transport

Department:
Transport
REPUBLIC OF SOUTH AFRICA

White Paper on National Rail Policy

March 2022

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Foreword by the Minister of Transport

We have come a long way since that first railway from Cape Town to Wellington was introduced in 1859. That was 163 years ago. Our railways have gone through various epochs that have consistently affirmed the role of the railways as an enabler of economic activity and social integration since time immemorial. This White Paper on National Rail Policy represents a new era and a decisive break with the past, which saw the railways being used as an instrument to segregate society and give credence to a system of racial oppression.

On 23 March 2022, Cabinet approved this White Paper on National Rail Policy, which takes a holistic view of the trajectory of the development of our rail system. This Policy not only creates policy certainty but also introduces radical structural reforms in the sector. This is intended to open up space for private sector investment and effective economic regulation that enables equitable access to both the primary and secondary network.

While rail is a well-established industry in the country, it has operated for more than a century without a cohesive national rail policy that provides a seamlessly integrated and holistic strategic direction for the sector. Challenges over time have weakened the efficiency of the system and limited its contribution to economic growth and connecting communities.

The de Villiers report of 1986 that advocated against new rail investments but rather sweating existing assets, and deregulation of the road sector in 1988, have pushed large portions of the rail industry into acute decline. This also gave rise to deferred maintenance of passenger rail assets resulting in the subsequent decline of commuter rail over the decades, with sub-standard service being provided in areas that predominantly serviced Africans. The terminal decline of Metrorail is a direct consequence of these deliberate policy choices made in the 1980s. Absence of equitable road pricing and institutional bias towards the road sector has tilted the scales in favour of road transport operators and further eroded rail's ability to compete effectively in the market.

The obsolete state of much of the rail infrastructure and rolling stock, the limitations of narrow gauge and the under-utilisation of the existing network presents only a few of the many challenges facing the rail sector.

This National Rail Policy intends to place rail on a sound footing to play a meaningful role as a backbone of a seamlessly integrated transport value chain able to make a meaningful contribution to the economy. The Policy equally sets out Government's remedial interventions to achieve rail renaissance in the country. This positions rail to contribute meaningfully to the country's economy and reduction in the country's harmful greenhouse gas emissions.

The key thrusts of this White Paper on National Rail Policy is enabling investment in our railways, with specific attention to the exploitation of rail's genetic technologies to achieve renaissance in the following market spaces: heavy haul, heavy intermodal, which includes double-stacked containers, contemporary urban and regional rapid transit, as well as higher-speed of 160 to 200km/h and high speed up to 300 km/h.

The Policy introduces secondary interventions that will give effect to institutional repositioning and allow for on-rail competition. This will then open up the rail market to other operators to compete and improve operational efficiency that is needed to improve service quality and competitive pricing in the freight sector.

These interventions will also reposition both passenger and freight rail to achieve inherent competitiveness by exploiting rail's genetic technologies to increase axle load as well as speed and train length across the board. This will encourage the use of appropriate technologies to increase productivity and acquisition of much needed skills in the South African economy.

The Policy further places emphasis on improved rural access, increased mobility, increased job creation within the rail sector through infrastructure construction and contribute to economic development. Support to the agricultural, agro-processing and mining sectors will receive maximum traction with the implementation of the Policy.

In relation to passenger rail service, the policy seeks to address the capacity challenges, where PRASA cannot run services and introduces concessioning on lines where private sector can operate services. This will result in the introduction of an alternative provision of commuter rail in the Republic, thereby providing much needed mobility, addressing funding constraints and enhancing competitiveness of our commuter rail system.

This White Paper presents a multi-decade vision of how South Africa's railway sector should evolve over time, which will provide Policy certainty and enable investment and private sector participation in the sector.

South Africa's Constitution categorises public transport as a functional area of concurrent national and provincial legislative competence, while municipal public transport is an exclusive local government competence. Commuter rail is an integral part of our public transport system. This therefore requires of us to implement an effective model that will enable Cities and Provinces to deliver a seamlessly integrated public transport system, with commuter rail as its backbone.

It is a harsh reality that municipalities do not have the requisite capacity to plan and operate railways in a manner that enables a seamlessly integrated service that traverses municipal boundaries. The White Paper acknowledges the importance of devolving public transport functions to the lowest level of government. To this end, the National Rail Policy requires the development and approval of a Devolution Strategy for Commuter Rail to guide the assignment of the commuter rail function to the municipal sphere of government. A devolution Strategy aligned with the Integrated Urban Development Framework will be a key feature of the next iteration of the National Land Transport Strategic Framework to take effect in 2023.

The National Land Transport Act of 2009 (NLTA) provides for service level planning by municipalities for passenger rail service on a corridor basis. The law imposes a number of obligations on a municipality in integrating passenger rail planning in its integrated public transport networks. It is equally important to note that the NLTA empowers the Minister to assign a function to a municipality provided that the municipality has adequate capacity

to undertake that function. We will work on a framework with SALGA to guide efforts by municipalities to build requisite capacity that will enable the assignment based on the capacity of the City to manage the rail function within the broader ambit of its Integrated Public Transport Plan.

The finalisation of an appropriate Public Transport Funding Model will play a pivotal role in addressing the intractable challenge of funding our public transport system, which includes passenger and commuter rail, in a sustainable manner.

The White Paper goes further to introduce concessioning of passenger lines in order to enable the private sector to invest and unlock economic value of our railways.

The Policy alludes that strategic rail network planning and oversight is a centralised strategic function that the Department of Transport will undertake. A National Rail Master Plan anchored on the National Transport Master Plan 2050 (NATMAP) will be developed; setting out a sustainable approach to strategic rail network planning and a long-term plan that informs all future developments of rail in the country.

Safety and security are a critical and an integral part of rail revitalisation. The Railway Safety Regulator will be encouraged to leverage the substantial new investments to implement modern safety technologies. All critical role players will ensure safety and security to transport passengers and freight at all times. The criminality behind the rampant theft and vandalism of railway infrastructure that has stripped bare our stations and rail network requires extraordinary interventions that go beyond merely stepping us security.

Theft and vandalism of critical rail infrastructure with the effect of disruption economic activity constitutes economic sabotage and should be treated as such by our courts of law. The corporate sector must come to the party and bolster our efforts to deal a decisive blow to this criminality that is enabled by scrap dealers buying stolen scrap metal.

We must eliminate this perverse incentive by banning export of scrap metal and therefore limit the market that aids this criminality. Taking this step will reinforce our other interventions aimed at protecting public assets and making theft of our cables and other metals less lucrative. We are unequivocal in our call to ban export of scrap metal and will support any measure that will bring us closer to this reality.

The National Rail Policy is critical for fast-tracking the implementation of priority structural reforms in the economy to support economic recovery. The key Policy position on the introduction of third-party access on the rail network is one of the key thrusts to drive efficiencies and improve competitiveness.

The National Rail Policy will guide the building of the local industry capacity thereby boosting the manufacturing capacity and localisation. Government will ensure that industrialisation and the local production of steel and other inputs, rail lines and supplies, and rolling stock is promoted through policies that will require state and private operators to procure all supplies from South African-based manufacturers.

The policy also encourages the entry of black, female and young industrialists as local manufacturers, including through manufacturing joint ventures.

A localisation strategy will be used to develop the industrial base for an active export strategy, particularly to other African countries. This will also support the Steel Master Plan of Government.

The Department working with the DTIC will set up a joint committee to develop the strategy and will engage the private sector on investment plans required to unlock opportunities in the sector.

Rolling stock as a key pillar to railway operations will be an integral part of this approach. Government supports the provision of own rolling stock by freight and passenger train operators as an additional funding source in kind, to close the gap between existing funding sources and overall funding requirements, as well as the provision of extra capacity by private sector rolling stock leasing companies. Train operators and State-Owned Enterprises can lease their rolling stock to any other party and to encourage new entrants in the market.

With regard the role of Private Sector Participation in railways, the Department will spearhead the development of a Private Sector Participation Framework for the rail industry. This Framework will aim to guide the collaboration between the major SOEs and private sector companies to deliver new economic infrastructure projects to augment the current level on infrastructure projects. The pursuit of PSP should, however, not be construed as the privatisation of the South African Railways, as there is no such policy on the table.

Central to the passenger rail reforms is the introduction of High-Speed Rail into the service mix. The Department will develop a High-Speed Rail Framework to provide the foundation for the prioritisation of high speed rail corridors in South Africa. The framework will determine the strategic objectives for high-speed rail in the country and determine the criteria to be used in determining and prioritising these corridors. Feasibility studies on proposed high-speed rail services will be conducted by the Department guided by the framework.

In Conclusion, giving practical expression to the objectives of the White Paper on National Rail Policy requires of us to pay particular attention to skills development and growing the requisite capacity in the country. Our long-term vision of an institution of higher learning specialising in rail engineering and operations will be built on the foundation of interventions such as the Centres of Excellence model the Department has developed in partnership with universities in the country and the Transnet Freight Rail's School of Rail. This will go a long way in ensuring that there is adequate capacity to respond to the current challenges and giving the implementation of the National Rail Policy the necessary traction.

Mr FA Mbalula, MP
MINISTER OF TRANSPORT

Executive Summary

After contributing substantially to the country's formative development, it has become increasingly evident that the rail sector is past its peak in terms of contributing to the national freight and passenger transport tasks. It has experienced a generally downward trend for several decades, although there have been a few highlights. It has lost virtually all its branch line traffic, virtually all long-distance passenger traffic, slipped from par player in global heavy haul to third place in iron ore with 6% and fifth place in coal with 5% of the respective global markets, while general freight and commuter rail market shares are around 10%. Meanwhile, the world's railway industry has been reinventing itself for 50-odd years to realise the benefits of global railway renaissance. Year 2050 looms beyond that, by which time many governments will depend on rail to meet substantial international commitments to reduce transport sector greenhouse gas emissions. This will require increasing rail traffic by two, three, four times. These events have provided eight consecutive decades of golden opportunities, but the country's railways have barely scratched the surface.

Rail's colonial heritage of low axle load, low speed, short trains, small vehicle profile and monolithic organisational structure set it up for troubles in later years. The sector had to be statutorily protected against road from the 1930s until 1988. Inability to renew equipment resulted in generally outdated, low performance, operationally inefficient, underutilised assets, which are unable to keep domestic traffic or support exports. With high allowances for vehicle payloads in South Africa, road trucking was able to punch above its weight; indeed, the demise of rail has been road's single biggest success factor. Furthermore, road and rail do not enjoy a symbiotic relationship, a situation which precludes spontaneous development of intermodal collaboration. The cost to the economy due to increased road congestion, externalities and maintenance is enormous.

Institutionally, rail transport was tightly held by national government while road transport was devolved to both lower spheres of government. Rolling out road infrastructure was comparatively straightforward, and vehicles easy to come by. Investment in fixed and moving transport assets is therefore strongly biased toward road. Consequently, road congestion is already a serious problem in metropolitan areas and truck traffic on all road categories is overbearing.

Both freight and passenger rail markets are monopolistic. Furthermore, funding for both sub-modes is inadequate. This has resulted in investment funding for freight railbeing limited to what Transnet can leverage from its balance sheet, which is not sufficient for its present needs, let alone positioning rail to play its destined role in climate change mitigation. Consequently, it has used its position to restrict its service output and maximise its financial performance. It is thus not possible to gauge the true size of the rail freight market for driving investment. In the case of passenger rail, inadequate funding has starved all but Gautrain and commuter rail: current institutional arrangements do not support accelerating remedial responses.

The National Rail Policy intends to place rail on a sound footing to collaborate with and compete against the other transport modes to position it to serve as the national land transport backbone by 2050. The remedial interventions will be two-pronged, infrastructure investment interventions to enhance rail's inherent competitiveness, and enabling interventions to adjust institutional arrangements to ensure that rail functions effectively in delivering its share of the national transport task.

Regarding infrastructure investment, rail's competitiveness will be maximised by restoring capacity and investing in modern technologies on the national rail network, while rehabilitating the metropolitan commuter networks. The investment will over time redress and rebalance the inordinate differences between rail and road asset value and market shares. Regarding enabling interventions, competition will be introduced into the freight rail market, to gauge its true size. The Transport Economic Regulator will oversee access arrangements and fees, market behaviour, public sector participation, train path allocation and more, while the Railway Safety Regulator will adopt a risk-based approach to safety management.

Government recognises that funding of both freight and passenger rail is currently inadequate, and it will ensure that additional sources are exploited. In principle, government will take responsibility for infrastructure financing, while train operators will finance their own rolling stock, an arrangement that is commonly applied to all transport modes. Beyond that, several sources have been identified, including private sector participation to finance infrastructure and rolling stock, to solve the impasse of too much investment backlog and too little funding ability.

