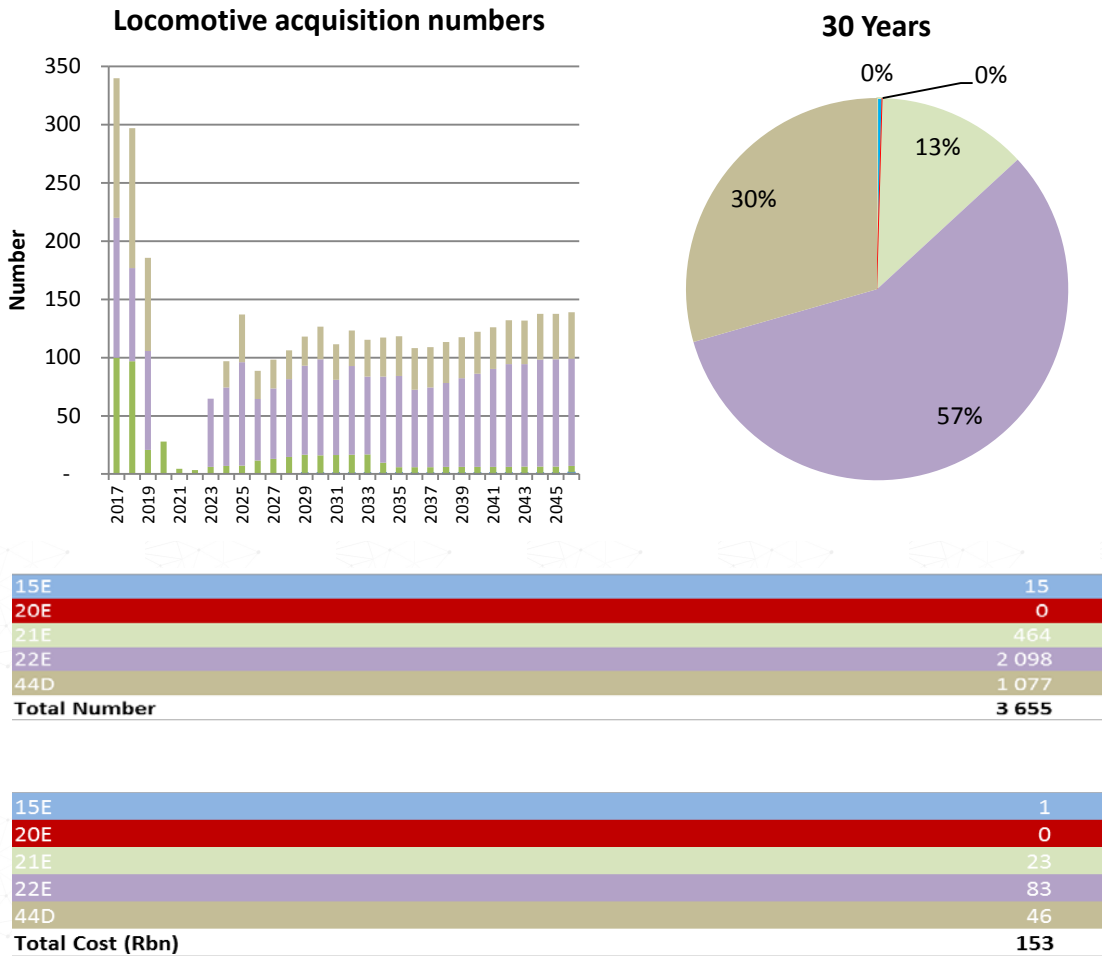
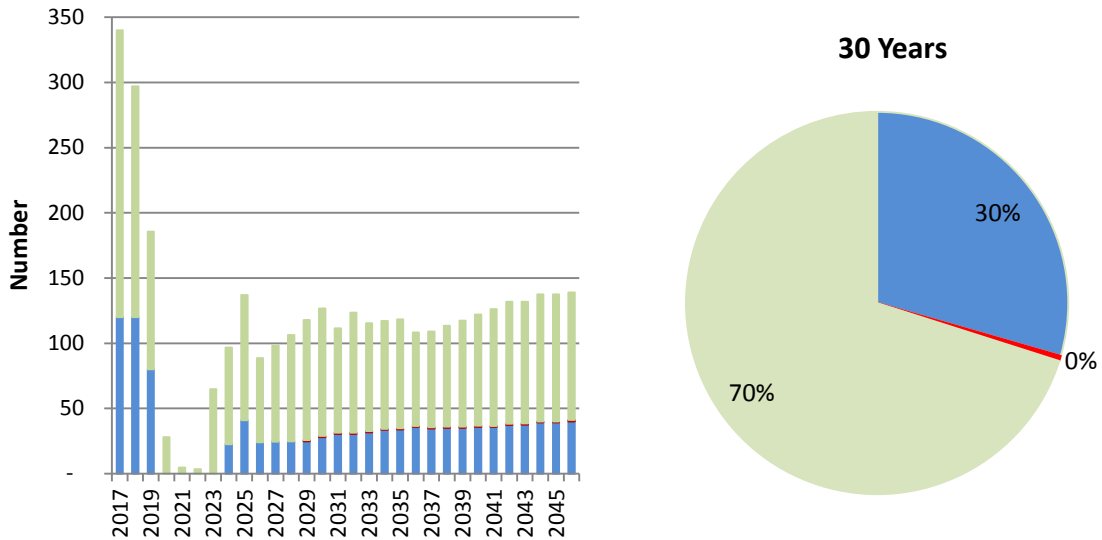