The foregoing interventions will stimulate the railway renaissance in the country. In addition, revitalising the rail sector is likely to be one of the country's largest infrastructure undertakings, with huge job creation potential. Beyond an envisaged railway renaissance, the country's rail sector will be positioned to start making important contributions to government's climate change commitments for 2050. Boasting the lowest energy consumption of all transport modes for a given task (other than for water-based transport and Non-Motorised Transport (NMT), rail is well-positioned to substantially reduce overall energy consumption by increasing its market share, and thereby shift substantial traffic from high energy consumption air and road to low energy consumption rail.

The market structure will be split between infrastructure and train operators. The infrastructure function could be further split between Infrastructure Owners, Infrastructure Managers and Train Operators. These functions could be provided entirely by any combination of vertically integrated entity on condition of clear accounting separation. Accounting separation will be implemented with clear cost, income and balance sheet for rail businesses. The Infrastructure Manager will operate the national rail network including traffic management, initially as is, and ultimately, after remedial investment, as a high-performance national rail network. In addition, contingent on feasibility studies, passenger trains in the 160–200km/h range could see service on some sectors of the high-performance national rail network.

Metropolitan areas are already vulnerable to traffic congestion over extended peak periods, a situation that is projected to worsen over time. Additional urban guided transit, which can be made immune to traffic congestion on its own right of way is contemplated in the National Rail Policy. This will not be confined to heavy metro routes as at present, but lighter density routes could use one or more of the lighter urban guided transit variants. Regional rapid transit will provide inclusivity to outlying areas.

The Department of Transport will drive the overall rail revitalisation intervention, in conjunction with the Department of Public Enterprises, PRASA, Transnet, the Transport Economic Regulator, the Railway Safety Regulator, provincial governments and local governments. The Department of Transport will develop a National Rail Master Plan, and thereafter monitor and evaluate policy implementation.

It is projected that the entire suite of investment and institutional interventions will be complete by 2050.

The National Rail Policy sets out to unshackle the rail sector from the constraints of its heritage and let it develop on the strength of challenges that it can address better than other transport modes. While the cost of repositioning rail will be substantial, the cost of doing nothing would be greater. By 2050, when the rest of the world is enjoying the benefits of transport running on renewable energy, South Africa could find itself dependent on expensive and polluting fossil-fuelled road transport.

1 Introduction

South Africa's economic development was chiefly a result of a rail network which rapidly connected significant localities through fast, reliable freight and passenger transportation. Thereafter, it opened rural areas to agriculture and mining. However, the mountainous Indian Ocean coastal belt prevented the Cape–Natal Railway from achieving its objective. Instead, the principal network followed an inland sweep from Cape Town via Johannesburg to eThekwini, supporting major diverging routes from hinterlands to ports and branch lines emanating from all of them. Notwithstanding an absence of explicit rail policy, this foundation endured to the present. Successive governments administered railway operations, maintenance, capacity and network expansion as best they could within the means at their disposal.

As other transport modes emerged over time, their competing demands and other public interests eroded rail's influence on funding and its share of the national transport task. Originally regulated to protect rail, deregulation of road transport in 1988 left rail in dire straits. Ultimately, in 1990 the various state-owned transport modes were separated as commercialised divisions of Transnet Limited, while commuter rail assets fell to the South African Rail Commuter Corporation. Meanwhile, vigorous development of rail's inherent strengths stimulated a global railway renaissance to which many countries were attuned. As its last manifestation emerged in the 1990s and renaissance rail became the new normal, the 1992 United Nations Framework Convention on Climate Change imparted further impetus to rail as countries turned to its intrinsic low energy consumption to help meet their 2050 greenhouse gas emission reduction targets. However, over the last quarter-century, and with a few exceptions, it has become abundantly evident that at operational level, South Africa's rail sector has failed to deliver its expected share of the national transport task, and that at strategic level, it has missed the railway renaissance and is ill-positioned to support the country's future climate change response.

In recent years several government policy documents, e.g., the New Growth Path for South Africa of 2011, the National Climate Change Response White Paper of 2011, the National Development Plan of 2012 and the Integrated Urban Development Framework of 2016, have articulated many desirable, but generally unrealised, railway attributes and expected contributions to the economy and society. The National Rail

Policy now sets out Government's remedial interventions to achieve rail renaissance in South Africa, to position rail to contribute substantially to reducing the country's harmful emissions, and to serve as the backbone of the national logistics and mobility tasks.

2 Rail's Background

Much of rail's present situation can be understood in the context of its roots in policy, society and technology. This chapter examines how rail originated and developed in relation to its setting, then surveys the country's current railway operators and finally, lists pertinent policies and legislation from the time of progressive interventions.

2.1 Railway Origins

Man used the wheel for millennia until the industrial revolution finally replaced muscle power by machines, initially on railways that rapidly became a formidable freight-and-passenger wheeled transport mode. The revolution also nurtured other transport modes so, as industrialisation advanced, machines came to power ships, road vehicles and aircraft. In creating land transport networks, rail and road leveraged their unique strengths to differentiate one from the other, while offsetting their respective weaknesses as best they could. Thus, they came to compete in some situations, and complement one another in others, as they still do today.

Initially promoted by private enterprise, rail's commercial success and economic power eventually attracted government attention in many countries, by way of nationalisation and regulation. Rail infrastructure and operations are linked closely, so rail leaned naturally toward vertical integration, also of funding. Hence nationalisation, vertical integration and political correctness characterised the classic monolithic state railway archetype. Accounting for different rail service types in one entity seemed rational, but opportunities for undue political influence and internal cross-subsidisation ultimately distorted the outcome, up to the present day. By contrast, operator diversity characterises the maritime, road and aviation modes, so their infrastructure and operations lean naturally toward vertical separation, including funding. Hence vessel, road vehicle and aircraft operators take publicly-funded open access infrastructure for granted, but naturally fund their own movable assets.

The foregoing developments occurred during Europe's colonial era. By the time colonial powers came to build railways in colonies, they had already settled on standard gauge (and broad gauge in Portugal and Spain) for their home railways. Reflecting the asymmetrical relationship between colonies and colonial powers, the latter built colonial railways in South America, South- and Southeast Asia, and Sub- Saharan

Africa to narrow track gauge and substantially lower alignment, axle load and gradient standards than at home, and imported custom-built small-profile low-capacity rolling stock to run on them. The territories that now constitute South Africa joined that milieu in 1860 when private enterprise introduced the first train in Durban, later followed by nationalisation and construction of two colonial and two republican railway networks. Used for agricultural, military and mining traffic, they were unified in 1910 as South African Railways & Harbours (SAR&H), a monolithic public entity that provided freight, long-distance passenger and suburban rail services, as well as harbour services.

Long-distance passenger trains were a significant constituent of the country's early railways. Daily trains were the norm, several on main routes, but only one on branch lines. As the road network developed, SAR&H also deployed Road Motor Transport intermodal services from strategically located stations. In time, direct road journeys, and later air transport, offered superior service at lower prices. Narrow gauge constraints prevented rail from hitting back, and ultimately its long-distance passenger market waned. The country's present urban networks also date from rail's early years, and to some extent shaped their host cities. However, rail failed to closely follow the country's economic and social development, hence buses, cars and taxis eroded much of what remained of its passenger market.

The country's current rail network is eleventh largest in the world at 22 387 route-km or 30 400 track-km. It comprises 12 801km of national network, 7 278km of branch lines and 2 228km of narrow gauge urban network, as well as 80km of standard gauge regional rapid transit network.

2.2 Existing Railway Operators

2.2.1 Transnet SOC Ltd

Transnet State Owned Company Ltd is a major public entity established under Schedule 2 of the Public Finance Management Act (PFMA). The Minister of Public Enterprises represents the shareholder. It owns, operates and maintains some of the country's principal transport assets through its Freight Rail, Engineering, National Ports Authority, Port Terminals and Pipelines divisions. In 1990 it legally succeeded the former South African Transport Services (SATS), a commercialised state enterprise that continued the monolithic commuter, freight and long-distance passenger rail services that it inherited among others from the original SAR&H in 1981.

Transnet's establishment might have appeared to unbundle that monolithic entity, but Transnet SOC Ltd is still a single accounting body. Only commuter operations and long-distance passenger services were transferred to the Passenger Rail Agency of South Africa (PRASA) in 2008.

Transnet Freight Rail (TFR) operates the national long-distance rail network and, in addition to its own capacity requirements, also provides access to PRASA's long-distance trains. The largest of the divisions, TFR currently contributes 51% of Transnet's income. Transnet has implemented strategic interventions to align itself with government priorities and shareholder compact targets in recent years.

2.2.2 Passenger Rail Agency of South Africa

The Passenger Rail Agency of South Africa (PRASA), a PFMA Schedule 3B National Government Business Enterprise, reports to the Department of Transport (DoT) via a Board. The Legal Succession Act of 1989 established its predecessor, South African Rail Commuter Corporation as owner of all commuter rail fixed and rolling assets in 1990: It was renamed PRASA in 2008, to which Spoornet's Shosholoza Meyl long-distance trains and Transnet's Autopax bus services were subsequently transferred. It is funded by the fiscus (53%), fare revenue (40%) and rental income (7%).

PRASA's Rail division delivers Metrorail urban commuter services as well as Shosholoza Meyl and Premier Class long-distance passenger services, while its Autopax Passenger Services (SOC) Ltd subsidiary operates long distance bus services. It plays a major role in fulfilling government's obligation to develop social and economic infrastructure. In line with its legislative mandate, it provides public rail commuter services at DoT's request and long-haul passenger rail and bus services in consultation with DoT. It operates heavy rail commuter networks in metropolitan areas, which offer valuable high-capacity rapid transit access to inner cities. Its City-to-City long-distance buses connect the country's cities and rural municipalities, while its Translux luxury services link its major cities and towns.

2.2.3 Gautrain

In terms of the Gauteng Transport Infrastructure Act of 2001, concessioning authority, Gauteng Province, and concessionaire, Bombela Concession Company, agreed in 2006 that the latter would design, partly fund, construct, operate and maintain a rapid

rail link under a 19½-year concession. The Gautrain Management Agency (GMA) Act of 2006 established the GMA, a PFMA Schedule 3C entity, to manage the concession. Gautrain introduced novel railway concepts to the country, e.g., private sector participation; performance to contract with penalties for missing targets; passenger and asset security; railway safety-by-design; and regional rapid transit. Since operations commenced in 2010, its contribution to provincial gross domestic product (GDP) has come close to matching its initial investment, while sustaining jobs and increasing tax revenues. It established a role model for South African authorities that have no prior experience of implementing greenfields rail projects.

2.2.4 Other Operators

Some 250 small operators have emerged over time. Freight examples range from railways integrated into industrial and mining production, to private sidings. The latter industries commit to substantial inbound and / or outbound rail logistics. The niche includes locomotive and wagon leasing, infrastructure and rolling stock maintenance, as well as outsourced operations. Passengers range from world class hotels-on-wheels guests, to day trippers using steam locomotives and heritage coaches.

2.3 Policy, Legislation and Strategies

Disparate statutes have influenced the country's rail sector without constituting a coherent rail policy. However, they have informed the policy positions adopted in this policy. Pertinent aspects are referenced where appropriate throughout this document.

a) Constitution of the Republic of South Africa, 1996;

b) White Paper on National Transport Policy, 1996;

c) Southern African Development Community Protocol on Transport, 1996;

d) National Railway Safety Regulator Act, 2002;

e) Public Transport Strategy, 2007;

f) Legal Succession Amendment Act, 2008;

g) National Land Transport Act, 2009;

h) New Growth Path for South Africa, 2011;

i) National Climate Change Response White Paper, 2011;

j) National Development Plan, 2012;

k) Infrastructure Development Act, 2014;

l) National Land Transport Strategic Framework, 2015;

m) Integrated Urban Development Framework, 2016; and

n) Industrial Policy and Action Plan

3 Problem Statement

While rail is a well-established industry in South Africa, it has experienced challenges over time and several historic events have impacted adversely on the industry's overall development and the socio-economic impact it should have had on the economy. Its low market share, of less than 20% for general freight and less than 10% for passengers, indicates that rail is not performing at the level that it should. Even in bulk minerals, where rail should be unbeatable, road-going side-tipper interlinks have captured significant market share.

Historic events, such as the De Villiers Report of 1986, that recommended no new rail investment but rather sweating existing assets, and deregulation of road in 1988, have pushed large portions of the rail industry into acute decline. Absence of equitable road pricing and institutional bias toward road have also advantaged road transport operators and further eroded rail's ability to compete effectively in the market.