Figure 10: Future locomotive fleet and capital requirement

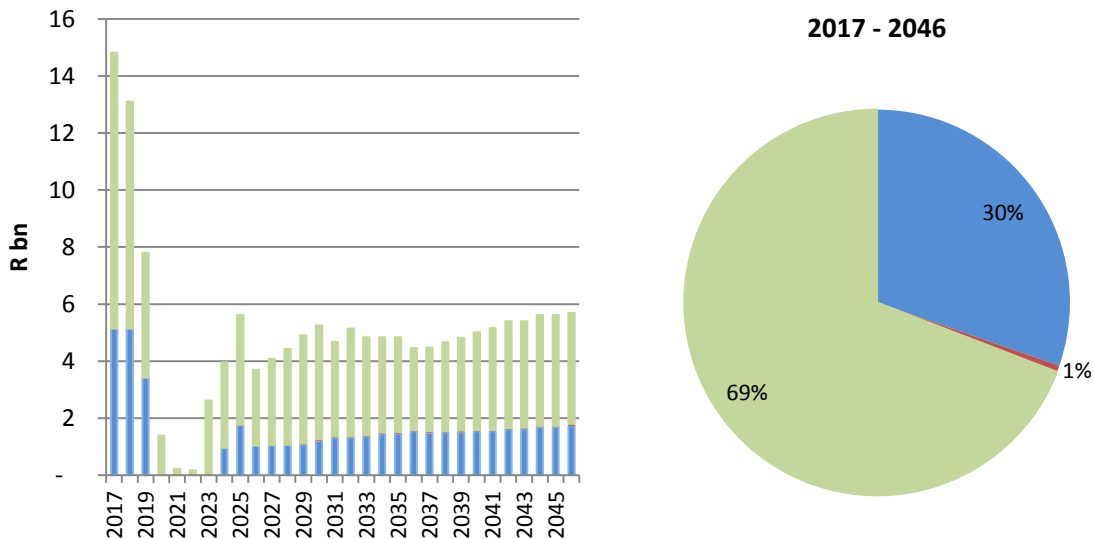




# CAPITAL PLANNING

Diesel	1 077
50kV AC	16
Dual Voltage	2 562
<b>Total Number</b>	<b>3 655</b>

Figure 11: Locomotive fleet by traction



Diesel	46
50kV AC	1
Dual Voltage	106
<b>Total (Rbn)</b>	<b>153</b>

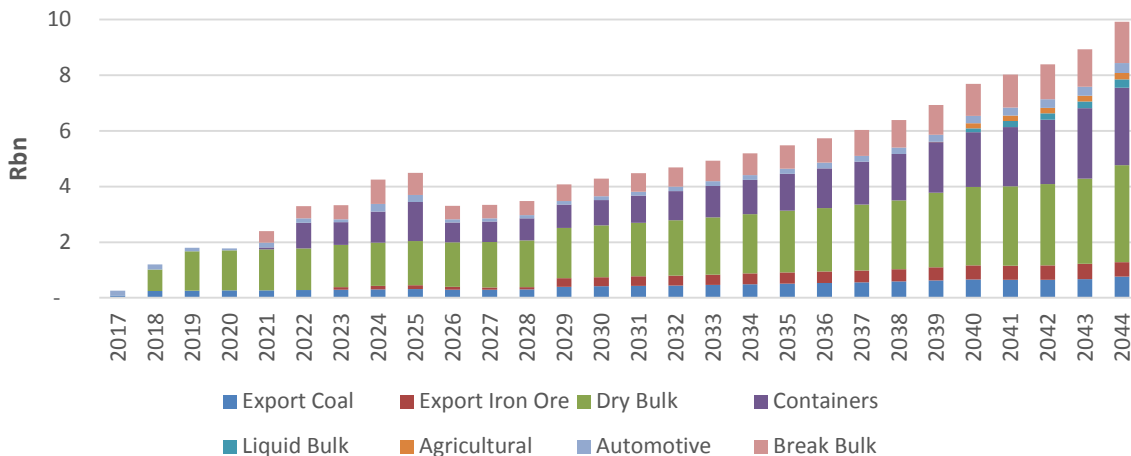
Figure 12: Locomotive fleet capital requirements by traction



# CAPITAL PLANNING

## 2.1.2.2. Wagon capital requirements

### Wagon Capital Requirement



### Number of Wagons Purchased

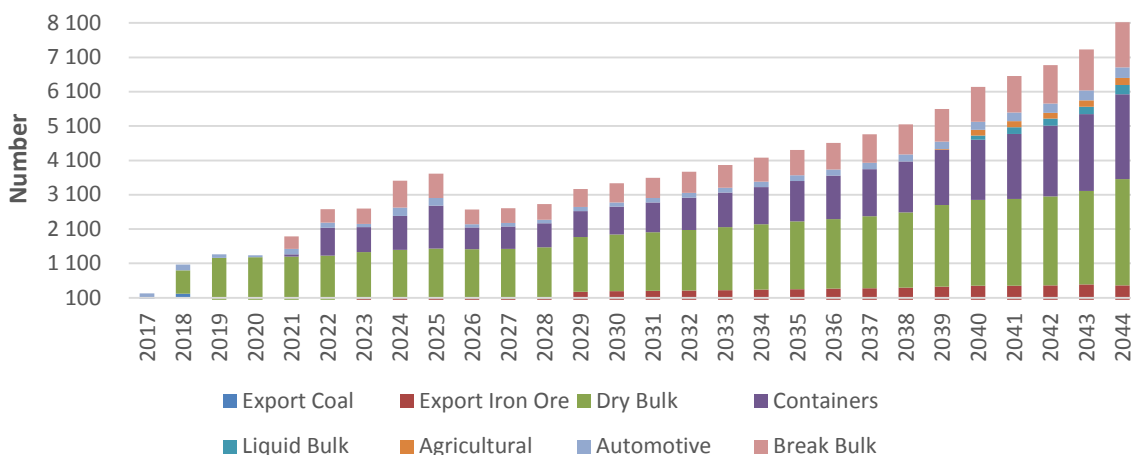


Figure 13: Future wagon fleet and capital requirements



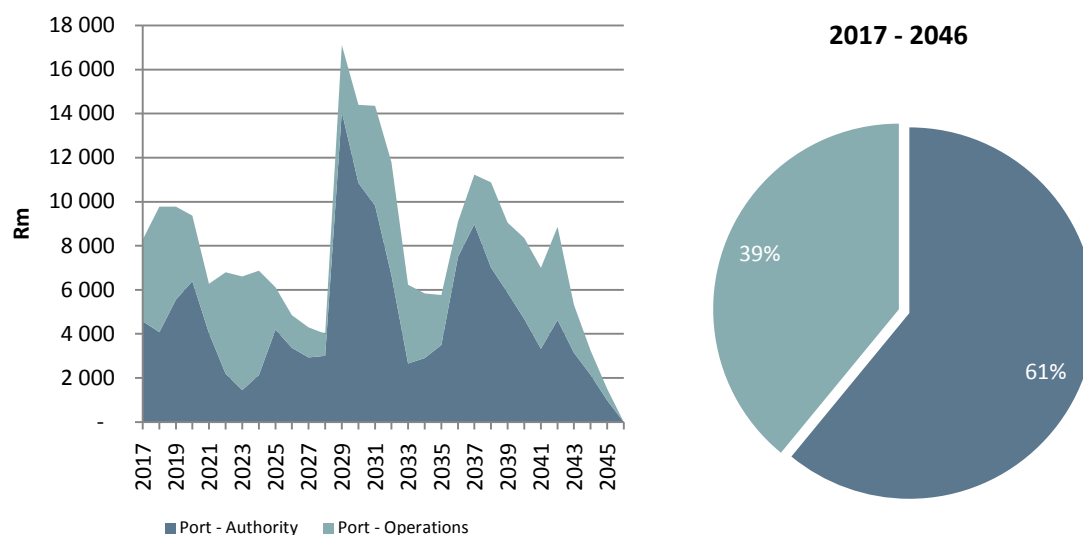
# CAPITAL PLANNING

## 2.2. PORT CAPITAL REQUIREMENTS (TNPA & TPT)

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 (R143 billion – 61%) are significantly more than that of TPT (R90 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.