Although State Owned Entities (SOEs) have made investments in recent years and there has been some improvement, the rail industry still faces many major challenges. A massive capital investment backlog and inadequate funding, obsolete and ageing infrastructure, deteriorating rolling stock and outdated technologies, limitations of narrow gauge, and insufficient specialised technical skills contribute to rail's generally moribund state. Quality issues, e.g., passenger and freight safety and security, train overcrowding and service reliability, also remain a challenge in rail.

The foregoing challenges have resulted in uncompetitively positioned, ineffectively equipped, operationally inefficient railways that have lost their ability both to dominate local logistics and mobility markets, and to support global exports.

The envisaged rail sector investment together with the institutional repositioning of rail must be an enabler for government to achieve its policy objective of movement of freight and commuters from road to rail. This manifest itself in freight transported for long distances in dense flows via rail between distribution centres. The policy thrust must support other industries including agriculture and rural freight that support the development of rural economies.

3.1 Performance Challenges

3.1.1 Outdated Technologies

Contemporary rail is a safe transport mode; however, outdated technologies still in service in South Africa compromise safety. They do not design out human error, and exacerbate human factor challenges in safety-critical train controller and train driver jobs. They lead to unsafe responses to abnormal conditions, while maintaining them is an unrelenting challenge that increases the frequency of such abnormal conditions. In freight rail, they contribute to unduly high derailment propensity and poor stopping ability. In urban rail, they undermine service quality that prompts arson incidents which in turn leads to fewer trains available for service, unsafe overcrowding of remaining trains and ultimately, further undermines service quality.

3.1.2 Low Performance and Operational Inefficiency

While the country takes pride in the long heavy haul trains on its narrow-gauge railways, the two other key railway metrics, axle load and speed, are mediocre compared to countries with standard (or broad) gauge railways. Consequently, the ratios between the output measures tonne-km per route km and passenger-km per route km, and the input measure route km, which is the key measures of operational efficiency, are well below achievements in those countries.

Rail commuters have shown deep dissatisfaction over operational inefficiency as the average distance between service failures has shrunk to less than 1 000km in recent years. Such events reduce availability of both trains and train paths, depriving prospective passengers of confidence that the train they intend boarding will actually run; if it runs whether there will be sufficient coaches; and if they board the train, whether it will complete the journey on schedule or fail en route.

Shosholoza Meyl's low-technology, unreliable coaches and locomotives date from a bygone era, the handed-down locomotives being particularly prone to repeated failures. A scheduled, i.e., non-tourist, passenger service cannot survive on that basis: Low performance has reduced the quality and quantity of services to irrelevance - far less than a million passengers per year. In addition to the direct negative impact on PRASA, the resulting service disruption also negatively impacts freight tonne-km, Transnet Freight Rail's prime operational efficiency metric.

As a counterpoint, Gautrain, in its tenth year of service and performing to tight targets, demonstrates that contemporary railways can consistently achieve high-performance operational efficiency and safety.

3.1.3 Underutilised Infrastructure

The popular notion that railway infrastructure is underutilised, particularly outside urban areas, rests on the observed absence of activity, or even of rolling stock, on railway lines and yards that are visible to passers-by.

The light axle load, low speed, short freight trains on existing Cape gauge mainlines, let alone branch lines, are inherently uncompetitive against road transport because they do not exploit any of the strengths that rail's genetic technologies endow. Rather than representing underutilised infrastructure, the evidence indicates that narrow gauge freight railways are unable to compete against well-developed, internationally-proven long-haul trucking technology on the country's roads.

Long-distance passenger traffic mostly defected to other modes long ago. Modest speed on narrow gauge tracks thwarted journey time reduction, in turn preventing long-distance passenger rail from differentiating itself competitively from other transport modes. Outdated trains could not demand higher performance from infrastructure, which therefore defaulted to freight rail standards. Significantly, tourist trains still prosper despite low speed, because tourists want a restful experience, not a hasty journey.

3.1.4 Capitalised Maintenance

Transnet Freight Rail has escalated its Capitalised Maintenance/Operating ratio from less than 2 to more than 5 over the last three years. As a benchmark, the ratio for United States (US) railways is around 1: They maximise effectiveness of track occupations by combining extensions and / or upgrading works with routine maintenance. In return, clients expect more reliable, safer service, increased line capacity, expanded facilities; traffic pattern flexibility and higher network speed. Such interventions demonstrate that a railway is closely in touch with its market.

Capitalised costs must associate with incremental benefits, e.g., increased capacity or extended life. Noting that assets typically emerge from TFR's comparatively high capitalised maintenance investment with the same performance attributes as before,

the presumed intent is to extend their useful life. However, without evidence of enhanced ability to win business or to satisfy clients, it appears that TFR is extending the life of uncompetitive assets rather than replacing them with competitive ones, and is therefore out of touch with its market.

3.1.5 Branch Lines

Branch lines were originally built to develop rural areas. Light track was laid for low axle loads and short trains on typically steep and curvy alignments that constrained average speed to 30km/h or less. Together, these attributes compromised rail's inherent competitiveness. Over time, good quality provincial and national roads, and even freeways, have been built parallel to or near to branch lines, on more direct routes that permit substantially higher speeds. A few branch lines were relaid with heavier rails, but most still fall short of the axle load ruling on the main lines to which they connect. Unless branch lines carry the same axle load as main lines, they in turn compromise main line operational efficiency and hence increase overall railage costs. Unsurprisingly, branch lines that could not compete on cost, network ability and or service, ultimately lost virtually all their traffic to road hauliers.

Three attempts have been made to revitalise branch lines by concessioning, namely Orange River Rail Company on the Aliwal North–Barkly East line, Alfred County Railway on the Port Shepstone–Harding line, and Kei Rail on the Amabele–Mthatha line. They failed in 1996, 2004 and 2010 respectively, due to their revenues being insufficient to cover variable operating costs. Most recently, in 2015, Transnet requested proposals to concession the 85km 18.5 tonne/axle Belmont-Douglas branch line, but received no bid. By now it should be self-evident that branch line revitalisation initiatives should be approached circumspectly.

3.1.6 Track Gauge

This document takes three views on competition and competitiveness to position rail in its task environment. The first concerns rail's ability to compete against other transport modes, recognising that railways that use inappropriate and outdated technologies are inherently less competitive than railways that use appropriate and contemporary technologies. This is the domain of inherent competitiveness. The second concerns rules of engagement among competitors in a particular market. This is the domain of transport economic regulation. The third concerns planning the market space within

which entities and / or modes will compete, with reference to their economic and social contributions. This is the domain of transport policy.

Three genetic technologies distinguish rail from all other transport modes: Supporting, which facilitates heavy axle load; Guiding, which facilitates high speed and low energy consumption; and Coupling, which facilitates long trains. They impart to rail inherent competitiveness in Heavy Haul (heavy axle load but low speed to convey bulk commodities), High-Speed (high speed but light axle load to convey passengers) and Heavy Intermodal (heavy axle load and high speed to convey double-stacked shipping containers, and heavy domestic containers). Coupling also shortens average headways between vehicles to deliver higher throughput capacity than any other mode, thereby counteracting rail's weakness in light axle load, low speed passenger service. Hence rail's inherent competitiveness extends to high-density urban services, where single-deck vehicles cannot attain heavy axle load and maximum speed is only 80km/h, as well as to regional rapid transit where longer distances between stations allow 160-200km/h, often using double-deck vehicles to maximise passenger count and hence maximise axle load.

Rail's genetic technologies enable it to do duty as the backbone of integrated, energy efficient urban, regional, national, continental and intercontinental transportation. Coupling scales capacity to match demand extremes, rail being the only mode to count freight vehicle combinations in hundreds, or to count passengers per hour per direction in many tens of thousands.

3.1.7 Theft and Vandalism

Operators have been exposed to a growing trend of security-related incidents since 2013/14 with a sharp rise in 2020/21 following a correction in 2019/20. Since 2013/14, theft and malicious damage to property (vandalism) made up 88 per cent of all reported security-related incidents. Although the increase in the ratio of security-related incidents to operational occurrences increased by 160% between 2010/11 and 2020/21, this is amplified 2.85 times when normalised per million train km.

According to the RSR's State of Safety Report (ASoSR) 2020/21, security-related incidents increased by 8 per cent overall between the 2018/19 and 2019/20 reporting periods, and 113 per cent since the historic low of the 2013/14 reporting period.

Since late 2019 and throughout the COVID-19 lockdown period, both the Transnet Freight Rail and PRASA networks have been exposed to rampant and severe theft and vandalism, thus rendering normal train services for both networks very difficult.

3.2 Institutional Challenges

3.2.1 Market Structure

3.2.1.1 Freight Rail

TFR owns and operates the country's only long-distance rail network, and also owns and operates virtually all freight locomotives and wagons. By virtue of it being the only rail freight operator, with limited local exceptions, the de facto market structure is monopolistic. No legal constraint excludes others from the freight rail market, but entry barriers are high and industry's participatory overtures before the last commodities boom were declined by Transnet.

Because of this monopolistic freight rail market structure, Transnet has no commercial incentive to develop planning methodologies showing evidence of understanding the market within a competitive multi-operator environment. This would have enabled it to articulate the drivers and predict the dynamics of the relative rail and road competitiveness that determine modal split. Transnet's Long-Term Planning Framework (LTPF), predicting only marginal change for the next 30 to 40 years, projects rolling national freight demand per section as per the road-to-rail migration strategy and market share targets without any mention or explanation whatsoever of such strategy or targets. It consequently fails to articulate what interventions it must implement to achieve road-to-rail shift, or how it plans to defend itself against the rising tide of truck competitiveness. Furthermore, the LTPF fails to recognise the major contribution that rail must make to mitigating climate change by 2050. It is understandable that Transnet, given its de facto monopoly status and against the background of its main objective - taking into account its developmental role of maximising profit and shareholder value - ostensibly sees no need for, nor appreciates the value of, extensive or realistic modelling or planning for the whole of freight rail as transport mode.

Transnet Freight Rail's compound annual growth rates over the last decade were:

Tonnes transported	3.35%
Revenue	10.7%
EBITDA	17.9%
Capital Investment	18.9%

Tonnes transported bore some relation to economic growth, but Revenue and EBITDA grew much faster, although not as fast as Capital Investment. The freight market structure in its current form does not allow TFR to effectively pursue the rail addressable market, presently a shortfall of 30 billion tonne-km. From a national rail policy perspective, this implies that additional third-party train operators must be admitted to fully exploit rail's potential share of the freight market.

3.2.1.2 Passenger Rail

Similarly, PRASA owns and operates the country's only urban rail networks and provides its only long-distance passenger services, a few tourist trains excluded. The market structure is monopolistic, and instances of apparently monopolistic behaviour are not unknown, such as the provision of insufficient capacity to meet demand and of service quality that falls below expectations. In recognising these problems, one root cause, namely inadequate funding over many years, must be concurrently recognised.

3.2.2 Cross-Subsidisation

Cross-subsidisation between operating divisions is common practice in monolithic entities, a heritage that may ultimately cause resistance to their unbundling. It is generally agreed that port charges currently levied by Transnet National Ports Authority (TNPA) are excessive. Cautionary notes to Transnet annual reports since 2008, which have stated that corporatisation of TNPA in terms of the National Ports Act of 2005 will have a significant adverse financial and strategic impact on Transnet in respect of funding and investment, have strengthened long-held misgivings that some portion of the excess finds its way to TFR.

To the extent that excessive port charges have propped up a railway that loses domestic traffic to road hauliers and export traffic to other countries despite that support:

- Three transport modes — maritime, rail and road — have been structurally distorted;
- Excessive South African port charges have shifted exports from and imports to landlocked countries to ports in neighbouring countries with concomitant loss of jobs and revenue for the country;
- Road hauliers have found themselves able to punch above their weight due to a dysfunctional railway shedding its natural traffic to them and thereby giving rise to undue road maintenance costs.

National Rail Policy must therefore recognise freight rail's weak inherent competitiveness in relation to the accounting transparency and financial sustainability that prospective private sector investors will seek.

PRASA faces comparable problems. Its government operating subsidy is inadequate and mainly funds salaries. In addition, Shosholoza Meyl was transferred to it from Transnet as an unfunded stepchild. While there is an evident cross-subsidy from Metrorail to Shosholoza Meyl, if the overall quantum of funding is inadequate, revenue and expenditure must ultimately be balanced by a blend of poor service, deferred maintenance and capitalised maintenance, not one of which puts stakeholders at ease.

3.3 Misaligned Land Use and Rail Transport

Many of the country's human settlements have far lower population density than in other countries which use urban rail intensely. Hence it is necessary to actively align human settlements and transport modes, to maximise the role of rail and hence to shift traffic from road to rail. Urban planners should ideally aspire to 40 units/ha in metropolitan residential areas. The higher the population density, the more viable is urban guided transit (UGT). Cities with comprehensive rail-based public transport prefer high rise buildings to squeezing in more people at ground level.