	Incl FEL1&2	Excl FEL1&2
Port - Authority	144 658	142 641
Port - Operations	91 602	90 444
<b>Total</b>	<b>236 261</b>	<b>233 084</b>

Figure 14: Port capital requirements



# CAPITAL PLANNING

## 2.2.1 CAPITAL REQUIREMENTS PER PORT

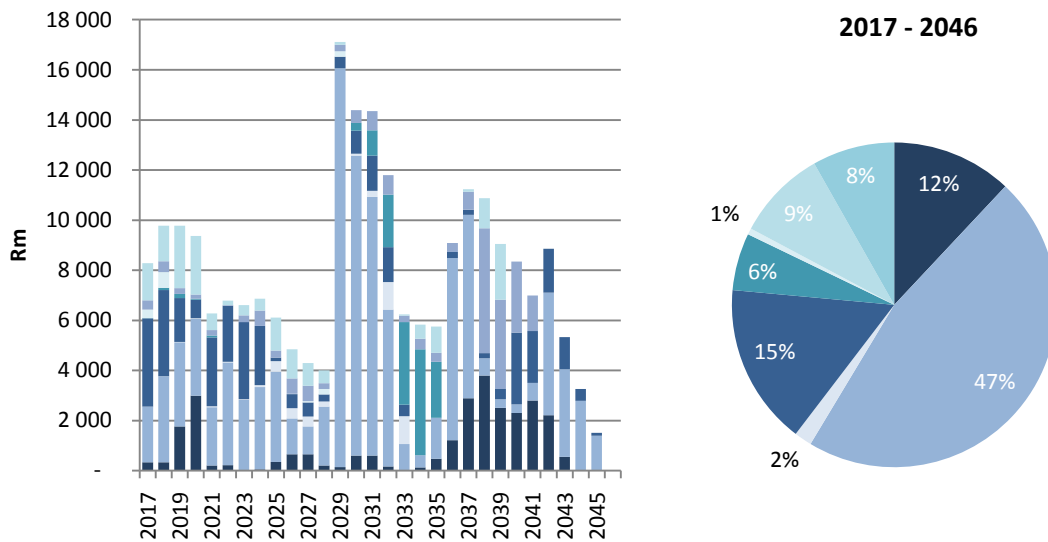
An analysis of the capital requirements per port highlights the ports of Durban (R110 billion), Ngqura (R36 billion) and Richards Bay (R28 billion) as the main port capital investment destinations. The expansion requirements of all the major ports, over the 30-year period, are indicated below.

Durban will attract (47%) of the port investments to cater for consistently strong demand for its services. Large investments are required for Phase 1 of the Durban airport site port development. Although the project is placed on hold in the short term, it is included in the LTPF and planned to start in 2029 and continuing into the 2040's. An estimated R61 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 R15 billion.

In the port of Richards Bay R28 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 (48%) 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 transshipment 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 R21 billion, and R14 billion respectively. Capacity expansion investment requirements in the ports of East London (R4 billion) and Mossel Bay (R1,4 billion) are comparatively small.



	Incl FEL1&2	Excl FEL1&2
Port of Richards Bay	28 656	28 213
Port of Durban	111 598	110 020
Port of East London	4 235	4 166
Port of Ngqura	36 093	35 669
Port of Port Elizabeth	13 777	13 554
Port of Mossel Bay	1 465	1 457
Port of Cape Town	21 638	21 299
Port of Saldanha Bay	18 799	18 709
<b>Total</b>	<b>236 261</b>	<b>233 084</b>

Figure 15: Capital requirements per port



# CAPITAL PLANNING

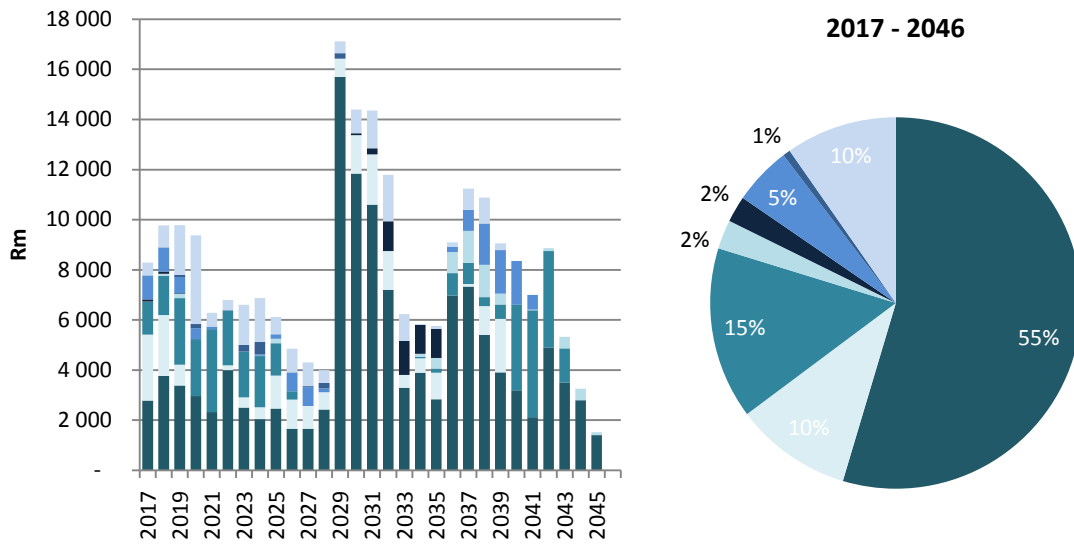
## 2.3. PORT CAPITAL REQUIREMENTS PER CARGO CATEGORY

When the capacity expansion requirements are summarized per cargo category, it is apparent that R129 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 (R35 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.



	Incl FEL1&2	Excl FEL1&2
Containers	130 751	128 873
Dry Bulk	22 556	22 365
Liquid Bulk	34 959	34 532
Break Bulk	6 114	6 017
Automotive	5 452	5 366
Ship Repair	11 907	11 762
Maritime Commercial	1 578	1 553
Other	22 944	22 617
<b>Total</b>	<b>236 261</b>	<b>233 084</b>

Figure 16: Capital requirements per cargo category



# CAPITAL PLANNING

## 2.4. PIPELINE CAPITAL REQUIREMENTS

The Multi-Product Pipeline (MPP) expansion requirements (R34 billion) make up 49 % of the Total Pipeline's expansion capital requirements of R70 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.

	Scenario 1 (Ngqura – Gauteng pipeline)	Scenario 2 (Shipping case)
Phase 1	2019	2019
Phase 2	2022	2021
Phase 3	2034	2025
Phase 4	2036	2029
Phase 5	2038	2031

Table 1: Mthombo oil refinery scenarios

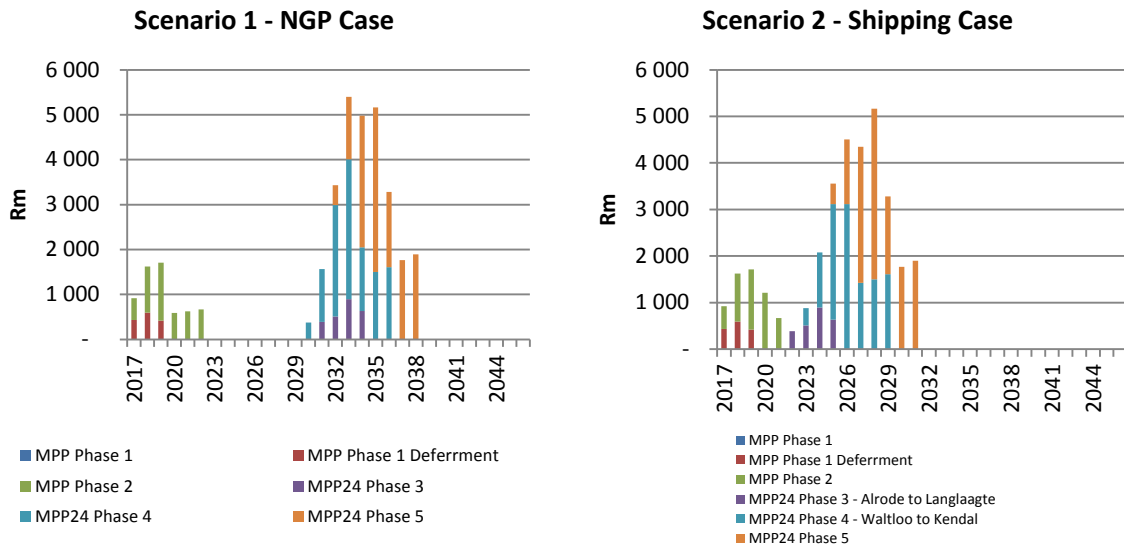


Figure 17: Pipeline capital requirements per Scenario



# CAPITAL PLANNING

## 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.

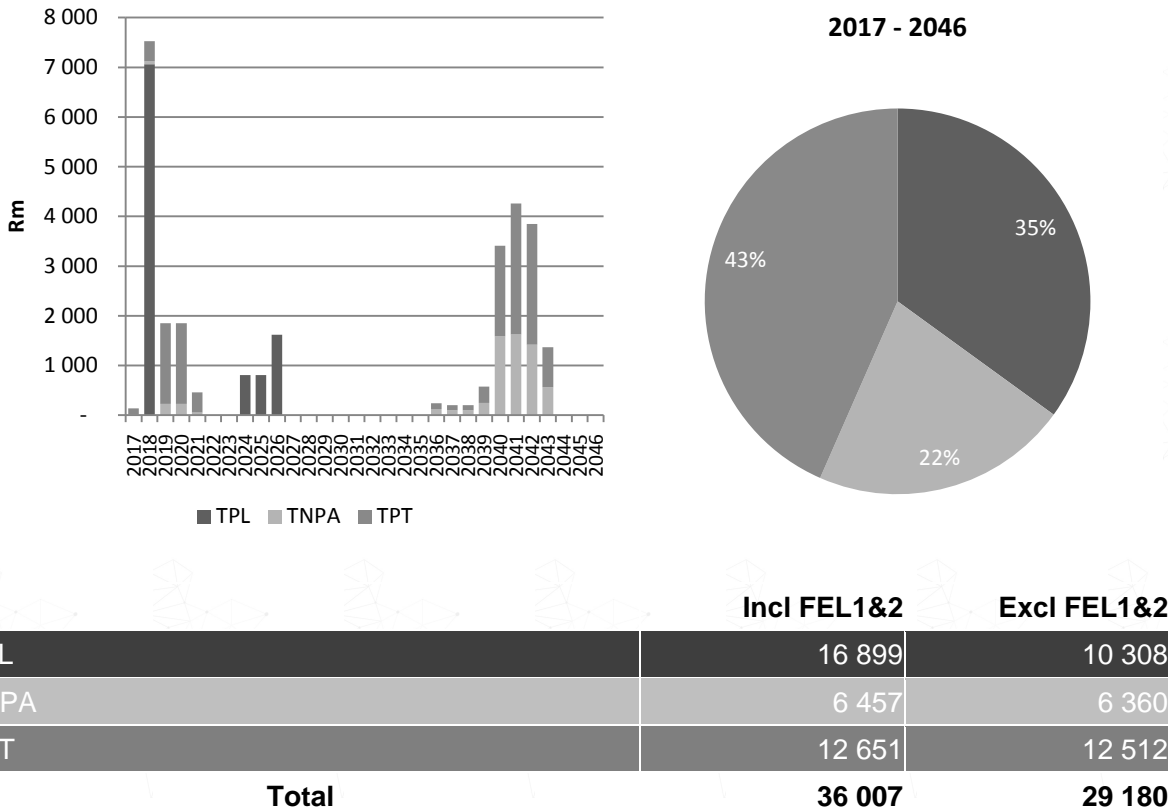