At the other end of a commute, high density trip attraction zones, e.g., central business districts (CBDs), ideally terminate transportation corridors. Suburban office and retail nodes are less attractive, even if they are integral to modern planning.

Direct pedestrian access to railway stations is usually only practicable in highly developed areas such as CBDs and high-rise apartment clusters. In larger, lower density catchment areas, feeder and distribution services may be required. In such cases a station becomes an intermodal facility, to be designed for that purpose.

3.3.1 Skills Development

The rail industry constitutes a specialised work setting that requires specific and sometimes scarce skills to support research, development, design; investment, construction and manufacturing; marketing; operations and maintenance; and corporate strategy. The impact of the industry's decline over several decades resulted in it losing its ability to develop and retain skills. One of the challenges to its revitalisation is therefore to restore that ability.

3.4 Rail's Backlog Relative to Other Modes

3.4.1 Evolution of Rail's Position

Railways played a founding role in South Africa, as private undertakings from 1860 to 1870, after which successive governments developed infrastructure and services. A few new developments still stir pride: Gautrain introduced contemporary regional rapid transit, PRASA initiated the world's largest commuter train procurement programme, and TFR's Integrated Solutions technology aims to position its services amongst leading freight railways. In contrast to such developments, main rail routes were completed before 1900 and most branch lines by 1910. Difficult terrain resulted in original route alignments having tight curves and or steep gradients. Some 10 percent of mainline route-kilometres were regraded and / or straightened between the 1950s and 1980s. The remaining 90 percent are still as curvy and steep as when they were built. Even the heavy haul lines are now older than 40 years, although Ermelo- Richards Bay was doubled and partly regraded in the 1980s.

Rail's colonial heritage added more handicaps. First, Cape gauge track stunted rail's inherent competitiveness so much that it cannot keep up with economic growth, while natural rail traffic defaults to other modes. Second, the original narrow gauge vehicle profile provided full but narrow width down to near rail level, but constrained capacity. In time, the top portion was widened above platform height to produce the country's peculiar mushroom-shaped vehicle profile, which does not allow double decking or

double stacking.

The De Villiers Report on Strategic Planning, Management Practices and Systems of 1986 highlighted SATS's mistaken investment in rail sub-sectors unable to compete with other modes, or that ran at a loss. Subsequent investment in SATS was severely curtailed. Next, the Transport Deregulation Act of 1988 resulted in significant road transport expansion at rail's expense. While public funding was promoting all transport modes except rail, the latter was denied the same and left to its own devices, that at a time when railway renaissance was visibly gaining traction. Railway investment is long term commitment: Nearly three decades passed before the unintended consequences of this strategic misstep became plain for all to see.

The approximate national total asset values of the rail and road sectors are:

Rail infrastructure and rolling stock,	R billion	229
Road infrastructure and vehicles, conservatively,	R billion	2 284

The road transport asset base is ten times larger than its rail counterpart. If for no other reason, one would expect road to dominate the land transport modal split. For further comparison, the network lengths are rail 22 387km and road 947 000km.

3.4.2 The Maritime, Road, Aviation and Pipeline Modes

Cape Town completed its first formal harbour, the Alfred Basin in 1870: A contemporary container vessel would fill the entire Alfred Basin. Ultimately, specialised ports for very large bulk carriers were commissioned at Richards Bay and Saldanha in 1976. Several decades after the first railway and harbour, road and later aviation emerged as new transport modes that would erode rail's dominant position by offering door-to-door convenience, faster transit, precise timekeeping and lower all-in costs. National road network construction started in the 1930s, followed by freeways in the 1970s and ultimately by metropolitan ring roads and strategic toll road concessions. The interlink trucks that ply the country's roads without restriction are amongst the world's heaviest. South African Airways established formal aviation in 1934, progressing from Rand Airport to OR Tambo International Airport as aircraft capacity grew almost forty times from 14 passengers to 538 passengers. The country's maritime, road and aviation infrastructure capabilities, plus pipelines added from 1965, have kept pace with global developments. Successive governments provided public infrastructure to support new

modes as they emerged, and later expanded and upgraded each one to ever higher performance, some several times. By comparison, rail's infrastructure, and the rolling stock that it allows, have fallen far behind the up- to-date infrastructure of the four other transport modes.

3.5 Positioning Relative to Significant Global Trends

3.5.1 Rail Trends

3.5.1.1 Continental and Intercontinental Networking

Continental and intercontinental journeys are generally too long for rail passengers: The heading essentially applies to freight rail, which is enjoying robust growth. The North American Free Trade Agreement, the European Single Market and China exemplify continental rail networking, individually contributing 29%, 24% and 15%, together 68%, of global GDP. China, Tajikistan, Afghanistan and Iran are building a standard gauge railway to connect the Chinese, Middle Eastern and Western European standard gauge networks, creating an intercontinental network to support 40% of global GDP. Despite existing breaks-of-gauge, 15 European cities already enjoy twice-weekly bi-directional 12 000 to 13 000km rail services with China.

North African railways were originally built to standard gauge. Following substantial rail network expansion currently underway in the Gulf Cooperation Council states, they can potentially link to the China – Middle East – Western Europe network. Several East and West African countries are implementing standard gauge networks too.

3.5.1.2 Climate Change Imperatives

The world has embraced a low-carbon renewable-energy future to mitigate climate change, 2050 being the strategic horizon for harmful emissions reduction targets. South Africa's National Climate Change Response White Paper charts a way forward, but its Intended Nationally Determined Contribution (INDC) to emissions reduction, submitted prior to COP 21 (Conference of Parties), lags behind global norms.

Fortunately, rail is the most energy efficient transport mode. However, simply renewing powered rolling stock from time to time only realises evolutionary efficiency gains, while foregoing the more fundamental advantage of positioning rail to compete strongly and win against other modes in high density corridors, and to complement them in

intermodal transfers where high density and low-density corridors intersect. Positioning rail as the backbone of a transport system must therefore recognise its integrative role in continental, national, regional and urban spatial development.

In providing a country's 2050 logistics and mobility backbone, high-speed trains will service journeys of up to three hours or 1 000km. Pit-to-port heavy haul will continue to move bulk commodities. Intermodal trains could convey containers over great continental and intercontinental circle routes at higher speed and lower energy consumption than maritime transport: Double-stacking containers will lift their axle load into the heavy haul domain to further reduce energy consumption and operating costs. Urban guided transit and regional rapid transit will provide short- and medium distance mobility in cities and conurbations, and service high-speed rail catchment areas. At airports, high-speed rail will provide long-distance connections, while urban- and / or regional rapid transit will provide local connections.

The country's present National Climate Change Response only reflects incremental benefits from advancing rail technology.

4 Policy Guidelines

Attention now moves from problems to policy interventions to resolve them, so a vision and mission as well as goals and objectives are appropriate. They project Government's need to address and resolve the problems identified within a finite time frame. Around the world and in South Africa, 2050 is the date by which critical environmental sustainability objectives should have been achieved: Recognising the rail sector's major role in the associated interventions, rail revitalisation should be complete by that date. The African Union Agenda 2063 and the recently introduced African Continental Free Trade Agreement have now placed rail on a growth path in Africa.

4.1 Vision

Rail as an affordable, competitive, effective, integrated, reliable, safe, sustainable and valued transport mode that provides the backbone of South Africa's freight logistics and passenger mobility systems and strengthens its economic growth and social development by 2050.

4.2 Mission

To recognise and understand rail's heritage of missed opportunities, strategic missteps and structural impediments, and hence to identify and mobilise funding and resources to leverage rail's inherent competitiveness to reposition it as the backbone of South Africa's land transport task.

4.3 Goals

The goals of the National Rail Policy are as follows:

a) Reposition the country's rail networks as the transport backbone from which to serve the urban and medium-to-long-distance mobility needs of its natural citizens and the logistics needs of its corporate citizens;

b) Provide a long-distance national rail network with access for qualified operators, PRASA for passenger trains, as well as Transnet Freight Rail and third parties for freight trains, subject to appropriate economic and safety regulations;

c) Provide affordable, value-for-money mobility for the country's people and visitors in densely populated urban settings, as well as in densely travelled medium- and long-distance corridors;

d) Enhance the competitiveness of the country's exports in global markets to facilitate trade with its partners;

e) Maximise the socio-economic contribution of rail transport in South Africa, the Southern African Development Community (SADC) region, and the rest of Africa, and optimise the economic balance between rail, road and other transport modes;

f) Support the country's commitments to mitigating climate change by repositioning rail to substantially increase its national transport task contribution, thereby reducing energy consumption and the associated harmful emissions;

g) Enable economic and social development by promoting SMMEs, co-operatives, rural development and BBBEE, and create employment, maintenance and productive capacity in the rail industry; and

h) Facilitate the movement of rail friendly cargo and passenger customers from road to rail.

4.4 Objectives

To these ends, Government will pursue the achievement of the following objectives:

a) Halt and reverse the decline of the rail sector by developing a National Rail Master Plan and supportive intervention and investment programmes;

b) Ensure the implementation of road to rail strategy across both freight and passenger corridors;

c) Facilitate or provide attractive, competitive, efficient, reliable, safe and secure freight and passenger rail services to reposition rail as the mode of choice and spontaneously shift freight and passengers from road to rail;

d) Reduce the cost of doing business in the country by maximising the rail freight sector's contribution to the national transport task, encouraging the use of the most cost-effective transport mode;

e) Establish governance, institutional and regulatory frameworks for managing, operating and maintaining railways, as well as facilitate infrastructure and rolling stock investments in new technologies that increase inherent competitiveness;

f) Promote rail transport's contribution to spontaneous intermodal collaboration, by providing convenient infrastructure and facilitating efficient transactions via policy and funding in the case of passengers who have limited or no alternatives, and via more sophisticated inducements in the case of freight;

g) Strengthen investment so that the rail mode can aggressively exploit its inherently competitive technologies to compete effectively and sustainably and to collaborate in intermodal solutions in the local transport market, and to support exporters in global markets;

h) Attract, encourage and regulate private sector participation in all categories of investment as well as operations and maintenance, to revitalise the rail sector, drive development and maximise growth to ensure accessible, affordable and effective service delivery to existing and prospective railway users;

i) Invite private sector participation where government cannot or should not invest, or where it demonstrates superior value for money, or where it is quicker to market;

j) Accommodate prospective rail freight investors who are able and willing to fund their rail access and service requirements when incumbent entities are unable to fund the required capacity or unwilling to bear the investment risk;

k) Invest in freight rail infrastructure to meet specific client or potential client demands, and allow private sector participants to step up to the opportunity where state-owned agencies and or companies are unable or unwilling to do so;

l) Facilitate concessions of both passenger and branch lines and grant long- term concession period or leases for private sector players to amortise investments;

m) Facilitate long-term Private Sector Participation in rail-and-below infrastructure by allowing concessionaires or lessees to amortise their investments over suitably long periods as reward for concessioning of passenger and branch

lines; and

n) Institute considerate, empathetic, fair, independent, sensitive and transparent economic regulation of the national rail network and train operators thereon.

5 Policy Principles and Interventions

This chapter introduces an array of high-level principles to guide the National Rail Policy, and then applies them to rail sector investment and reform as fundamental revitalisation interventions without dealing with modalities thereof (the latter will be addressed in the Policy Statements). After introducing the high-level guiding principles, this chapter distinguishes between a primary intervention, Rail Sector Investment, and a secondary intervention, Institutional Repositioning.

During the initial stages of policy development, it became evident that much of rail's unacceptable performance was attributable to inappropriate and insufficient investment over many years. This needs to be remedied by the primary intervention. However, deeper investigation revealed that the primary intervention alone would not suffice, and that institutional dysfunctionalities regarding market behaviour, roles and responsibilities also needed attention. They need to be remedied by the secondary intervention.

5.1 Guiding Principles

The following principles will guide the National Rail Policy:

a) Understand the fundamental drivers of railway inherent competitiveness so that interventions achieve the desired outcome and avoid unintended consequences;

b) Underpin the formulation and implementation of National Rail Policy by consultation with affected and interested stakeholders;

c) Recognise that safety and security of railway passengers and freight are of prime importance, as is the safety of persons residing alongside a railway reserve;

d) Promote economic growth and social development through investment in rail;

e) Promote and encourage movement of commodities and passengers from road to rail through rail investment;

f) Apply user pays principles, except where government funds and provides passenger rail services as an instrument of economic and social policy;

g) Retain all state-owned railway networks and rights-of-way in state ownership

but, where appropriate, make them available to the private sector on mutually agreed terms to facilitate private sector participation;

h) Ensure that subsidies, where provided, are targeted, transparent and monitored with respect, to achieving their intended purpose;

i) Increase rail's operational efficiency and performance, to maximise its utilisation; and

j) Encourage the use of local content and local manufacturing in rail investment.

5.2 Primary Intervention: Rail Sector Investment

The country is weakly positioned regarding rail's contribution to urban mobility, the inherent competitiveness of freight as well as medium and long-distance passenger services and, as a consequence, mitigation of climate change. This Policy therefore sets out to revitalise the country's railway sector by investing substantially in establishing a high-performance rail sector that will recapture rail's proper contribution to the national transport task and thereby reduce transport sector harmful emissions.

Given the enormity of the task, attempting to deliver the required outcome by extending and upgrading the existing inherently uncompetitive Cape gauge long-distance national network would not achieve the desired outcome. Rail has accumulated a formidable investment backlog relative to other transport modes, particularly road, so the primary intervention must be investment to reposition rail as South Africa's transport backbone by 2050. This intervention shall initiate railway renaissance in the country by deploying high speed, heavy haul, heavy intermodal as well as contemporary urban- and regional rapid transit, in situations where rail offers the most economically, environmentally, financially and socially viable logistics and / or mobility solution. To redress the road- biased imbalance between the country's rail and road infrastructure investments, the future rail network will comprise, where appropriate, high density freight- and or passenger corridors. Given Government's resolve to reposition rail as the land transport backbone, and noting the present poor run-down condition of rail in general, South Africa has never had a better opportunity than the present to progress toward a new rail dispensation.

The major revitalisation investment will therefore be development of a minimalist standard-gauge high-performance national rail network to maximise rail's inherent competitiveness, and provide sufficient capacity for heavy haul and general freight

services, as well as for regional rapid transit and long-distance passenger services. Where appropriate and feasible, Government will direct investment to standard-gauging existing infrastructure, to complement the Greenfields projects that will also be necessary. By 2050, the national long-distance rail network will be largely standard gauge, at least one dedicated passenger high speed route will be in operation, and the Cape gauge will be confined to urban areas where it cannot frustrate rail's inherent competitiveness: Some heavy haul operations may possibly retain Cape gauge where the value of remaining reserves and the logistics cost of delivering them to destination, cannot support standard-gauging tracks.

The Rail Sector investment must be aligned to the country's strategic objective of developing the Rail Sector by establishing local factories. This will be in line with the country target to achieve 65% local content in building new trains. The investment will position South Africa as destination for train manufacturing in Africa.

Urban rail will remain primarily on the existing Cape Town, eThekwini and Gauteng Cape-gauge metropolitan networks, amongst others, to segregate them from freight rail that will use the high-performance national network. The urban guided transit networks in these three conurbations will be substantially augmented, expanded and / or extended to alleviate existing road congestion and avert ultimate gridlock as their populations and car ownership increase exponentially, and to meet future capacity and catchment area requirements. Different solutions may emerge in Buffalo City and Nelson Mandela Bay given their typical small networks.

5.3 Secondary Intervention: Institutional Repositioning

The Green Paper on National Rail Policy identified weak inherent competitiveness as rail's primary problem, with remedial investment as the indicated solution, referred to as the primary intervention in this document. Absence of competition in the rail sector was recognised as a contributory problem but, to minimise the complexity of remedial interventions, considered a secondary problem to be addressed later. However, it has become evident that institutional issues were masking the true size of the primary problem. This section therefore addresses additional insights into market behaviour, roles and responsibilities in the rail services market, leading to a corresponding secondary intervention that addresses institutional repositioning.

5.3.1 Freight Rail

It has become evident that TFR actually addresses, or intends to address, only a fraction of the rail addressable market. It passes up the remaining opportunity due to inadequate capital availability, operational inefficiency and / or return on investment. The capacity requirement forecasts in Transnet's Long-Term Planning Framework (LTPF) are therefore not a dependable basis for planning rail revitalisation interventions. It is difficult to fathom the true size of the rail freight market, other than that it is larger than what TFR can convey.

The classic remedy is to allow third party access. To fully exploit the rail addressable market, third party train operators must be allowed to avail themselves of the opportunity. Such intervention should grow traffic at a reducing price until market equilibrium is achieved at higher service quality and / or quantity, and at a lower price: Over time it will reveal the true size of the rail addressable market, enable rail planners to design well-grounded investment plans and ultimately achieve a broadly acceptable modal split between rail and road.

Introducing third party access is a palliative that recognises only service quality, quantity, and pricing at market equilibrium, as well as the incremental operational efficiency that comes with competition. Third party train operators must therefore be admitted to the national rail network to access the infrastructure in conjunction with commitment to the investment-led intervention. This will create an enabling environment for private sector participation in railways.

5.3.2 Passenger Rail

PRASA occupies a monopoly position in providing passenger rail services. It is largely funded by the fiscus, and therefore has no basis for monopolistic market behaviour. However, being the only service provider may desensitise it to user perceptions of service quality and quantity. Furthermore, as currently constituted, there is no assurance that PRASA maximises the value of services delivered to passengers and minimises the economic resources that it uses to do so. Introduction of competition for services rendered by PRASA must therefore be considered.

Direct on-rail competition in PRASA's primary urban commuter market is generally accepted as unworkable, because trains following one another at short headways in a closed system do not allow one operator to distinguish itself from any other operator.

However, outside of narrowly defined operations, opportunities for competition abound.

Concessioning of commuter/passenger lines where PRASA is unable to offer services must be considered. This must be offered to the private sector on favourable terms in order to recap the investments over the long term.

6 Policy Statements

This chapter proposes policy interventions under four headings. First, Infrastructure Investment addresses the durable and expensive interventions that cut across freight and passenger rail. This signals that infrastructure is being positioned to lead rail revitalisation. This position aligns rail to other transport modes in the country, where public funding defines the space within which operators deliver services using their own conveyances. Particularly when public funding is constrained, the funding of infrastructure alone, instead of infrastructure and operations, enables government to maximise its direction of the sector and minimise the fiscal contribution. Second, Enabling Interventions addresses broad high-level institutional considerations that also cut across both freight and passenger rail. Third, Freight Rail and last, Passenger policy interventions, follow separately, to recognise their significant differences and to afford each due consideration in relation to its unique challenges.

6.1 Infrastructure Investment

6.1.1 Rail Infrastructure Planning

Issue

Several indicators have flagged concerns regarding the country's rail infrastructure planning quality, which includes funding, in respect of the following aspects:

a) Absence of shared vision for long-distance passenger services in relation to development of the national rail network;

b) Absence of light urban guided transit sub-modes from the space between bus rapid transit and heavy urban rail;

c) Stretching Cape gauge beyond its natural journey-time reach in situations where regional rapid transit would provide a better solution;

d) Narrow gauge's inherent axle load and speed limitations have disadvantaged railways;

e) The inability to expand network capacity and respond rapidly to market opportunities have disadvantaged mines;

f) Branch lines having wasted away for decades and, despite dedicated, sincere efforts to revive them, have not been restored; and

g) Aggregate funding sources are insufficient to support all legitimate rail funding requirements.

These indicators show that the absence of a national rail policy has created a vacuum within which rail entities and stakeholders have planned and invested, guided bottom-up by their particular interests, rather than top-down for the national good.

The interventions required to reposition rail for competitiveness and sustainability are complex, will involve substantial funding, and demand sustained attention over three to four decades.

Policy Statement

Strategic rail network planning and oversight is a centralised strategic function that DoT will undertake. The department will, as a first priority, establish a Government Component, to be known as the Rail Planning Component, to undertake centralised strategic rail network planning.

The Rail Planning Component shall be mandated to:

a) Develop and maintain a high-level strategic vision and plan for the development of the strategic rail network in South Africa, in consultation with relevant stakeholders;

b) Publish a National Rail Master Plan, anchored in the NATMAP 2050 Synopsis Update, which will be updated at least every five years;

c) Take custodianship for the establishment and maintenance of a current and detailed knowledge base of passenger and freight flows, network capacity, asset condition, rolling stock fleets, local content and available train slots in South Africa from which to develop and track the implementation of a strategic vision;

d) Undertake the detailed feasibility assessments and analyses needed to enable decisions on the development of rail infrastructure and sectoral reforms to be taken in full knowledge of relevant trade-offs;

e) Pursue and support investments in rail infrastructure and sectoral reforms that leverage the rail mode to position the country for transport sustainability by 2050 and beyond;

f) Leverage the strategic plan and detailed knowledge base to provide informed guidance on the preferred rail sub-mode during network expansion and route rationalisation;

g) Aligned with strategic planning, develop funding strategies, including private investment, in consultation with relevant stakeholders, and provide oversight to ensure funding maximises the commercial, developmental and environmental value of infrastructure provision; and

h) Secure a qualified mandate from incumbent freight and passenger infrastructure owners to concession non-core and branch lines identified as strategic in the Rail Master Plan.

Furthermore, the DoT will:

a) Coordinate and lead a rail sector development programme on railway engineering research, technology development, test and homologation; on skills development with the Department of Higher Education and Training, universities, technical vocational education and training (TVET) colleges, SOEs, private and government-owned research institutes; and alignment with international railway standards and specification bodies.

b) Agree a suite of specifications for narrow and standard-gauge high-performance national rail networks inclusive of rolling stock and systems in consultation with the Railway Safety Regulator, rail sector and its suppliers, and inform a forum within which stakeholders can negotiate objectively.

c) Develop the requisite localisation, procurement, project, contract and asset management skills in advance of the rail sector investment programme rollout.

d) Develop labour-intensive and cost-effective techniques and practices that will stimulate large-scale low-skilled job creation during the rollout of the rail sector investment programme.

e) Provide a 'one-stop' rail policy advisory service for new and incumbent infrastructure managers and train operators.

Whereas the DoT performs centralised strategic rail network planning, rail network owners are responsible for capacity provision, infrastructure managers are responsible

for capacity utilisation and regular publication of network statements, and train operators are responsible for capacity usage and train capacity provision.

The DoT Rail Planning Component shall consult with operating and implementing entities, relevant Ministries and key stakeholders in finalising and updating its Rail Master Plan to ensure that alignment is maintained with established and emerging national, provincial and local priorities.

The DoT Rail Planning Component will undertake centralised planning at strategic level in relation to the country priorities. SOE operating bodies will undertake their own planning with regard to business operations, including investment business decisions, and will consult with the DoT Rail Planning Component to ensure planned investments and initiatives are aligned to the National Rail Master Plan and the National Land Transport Strategic Framework.

6.1.2 Climate Change Mitigation

Issue

All United Nations member states adopted the 17 integrated Sustainable Development Goals (SDGs), together with 169 targets tracked by 232 unique indicators, during a 2015 universal call to action that leaves no one behind by ending poverty, protecting the planet and ensuring all people enjoy peace and prosperity by 2030. Although the contribution of transport to the SDGs is implicit, it can be grouped under Universal Access (SDG 9, SDG 11), Efficiency (SDG 7, SDG 9, SDG 12, SDG, Green (SDG 3, SDG 7, SDG 9, SDG 11, SDG 13), and Safety (SDG, SDG 11).

Transport accounts for 28.8% of final energy consumed (SDG 7), and for 15% to 24.7% of global CO2 emissions (SDG 13), which accounts for about 76% percent of total greenhouse gas emissions.

While contributing 6.7% of all passenger kilometres and 6.9% of world freight tonne kilometres, rail transport only accounts for 4.2% of global transport's CO2 emissions, and 1.9% of its final energy demand.

The South African passenger and freight railway system is only a 1% producer of global rail CO2 emissions despite being the eleventh largest national rail system in the world. This highlights the impact of South Africa's low rail market share on emissions now caused by an over-dependence on road transportation.

Rail's contribution to mitigating climate change has been expected to come from more energy efficient rolling stock as well as shifting traffic from road to rail. Rail is indeed the most energy efficient of all transport modes in niches that its genetic technologies equip it to serve best. Shifting traffic from air and road to rail therefore immediately reduces energy consumption by 60 to 70% for comparable transport tasks, and reduces harmful emissions by the same amount when using non-renewable energy.

Notwithstanding rail's naturally low emissions, railway renaissance technologies can yield further substantial reduction, by some 50% per passenger-km and per tonne-km by 2030 with reference to the 1990 baseline. However, this requires doubling, tripling and quadrupling rail's market share and taking all in the case of heavy haul and high speed, together with the necessary rail network expansion. It will require strong leadership to coordinate and drive the country's 2050 urban, regional and long-distance mobility solution that positions rail as the backbone of passenger services that ripple outward from urban areas at higher-speed over medium distances and high-speed over longer distances, as well as freight services that connect to major agricultural, commercial, industrial and mining areas.