Figure 18: Gas capital requirements



# CAPITAL PLANNING

## 2.6. PROJECT STUDY FUNDING REQUIREMENTS

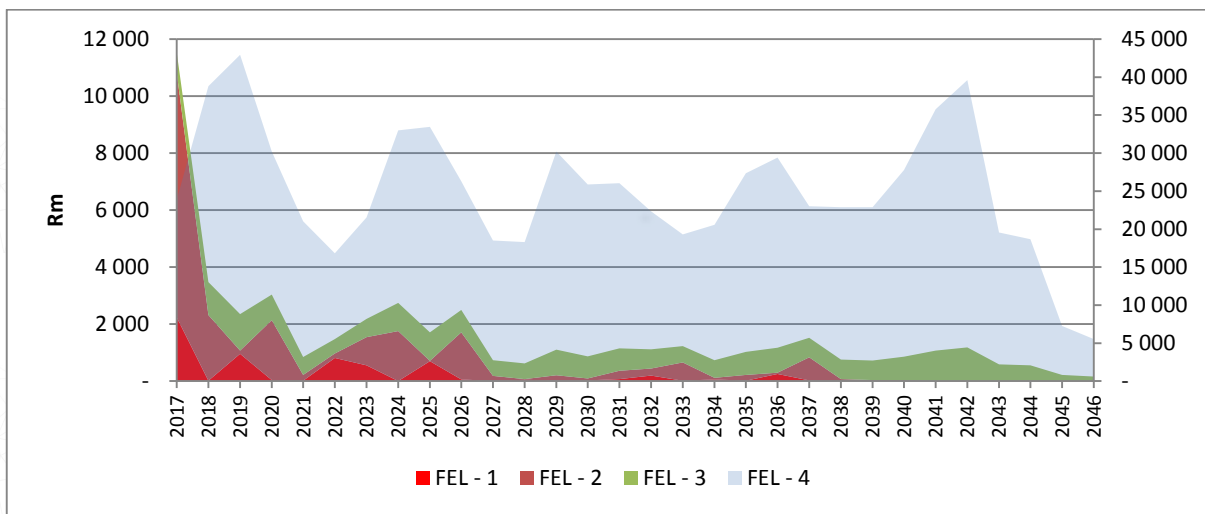
Project study requirements for the PLP process and the funding thereof follow the normal Transnet financial policy and procedure guidelines. FER, FEL-1, and FEL-2 studies are funded predominantly from the operating budget, whilst FEL-3 and FEL-4 is funded from the capital budget.

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:

PLP Stage	Allocation of ETC
FEL-1	0,4%
FEL-2	1,25%
FEL-3	2,85%

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 6 % of total project cost.



FEL - 1	6 153
FEL - 2	20 766
FEL - 3	22 347
FEL - 4	748 819
<b>Total</b>	<b>798 085</b>

Figure 19: Transnet 30-year capital and study requirements

# CAPITAL PLANNING

The project and study estimates over the 30 years are 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 R27 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.