Policy Statement

The DoT shall:

a) Develop in consultation with SOE's, other departments and government initiatives, an actionable, benchmarked, costed and time-bound decarbonisation strategy for the rail sector, aligned to the national strategic plan.

b) Undertake rigorous, regular consultation to ensure sectoral alignment and integration with respect to planning, in relation to all three spheres of government, to ensure that rail maximises its contribution to the country's 2030 and 2050 energy consumption and harmful emissions reduction targets by repositioning it as the backbone of land transport.

c) Establish and maintain a monitoring mechanism to track progress on the strategic climate and emissions goals and undertake regular revisions of the strategy to reflect performance towards achieving climate goals.

d) Develop and maintain a set of climate resilient standards for rail infrastructure and operations and provide oversight to ensure adherence to these

standards.

e) Coordinate and support the planning of rail infrastructure investment interventions in relation to the initiatives of other departments, that also addresses infrastructure resilience to climate change and reducing energy consumption and harmful emissions.

f) Align the strategic planning with the Just Economic Transition decarbonisation priorities of the country.

g) Benchmark the contribution of rail to the SDGs against globally recognised frameworks developed for transport.

6.1.3 Track Gauge

6.1.3.1 High Performance Rail Network

Issue

A high-performance rail network is configured to achieve optimal rail market share in rail-natural market spaces, which for freight rail are heavy haul, heavy intermodal, or general freight rail sub-modes; and for passenger rail are high-speed, regional rapid transit, urban rapid transit, as well as the lighter urban guided transit sub-modes.

Comprehensive remedial investment including mitigating ongoing theft and vandalism, modernising train control for traffic-densification and safety, improving the load to tare ratio of freight wagons, GHG-reducing locomotive engineering, deployment of low-cost fixed geometry track systems, introduction of high-comfort commuter and fast passenger trains, and standard-gauging the national network, must lead the rail revitalisation agenda as fundamental interventions.

Centre of gravity limitations associated with narrow gauge track reduces rail's inherent competitiveness to exploit supporting of heavy axle loads and guiding for all speed-sensitive market spaces, make it easy for road transport to encroach on rail's natural freight and passenger domains, and simple for other countries to encroach on the country's export markets for minerals, coal and containerised manufactured goods.

Not only is road transport weaving itself ever deeper into the country's industrial and urban spatial development fabric to the exclusion of rail, but failure to achieve

substantial road-to-rail shift hinders the country from meeting international commitments to reduce harmful emissions. It is therefore imperative to plan, fund and implement the country's standard-gauge high-performance national rail network.

However, it should be noted that, given short distances between stations, slower speed narrow gauge trains offer passenger comfort and optimise energy consumption in the urban rail market space characterised by frequent accelerate and decelerate start-stop metropolitan operations. Furthermore, South Africa is the world leader by some margin in the successful exploitation of the coupling rail genetic technology of rail, whereby we operate the longest heavy haul iron ore trains globally, and also the longest train of any description as a long-distance general freight bulk mineral export service. Limitations militate against further exploitation of the coupling genetic technology.

Policy Statement

The long-term strategic direction for the country's rail network is standard gauge.The new standard-gauge high-performance national rail network must be designed to maximise the economic stimulation that follows agglomeration of spatial developments by a competent railway network, and optimise rural cohesion and inclusion.

The central Rail Planning Component shall ensure the National Rail Master Plan balances a brownfields approach, that minimises costs by retaining as much as economically possible of the existing infrastructure, against a greenfields stance meant to extend the standard gauge network at every economically justifiable opportunity.

The Department of Transport, being responsible for the suite of specifications for a high- performance national rail network comprising both narrow and standard gauges, will determine through feasibility studies on a route-by-route basis whether to:

a) Return the existing Cape gauge network selectively to a high-performance end- to-end national rail network, inclusive of train loading and unloading facilities, via selected and affordable continuous quality improvements that achieve lasting gains through stepwise interventions.

b) Address ongoing, long-term problems that can only be solved through focused, dedicated resources working for a limited period of time with breakthrough improvements.

c) Extend the existing narrow gauge system in length where justified.

d) Upgrade the existing Cape gauge system to dual gauge to accommodate new standard gauge routes on critical sections to allow for inter-operability.

e) Create a completely new standard gauge network element, especially for stand-alone greenfields rail projects, in line with the AU resolution of 2007.

f) Re-gauge the Cape gauge network to standard gauge, for instance, where route rationalisation is proposed and justified.

6.1.3.2 Standard-gauge Specifications

Issue

Of the 1.33 million km globally installed railway track, 21.8% is built to Broad gauges, 60.6% to Standard gauge, and 17.5% to Narrow gauges, of which 8.5% is built to Cape gauge. About 27% of the 112 000km Cape gauge is installed in South Africa.

The country is a small player in a large global railway market, and its existing railways rest on miscellaneous specifications, Cape gauge and others. Therefore, new investment in the high-performance national rail network, and probably in one or more dedicated high-speed routes as well, presents both opportunity and responsibility to select and adhere to well-grounded, widely recognised specifications that facilitate participation in the economic and technical advantages of global mainstream solutions. Major track standards and specifications bodies include American Railway Engineering and Maintenance-of-way Association (AREMA) for standard gauge, the International Union of Railroads (UIC) for all track gauges, and the specialised International Heavy Haul Association (IHHA) and Chinese High Speed Rail standards and specifications published by China's National Railway Administration. South Africa is a founding and most-decorated member of the IHHA and used to have a prominent profile leading the metre gauge group of the UIC.

The following considerations will be new to the country.

Policy Statement

To ensure the standard-gauge national rail network supports unrestricted interoperation over its entire extent, with the exception that lighter axle-load dedicated passenger lines do not require vertical clearance for double stacked containers.

The DoT shall:

a) Coordinate and lead a rail sector development programme on railway engineering research, technology development, test and homologation; on skills development with the Department of Higher Education and Training, universities, technical vocational education and training (TVET) colleges, SOE, private and government-owned research institutes; and alignment with international railway standards and specification bodies; and

b) Agree a suite of specifications for narrow and standard-gauge high-performance national rail networks inclusive of rolling stock and systems in consultation with the Railway Safety Regulator, rail sector and its suppliers, and inform a forum within which stakeholders can negotiate objectively.

The DoT and stakeholder forum must therefore maximise use of specifications created by others to acquire suitable and compliant equipment at minimal or no price premium.

The specifications must address at least maximum axle loads, track forms, speeds and train lengths; vehicle profile; train authorisation and protection systems; energy consumption; and electrification where that is indicated.

6.1.4 Branch Lines

Issue

The branch lines comprise 7,278 kilometres, or 35% of the 20,953 route kilometres of the total freight rail network. Fifty six percent of these branch lines are currently operational, while the remaining 3,350 km are closed lines. All the branch lines are feeder lines to the country's Core Network for freight and long-distance passenger services.

The Core Network is owned by Transnet and freight operations are undertaken by Transnet Freight Rail (TFR), a division of state-owned Transnet SOC Limited, while the majority of passenger operations are undertaken by the Passenger Rail Agency of South Africa (PRASA), which is a government-owned and operated entity.

Much of the freight that originates on branch lines undergoes consolidation at marshalling yards as it progresses to and on the Core Network for transportation to end markets. Most passenger operations are concentrated on the larger metropolitan areas of Johannesburg, Pretoria, Port Elizabeth, Durban and Cape Town. The branch lines are currently a relatively underutilised part of the country's transport infrastructure, and it is expected that their revitalisation could unlock economic potential, both regionally and nationally.

An opportunity for relieving unemployment is presented through the creation of jobs to restore and operate branch lines' right-of-way and network connections. Many branch lines have, however, become dormant, or been closed, lifted or underutilised, over the past three to four decades. During that time, they were not maintained, and essential items have been vandalised or stolen. Returning them to service will require restoration to safe working order. Several branch lines will nevertheless remain unable to meet contemporary logistics and mobility requirements, even after restoration, due to light axle load, low speed and short trains, and will, therefore, in addition to the cost of restoration, require an ongoing operating subsidy.

Note that the concessioning of branch lines forms part of Transnet's Private Sector Participation (PSP) programme whereby revitalisation of the branch line network provides focus on specific business opportunities, promotes the inter-modal shift of freight from road to rail, lowers the social and commercial costs of freight transportation, encourages entrepreneurship, apportions risk to where it can be best managed, stimulates employment and other socio-economic opportunities in rural areas, promotes Socio-Economic and Local Development (SELD), and supports the growth strategy of Government.

Policy Statement

The DoT's central Planning Component shall include branch lines in the National Rail Masterplan.

Branch lines will be categorised as strategic and, by default, non-strategic. The criteria that qualify a branch line as strategic will be determined by the DoT's central Planning Component in line with the DoT's Rail Branch Line Strategy (2016). This will be done after consultation with all network owners, critical stakeholders and the affected operating entities.

Private sector investment in branch lines will be included in the Private Sector Participation Programme policy statement contained in this document.

Where branch lines are strategic and Government cannot afford the investment, they must be put out for concessioning.

Branch line operators shall have access to the core network, non-core network and other branch lines, according to the Third-Party Access policy statement contained in this document

Any Government entity, or other stakeholder that wishes to introduce a freight and / or passenger service on a state-owned strategic branch line, shall fund the actual costs of carrying and maintaining the branch line by the Infrastructure Manager, as well as the actual costs of operating trains. Where a branch line is inactive and requires rehabilitation to restore it to minimum safe standards, the Government entity or stakeholder shall also fund that investment. All such rehabilitation and operations shall be subject to the oversight of the Railway Safety Regulator (RSR) and ruling access arrangements, with the latter eventually being superseded by the Transport Economic Regulator (TER), once established. The Government entity or stakeholder shall also procure a train operator under the ruling access arrangements, which again would eventually be superseded by the TER's dispensation. Municipalities or any Government entity is responsible to maintain and upgrade municipal sidings and associated rail infrastructure under their control.

6.1.5 Building local industrial capacity

Issue

The Rail National Policy provides an important opportunity to build and strengthen local manufacturing capacity in South Africa.

Manufacturing can include the production of:

- steel of the right qualities and quantities;
- rail lines and supplies, including railway sleepers, rail joints, fastening systems and switches, and control systems (hardware and software); and
- rolling stock manufacturing, including locomotives and engines, wagons and passenger coaches.

The rail manufacturing industry is also an opportunity, as set out elsewhere in this document, to address related matters of transformation and African exports.

Policy Statement

Government will ensure that South African industrialisation and the local production of steel and other inputs, rail lines and supplies, and rolling stock is promoted through policies that will require state and private operators to procure all supplies from South African-based manufacturers. The policy will also encourage the entry of black, female and young industrialists as local manufacturers, including through manufacturing joint ventures.

The state will take active steps to help develop the technology, skills and manufacturing capability locally, to ensure that the production of rail-related products as set out above, increases South Africa's GDP output, jobs and economic inclusivity.

A localisation strategy will be used to develop the industrial base for an active export strategy, particularly to other African countries. This will also support the Steel Master Plan of Government.

The DoT and the DTIC will set up a joint committee to develop the strategy and will engage the private sector on investment plans required to unlock opportunities.

6.1.6 Neighbouring Countries and Africa

Issue

Estimates on the 'Implications of the African Continental Free Trade Area for Demand for Transport, Infrastructure and Services', released by the Economic Commission for Africa (ECA) at the fifth African Business Forum on 7 February 2022, indicate that according to the African Continental Free Trade Area (AfCFTA), intra-African trade in transport services is expected to increase by nearly 50 per cent. In absolute terms, over 25 per cent of intra-African trade gains in services would go to transport alone and nearly 40 per cent of the increase in Africa's services production would be in transport. If Africa is to base intra-continental trade on rail, as continents do, and as it will have to do to meet global emissions targets, it needs a standard gauge continental rail network.

The African Union (AU) resolved in 2007: To this end and to facilitate interoperability of rail transport networks in Africa, standard 1435 mm gauge should be adopted and retained for construction of new rail lines in the Continent. The conversion to standard gauge for new railway lines should enable African railways to benefit further from the wide range of material and equipment at global level and will contribute significantly to resolving the problem of interoperability in the future Pan-African railway network.

The African Ministers responsible for transport adopted the "Vision 2040 for Railway Revitalization in Africa" in 2014. Towards 2040 the infrastructure should be renewed; signalling should be automated; cross border interoperability should be the order of the day; international standards should apply; costs should be competitive throughout the network; safety levels should be to international standards; digital twin models should be in use; and continental planning towards 2063 should be in place.

Ten Corridors and three Radials feature in the vision of the Union of African Railways. Member states are encouraged to keep these in mind for future integration whenever new lines are considered. One of these corridors, the North-South corridor reaches into South Africa from Musina.

Meanwhile, it is important to retain the country's rail connections with the SADC region's current Cape gauge network. Several technologies can do this, namely changing bogies (e.g. the broad gauge Community of Independent States (CIS) and their standard gauge neighbours to the south); transloading containers (and in future bulk, using a South African invention) from standard gauge to broad gauge wagons and vice versa (e.g. China to Mongolia and Western Europe); variable gauge axles (e.g. standard gauge Western Europe and broad gauge CIS neighbours to the east and Spain to the west); and lastly three-rail dual gauge track (e.g. Cape gauge and standard gauge in Western Australia).

Policy Statement

South Africa will use technical solutions to maintain rail connectivity with the SADC region, whilst facilitating a dialogue on migration to standard gauge.

The central Planning Component, guided by the National Rail Masterplan, will determine through feasibility studies how to comply with the AU resolution of 2007 on standard gauge, whilst addressing non-trade barriers identified by the AfCFTA.

6.1.7 Rolling stock

Issue

This Policy recognises the distinction between 'rail-and-below' fixed infrastructure and 'above-rail' rolling stock. Rolling stock requirements respond to fluctuating business cycles, changing seasons, growth in some markets and decline in others, and more. All other transport modes take for granted that one party (sometimes a few) provides infrastructure and many parties operate on it, a principle that should be no less true of rail than of any other transport mode.

Provision of rolling stock is aligned with Government's Industrial Policy Action Plan, which has made significant progress regarding manufacture of railway rolling stock, securing investment and scaling up industry capabilities using a range of policy measures, including the Competitive Supplier Development Programme, industrial financing and technology support.

In 2015 the AU adopted a resolution that "the manufacturing of rail rolling stock [is] to be championed by the Republic of South Africa to support the deepened drive towards industrialisation". The Economic Commission for Africa (ECA) estimates the AfCFTA will result in growing Africa's rail network by 26,500km, which will require 97 614 wagons for bulk cargo and 20 668 wagons for container cargo by 2030. This could increase the continental fleet to 132 857 and wagons to 36 482.

Policy Statement

DoT will engage with the DTIC and other government stakeholders for South Africa to exploit its rolling stock manufacturing capacity and strive to become a supplier of rolling stock in Africa.

Train operators on the existing Cape gauge national rail network and on the future standard-gauge national rail network shall fund, procure and maintain their own rolling stock, and where feasible, collaborate through central procurement to improve buying power and economies of scale at the national level.

Government supports the provision of own rolling stock by freight and passenger train operators as an additional funding source in kind, to close the gap between existing funding sources and overall funding requirements, as well as the provision of extra capacity by private sector rolling stock leasing companies (ROSCOs).

Train operators and SOCs can lease their rolling stock to any other party and to encourage new entrants in the market.

To an economically feasible extent, new rolling stock must be procured compliant with government's Industrial Policy Action Plan and future-proofed against obsolescence due to changing track gauge. Traction bogies for Cape gauge locomotives in particular, should provide for changing wheel sets to standard gauge.

6.1.8 Job creation

Issue

The South African rail sector is not prepared for the rollout of a National Rail Masterplan. Global rankings of Engineering Procurement and Construction (EPC) companies place the few existing JSE-listed construction groups in the lower quartile globally. Hence, in the absence of a concerted DoT–led initiative to ensure local capacity in advance, these large projects will go to highly-mechanised experienced multi-national EPCs and Original Equipment Manufacturers (OEM) companies, resulting in minimal local skills development and little participation by incumbent local EPCs and emerging construction companies.

Depending on the levels of mechanisation and localisation of highly specialised imported track construction equipment, investment in rail revitalisation to construct a high-performance national rail network and associated rolling stock, could sustainably absorb significant unemployment.

During the construction of railway track, both unskilled and semi-skilled temporary on-site construction jobs are created. Similarly, the construction of a modern rolling stock factory creates skilled, semi-skilled and unskilled temporary jobs. Construction of trainsets creates permanent skilled jobs. In both cases, there is also a job-creation multiplier effect in the upstream supply chain.

The total capital investment, probably the country's largest public works project ever, will sustain a substantial number of jobs over a minimum 20-year transition period.

They will spread across the country and support construction and rail supply industries. The former will enable construction companies to establish and populate specialist rail divisions; the latter will provide ongoing work for an industry that the Industrial Policy Action Plan has already reinvigorated on the back of locomotive and multiple unit

contracts. The benefits will permeate the country's socio-economy much deeper and wider than only the abovementioned jobs, through flow-down to job holders' families, job multiplication through contributions from lower tier suppliers, corporate social investment by participating entities, and a general economic uptick as a high-performance, inherently competitive railway does the country's logistics and mobility heavy lifting.

Policy statement

Government endorses the package of rail revitalisation investment intervention as a substantial contribution to create direct and indirect unskilled, semi-skilled and skilled jobs, thereby stimulating economic growth both on-site and nationally. This will assist in reducing unemployment, specifically amongst the youth and women.

The DoT will engage with the DTIC and industry to ensure highly specialised normally imported mechanised track construction equipment are localised and construction projects are configured to actively promote low-skilled job creation in a balanced cost-effective manner without detracting from quality or project timelines.

In advance of the National Rail Masterplan rollout, DoT will engage and ensure:

a) the Department of Higher Education develops sufficient skills in advance of projects;

b) the Department of Public Works and Infrastructure (DPWI) provides smaller 'sandbox' projects where these skills can be commercialised; and

c) the DPWI's Construction Industry Development Board (CIDB) establishes risk-mitigated accelerated pathways for local supplier accreditation to Level 9 to happen in time to participate.

6.1.9 Gender equity

Issue

The National Development Plan (NDP) 2030 clearly pronounces on building a more equitable society where "opportunity is not defined by race, gender, class or religion.

By 2030, we must ensure that skilled, technical, professional and managerial posts better reflect the country's racial, gender and disability makeup". The NDP 2030 also recommends implementation of an overall approach to eliminate gender-based

violence is "to address all facets of society that cause and condone such behaviour. Among other remedies, an effective criminal justice system is needed to address gender-based violence where and when it occurs. Preventing it from occurring requires a concerted effort from all sectors of society to address social, economic and political inequality among men and women".

Gender-sensitive mobility planning aims to ensure fair and equitable opportunities and equal outcomes for women and men as passengers, commuters and workers in the rail sector.

Policy statement

The DoT will develop women in rail strategy and establish a mechanism to monitor progress. Specifically, the DoT will establish a set of targets in consultation with SOE's and operators for gender-equity and representation across the industry by function, and develop a set of gender-sensitive mobility planning indicators to ensure equal outcomes for women and men during rail transit.

6.2 Enabling interventions

6.2.1 Economic Regulation

Issue

A study on Rail Regulation conducted by the World Bank (Campos and Cantos) pointed out that "Rail companies are, in most cases, multi-product firms that provide different types of freight and passenger transport services. In the case of freight, together with the usual transport of bulk freight, rail operators also supply complete cargo wagons or trains, as well as other services of intermodal transport. In the case of passenger transport, long-distance traffic usually coexists with local services (suburban and commuter trains), regional services on certain corridors or routes. The implications of the multi-product nature of the activity can be examined at different levels. At the accounting level, for example, it is often difficult to allocate total operating costs among services. For instance, many of the costs of running a long-distance train (including not only infrastructure costs but also variable costs) are shared by different types of traffic and these joint costs coexist with other costs not affected by changes in output.

Some cost elements may be attributable to a particular traffic (for example, passengers), but most of them (wagons, energy, staff) may not. Thus, cost interdependence requires simultaneous decisions on prices and services, which, in practice, makes any regulatory task much harder."

The revitalised rail sector will have a more complex array of actors and stakeholders than heretofore. Their different interests will require economic regulation to ensure the sector's fairness and long-term sustainability.

An Interim Rail Economic Regulatory Capacity (IRERC) has been established to guide the strategic direction for implementing economic regulation in the rail sector. The main objectives of the IRERC are to develop skills and capacity in the area of rail regulation, to collect data and information on the structure and performance of the rail industry, to benchmark and develop frameworks to guide regulation, and make concrete recommendations on the future scope and design of economic regulation and enforcement in the rail transport sector.

Monopoly within the rail sector needs attention. Price regulation may moderate monopoly profits, but can do little to increase productive output to the level that a competitive market would achieve with the appropriate technology base. Introducing regulated on-rail competition is essential for determining the true demand for freight rail service that must be used to design investment interventions.

Policy Statement

The economic regulation of Infrastructure Managers as an intervention will play a vital role in providing regulatory certainty to multiple rail sector actors, which is fundamental to successful rail revitalisation. A Transport Economic Regulator will be established which will determine economic regulatory instruments and procedures to be applied to the transport sector.

In exercising railway economic regulation functions for the rail sector, the TER must:

a) Exercise independent economic regulation of rail infrastructure, facilities and services in line with national strategic objectives such as the National Development Plan.

b) Promote non-discriminatory and equitable access for private sector participation to rail infrastructure and facilities, as well as fair and transparent

pricing and associated terms and conditions for access, including penalties for non-compliance with access terms and conditions.

c) Regulate the provision of adequate, affordable, efficient and sustainable rail services within adequate service quality levels, as well as market exit.

d) Promote efficiency in transport facilities and services by facilitating competition through private sector participation and promoting appropriate investment.

e) Promote the principle of user pay and cost recovery, benchmarked against international best practice, to ensure that costs are globally competitive and applied where deemed appropriate to ensure an appropriate return for infrastructure providers.

f) Investigate complaints and conduct market enquiries where necessary or requested by a competent authority.

The IRERC model will be utilised as an interim arrangement for economic regulation within its mandate until the TER is established. In terms of the Economic Regulation of Transport Bill, the scope of regulation of the rail sector will be confirmed through the process of conducting market inquiries and making a determination of essential facilities to be regulated, which may impact on the pricing methodologies of infrastructure owners.

Given the multi-product firms that provide different types of freight and passenger transport services, as well as the capital-intensive nature of the industry, a system-wide approach to price controls could be deemed more appropriate for the rail sector. Current infrastructure owners may continue to use a system-wide approach in its pricing until the scope of regulation of the rail sector has been determined by the TER, at which time the appropriateness of a system-wide approach will be examined by the TER, subject to price controls set by the TER.

6.2.2 Safety Regulation

Issue

Rail safety is regulated by the DoT's Railway Safety Regulator (RSR) established by the Railway Safety Regulator Act no. 16 of 2002 "to provide for the establishment of a

Railway Safety Regulator; to provide for its objects and functions and for the manner in which it is to be managed; to provide for its staff matters; to provide for safety standards and regulatory practices for the protection of persons, property and the environment; and to provide for matters connected therewith".

The RSR regulates: network operators accountable for the safety of a network or part thereof (including the proper design, construction, maintenance and integrity of the network), ensuring compliance of rolling stock with the applicable standards of the network, or for the authorising and directing of the safe movement of rolling stock on the network; train operators responsible for the safe movement of rolling stock on a network, safety and integrity of rolling stock, and safety of freight or persons being conveyed; station operators in control of a station and the management of a station; or a combination of them in terms of railway safety. The RSR with far-reaching powers regulates each operator in terms of its respective permit and associated Safety Management System (SMS).

It is noted that rail safety complements rail revitalisation:

- Not only are the nominal non-vital wayside wired train control technologies outdated and expensive to source and maintain, but they have embedded a systematic cost of risk in the rail network. Presently, apart from security management issues dealt with as a separate policy statement, there are significant challenges in the freight and passenger rail system which suffers from collisions and derailments, while operators struggle with: the technical condition of railway infrastructure and rolling stock, train integrity, predictable train braking, management of obstructions, speed limit adherence, limit of authority compliance, signals passed at danger, unsafe platform train interfaces, people struck by trains, level crossing accidents, and other adverse human factors.

- According to the RSR's State of Safety Report (ASoSR) 2020/21, despite a COVID-impacted reduced service, operators still reported 2 024 operational occurrences against the 10-year average of 4 218. For the 2010/11 to 2020/21 reporting period, on average 587 Fatality and Weighted Injuries (FWI: 10 injuries are equivalent to 1 death) resulted from operational occurrences. Fifty- nine per cent of these resulted from people struck by trains during movement of rolling stock, which was almost always fatal. Human error

elements such as the lack of critical properly trained and skilled safety employees, fatigue, and the disobeying of safe working procedures, are some of the root causes of railway accidents in the country. This is further exacerbated by poor railway infrastructure which leads to over-reliance on human elements which is naturally prone to errors.

- While safety management must be addressed with urgency, investment in standard gauge assets opens multiple opportunities for a fresh start at the same time, unfettered by the country's existing rail technological heritage which, amongst other limitations, has generally lower safety resilience than other high-performance railways.
- Furthermore, shifting traffic from road to rail potentially reduces fatalities per billion passenger-km by a factor of approximately fifty, while dedicated high-speed lines are virtually fatality-free.