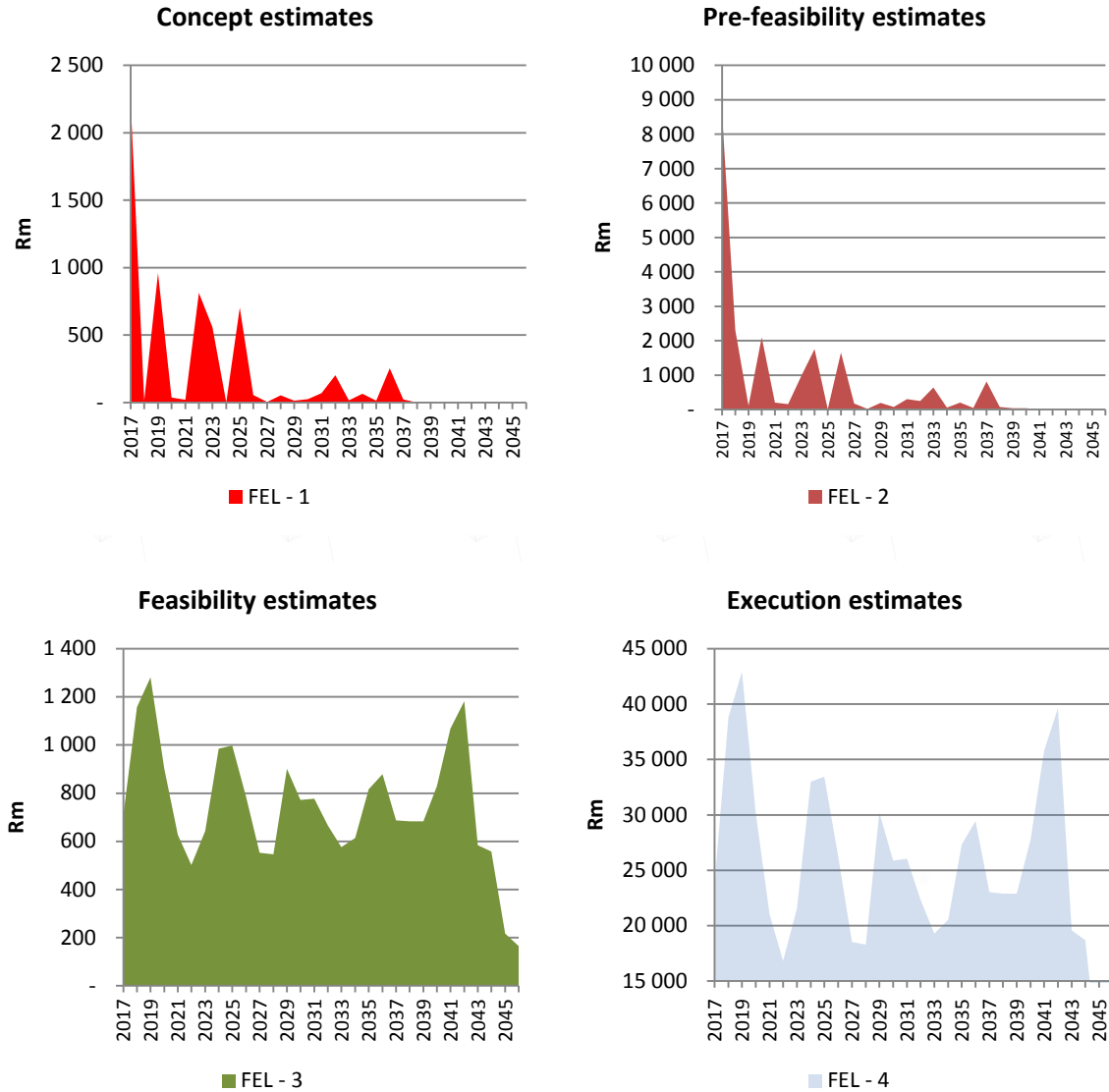


Figure 20: 30-year capital and study funding per PLP phase

# CAPITAL PLANNING

## 3. FUNDING

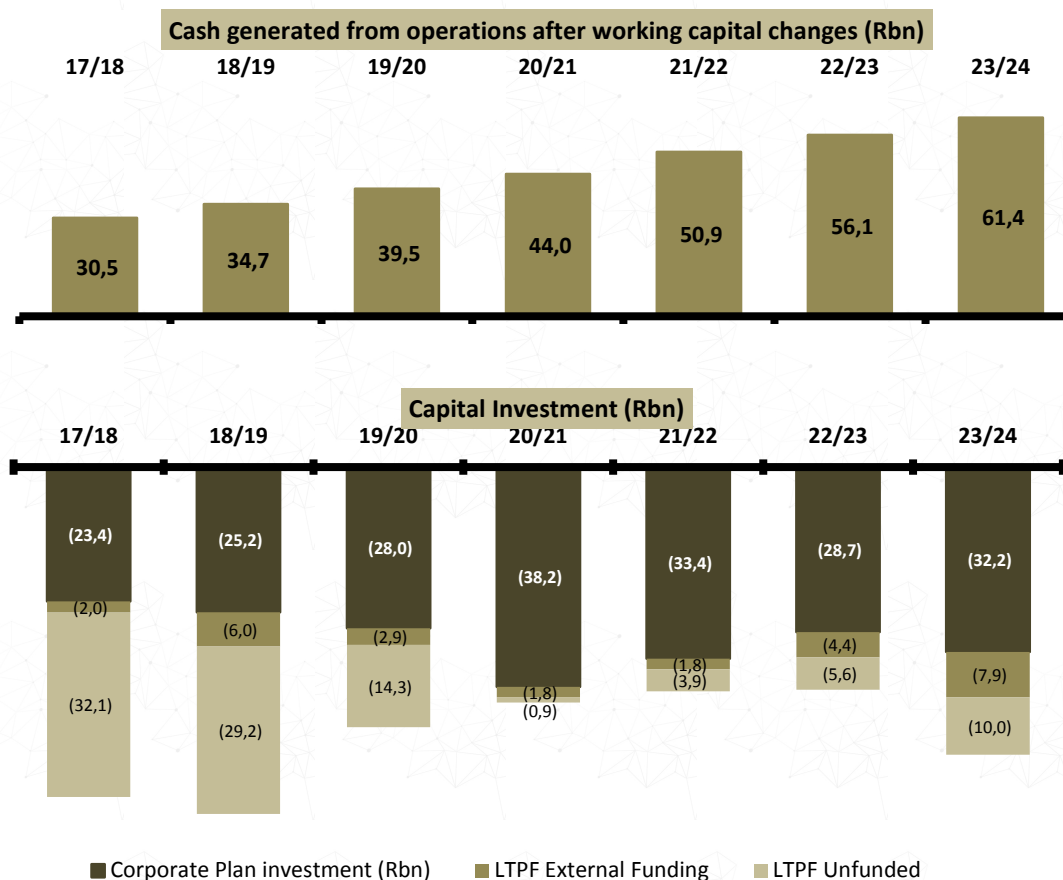
### 3.1. FUNDING SOURCES AVAILABLE TO TRANSNET

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 that 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 R94.7 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.





# CAPITAL PLANNING

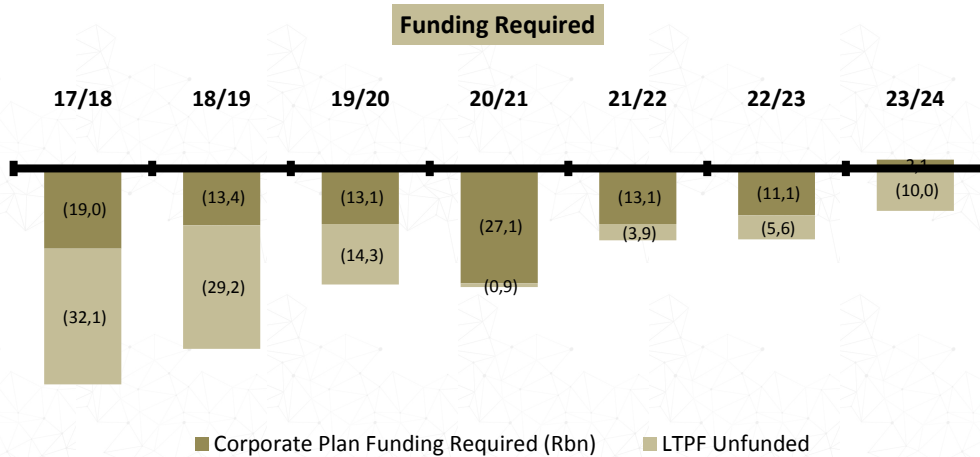


Figure 22: Seven-year funding requirements including LTPF

### 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 43.5%;
  - Generally maintain a cash interest cover of at least 2.5 times;
  - Return on total assets (ROTA) of >6.7%; and
  - Earnings before interest, tax, dividends, and amortisation (EBITDA) of >44.6%.

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 >43.5%;**
  - **Cash interest cover of more than 2.5 times.**
  - **ROTA of >6.7%;**
  - **EBITDA of >44.6%**
- Funding affordability up to 2046 will be dependent on similar criteria as for the next seven years.

Figure 23: Affordability

# CAPITAL PLANNING

## 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.

# CAPITAL PLANNING

## 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:

	Indicative accuracy range	Level of contingency
<b>FER</b>	<-50% to >+50%	>30%
<b>FEL-1</b>	-50% to +50%	30% to 50%
<b>FEL-2</b>	-20% to +20%	20% to 30%
<b>FEL-3</b>	-10% to +15%	10% to 15%
<b>FEL-4</b>	-5% to +10%	up to 10%

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

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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

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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

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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

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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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