Policy Statement

The RSR shall, complementary to its current statutory responsibilities, after consultation with relevant stakeholders, develop a railway risk matrix that balances the severity of harm against the probability of its occurrence, and align the risk levels with best global railway practice, to achieve an inherently safe railway.

The RSR will ensure its permit cost methodology reflects a measurable direct and indirect cost of risk whilst incentivising improved railway safety.

The DoT shall align with the RSR to ensure that infrastructure and rolling stock technologies, incorporated in revitalisation interventions for Cape gauge and standard gauge rail, provide a quantifiable and acceptable residual safety risk.

In order to enhance the human factor elements of railway safety, the Railway Safety Regulator will oversee the registration and licensing of safety critical grades in line with applicable regulatory frameworks.

6.2.3 Security Management

Issue

During the Security Alert Levels (lockdowns) due to the Covid-19 pandemic, operators experienced a significant increase in theft and vandalism. In absolute numbers, it

seems that there has been some improvement in the risk profiles of railway operators, specifically for Transnet Freight Rail and PRASA.

Operators have been exposed to a growing trend of security-related incidents since 2013/14 with a sharp rise in 2020/21 following a correction in 2019/20. Since 2013/14, theft and malicious damage to property (vandalism) made up 88 per cent of all reported security-related incidents. Although the increase in the ratio of security-related incidents to operational occurrences increased by 160% between 2010/11 and 2020/21, this is amplified 2.85 times when normalised per million train km.

According to the RSR's State of Safety Report (ASoSR) 2020/21, security-related incidents increased by 8 per cent overall between the 2018/19 and 2019/20 reporting periods, and by 113 per cent since the historic low of the 2013/14 reporting period.

Despite the SAPS being organised territorially, which complicates law enforcement on trains which traverse many jurisdictions en route, while authorities fall only within a specific jurisdiction, safety of passengers increased since 2010/11. Fatalities due to security-related incidents decreased by 7 per cent since the 2010/11 reporting period and decreased by 300 per cent since the historic low in the 2012/13 reporting period.

The long-standing destructive trend of theft and vandalism places all operations at significant risk and must be arrested if South Africa is to exploit the rail mode to its fullest. Fuelled by unscrupulous scrap metal dealers, the theft of cable, rail track and infrastructure has decimated large parts of the PRASA commuter rail network and many parts of the Transnet freight rail network.

Protection and security for rail assets, freight and passengers at railway stations and other fixed facilities, as well as on board freight and passenger trains, must be seen in the context of the need to provide reasonable security at other transport facilities, routes and public premises throughout the country.

It should be noted that the Public Finance Management Act no 1 of 1999 obligates any rail entity that its "accounting authority must exercise the duty of utmost care to ensure reasonable protection of the assets and records of the public entity".

Policy Statement

The DoT shall engage the Minister responsible for the Critical Infrastructure Act No 8 of 2019 to obtain a departmental seat on the Critical Infrastructure Council ("CIC"), and then use the railway occurrence reporting, as defined and reported on in the Railway Safety Regulator Act no 16 of 2002, to inform proposed rail sector interventions and countermeasures by the CIC.

The DoT will fulfil an important coordination and oversight role to ensure that appropriate plans are developed and implemented in a timeous manner, and that collective experience and advanced technologies are deployed to address the very serious security challenges in the railway sector.

The DoT in consultation with the DPE and operating entities will develop an overarching rail sector security strategy and plan. The RSR will develop and maintain a central security risk register to help ensure sectoral resilience and threat awareness. The register will maintain central visibility of the diverse security risks and their potential impact on the network, will ensure ownership of risk is maintained at the appropriate levels, will collate a record of security incidents, and will help operators and infrastructure owners formulate cost-effective, proactive intervention plans to mitigate risks based on their impact and severity.

In recognition of the fact that addressing the current security challenges in the rail sector will require a whole-of-government approach, the DoT will establish a specific security coordination forum where SOEs, the country's security agencies, including national and local police, as well as local and provincial governments, can share information on recent and emerging developments, share experiences on the use of, and proposals for, the deployment of advanced security technologies and practices, align on issues of implementation, agree on the exigencies of areas of cooperation, and discuss progress on the implementation of measures to address ongoing and emerging challenges.

The Department will leverage its position to support the development of research and thought leadership in managing the security challenges in rail, building on the lessons being learnt by practitioners and operators, and will develop an evidence-based set of best practice guidelines to inform the planning of implementing agents.

Operator-owned or outsourced security services will provide first line defence in the rail setting. They will manage safety and security as well as protect assets, passengers and personnel. They will also address fixed facility requirements, e.g., emergency communications, lighting, perimeter protection and surveillance, etc.

The Department will develop in consultation with SOEs, the specifications for security requirements to be included in Service Level Agreements between rail operators and IMs.

The Department of Transport will engage the Minister of Police to strengthen the South African Police Service (Railway Police) as a dedicated pro-active law enforcement division within the rail setting, for both fixed facilities and trains, including the rail infrastructure declared as National Key Points.

The RSR will ensure permitted operators include in their Safety Management Systems (SMSs) costed, resourced and time-bound action plans to address the ongoing security challenges being experienced in the rail sector.

The IMs, together with Government agencies, will ensure that planning is implemented timeously, and that railway infrastructure is protected from vandalism, theft and sabotage.

6.2.4 Skills Development

Issues

The rail sector employs only some seven percent of the country's transport industry workforce, but uses many systems and technologies that set it apart from other transport modes and other industries. Skills development must therefore rest to a large extent on sector initiatives, and resumption of new investments such as Gautrain, Transnet locomotives and PRASA commuter trains, has re-established skills development channels. Nevertheless, there is still a way to go, as the following challenges indicate:

a) The quality and quantity of job market entrants cannot meet demand;

b) The number of critically skilled staff is inadequate;

c) Education institutions that address rail-specific needs are inadequate;

d) Training facilities for rail-specific safety critical skills are inadequate; and

e) A new retiree generation gap endangers institutional knowledge retention. A competitive, revitalised rail industry will set the stage to attract the right calibre of job seekers.

Policy Statement

The DoT will take custodianship of a skills audit and tracking process to identify ongoing sectoral needs and promote targeted rail skills development, to prepare people for employment opportunities at all levels, as an integral part of its investment plan to reposition the rail sector as the backbone of the country's land transport by 2050.

The DoT will lead the rail sector skills development agenda in consultation with the Department of Higher Education and Training, universities, technical vocational education and training (TVET) colleges, SOEs, and private and government-owned research institutes.

Operating entities will prepare, manage and deliver, in consultation with government, workplace exposure and rail skills development programmes in support of rail revitalisation.

The supply industry will build on Industrial Policy Action Plan achievements. Operating entities will manage and deliver skills development programmes where workplace exposure is required.

6.3 Freight Rail

6.3.1 Market and Organisation Structure

Issue

The market structure will be split between infrastructure and train operators. The infrastructure could be further split between Infrastructure Owners, Infrastructure Managers and Train Operators. These functions could be provided in totality by any combination of vertically integrated entities on condition of clear accounting separation.

At present, both PRASA and TFR have adopted a vertically integrated organisational structure, which is shared by many successful passenger and freight railways across the globe.

In many countries policy makers have been debating the various pros and cons of vertical separation in order to determine if organisational reform is a viable means of improving the performance of their rail sectors. Despite the various structural and ownership reforms that have occurred in the rail sector around the world, no clear model for achieving this objective of enhanced competition and efficiency has yet been found.

A key insight, however, is that separation is likely to be more successful in some parts of the network compared to others. Different systems, with varying densities, operating conditions and levels of efficiency, can be the reason for different results.

The situation in UGT, with high safety standards, dense traffic with high coordination costs and often government subsidies, means that separation can potentially be very costly. Circumstances in rail freight appear somewhat different. In freight markets with low density and long distance, separation and the introduction of competition, could generally be expected to lead to efficiency gains without too much increase in the costs of coordination. However, in the case of high-density bulk freight, separation can improve levels of competition and efficiency, but lead to substantial increases in coordination costs.

On the other hand, if the rail industry is characterised by the existence of large, inefficient, government-owned companies, then the introduction of a combination of competition and separation can lead to substantial efficiency gains.

Policy statement

Separation may take a variety of forms ranging from complete separation of the provision of track infrastructure from the operation of passenger and / or freight trains, to putting in place third-party access arrangements so that track services may also be provided by an incumbent train operator. The latter can take place with a vertically integrated entity that has financially ring-fenced track infrastructure management from train operations.

Infrastructure owners, ultimately responsible for ensuring safe operations can be conducted on their track assets, will be the primary concessioning authorities, although the right to concession facilities could be devolved through agreement with another party. Infrastructure managers will maintain and manage the facilities and will be

responsible for safe traffic management functions (allocation of train slots and ensuring safe operations on the assets). Train operators will operate services in accordance with the prescripts of the RSR.

In the transition to a TER, the IRERC will formulate and publish proposals and procedures, by which any qualified third-party operator may apply to, or propose a train service with a view to negotiating and concluding a network access agreement. The procedures shall recognise cases where existing capacity is sufficient, as well as where incremental expansion is required to create additional capacity.

6.3.2 Third Party Access

Issue

At present Transnet Freight Rail provides no access for freight operators on any of its main lines:

- In the case of branch lines, Transnet Freight Rail insists on providing the train operations, traffic management, and even infrastructure maintenance services in its so-called Branch Line Operations Model (BLOM), under subcontract from the concessionaire.
- Main line access to applicant operators is only for a Permitted Purpose defined by Transnet as "the transportation of passengers only and not any freight, excluding water and coal required for own consumption, within the time schedules and operational times as set out in the Agreed Services".
- Access is granted at Transnet's sole discretion "subject to its own commercial and operational requirements of the Transnet Freight Rail and SARCC Networks".
- Leasing of rolling stock and / or maintenance facilities by Transnet Freight Rail to the operator shall not automatically grant the operator access to the Transnet Freight Rail Network.
- Applicant operators must prove compliance with Transnet Freight Rail access conditions, which includes proof of a valid RSR safety permit, compliance with all specified conditions set out in Transnet Freight Rail's Audit Requirements and Risk Assessment documents, and compliance with Transnet Freight

Rail's Act 85 checklist. The operator is also contractually bound by Principles of Safe Movement on Rail (POSMOR); Transnet Freight Rail and Metrorail Operating Rules, Regulations and Instructions (all as amended from time to time); and any other applicable local operating instructions given by Transnet Freight Rail from time to time.

Policy Statement

Every open line whether classified as core, non-core, branch line, or shared freight and commuter line, shall be subject to third party access managed by an Infrastructure Manager (IM) appointed by the Infrastructure Owner of that open line. No IM may refuse or prefer access for a train operator.

The IM acts as the "network operator" as defined in the National Railway Safety Regulator Act No 16 of 2002 and shall be the responsible incumbent for the Railway Safety Regulator (RSR) regulated safety permit required of all railway undertakings. The IM is responsible for the care and maintenance of the line to approved standards, the RSR operator permit, and provision of the traffic management function.

Transnet for the national freight network, and PRASA for its shared passenger and freight network sections, must establish their IMs in accordance with a Traffic Management Function to control access to and manage operations of the large existing national rail network for all routes, except PRASA's three Cape gauge metropolitan networks dedicated to passenger rail only.

Access fees and terms of business shall be published in the public domain. In negotiating network access agreements, the IMs may not discriminate unfairly between the proposed rail operations and the pre-existing rail operations of incumbent train operators.

The DoT through IRERC will have oversight of transparent interim arrangements for access provided by incumbent IMs for all classes of freight network until such time that the Transport Economic Regulator (TER) is fully operational, whereafter IMs will sell train slots at TER approved prices. The TER will establish the access regime that includes compliance and penalties.

IMs must periodically publish a network statement that details Access Conditions, Capacity Allocation, Services and Charges. All access to the existing Cape gauge long-

distance network and the standard-gauge high-performance national rail network shall be overseen by the RSR and the TER, once established, in terms of their respective legislation. IMs of the existing Cape gauge national network and the standard-gauge high-performance national rail network shall provide access to passenger trains. The TER shall regularly monitor the performance of the Transnet IM with regard to its obligations set in the TER legislation and regulations.

All IMs are subject to TER-imposed penalties applicable to agreed events that impose restrictions on train operators such as, but not limited to, non-provision or non-acceptance of agreed train paths, failure of trains in sections, failure of infrastructure in an agreed train path, and inability of trains to maintain scheduled running times.

The TER shall establish an Access Coordination Forum to represent all infrastructure providers, train operators and maintenance service providers. It shall advise the TER on matters such as, but not limited to, detailed access rules and associated terms and conditions, technical standards, non-compliance penalties, as well as, but not limited to, procedures and responsibilities for rail-worthy and train-worthy inspections, unplanned maintenance, emergency services and the associated fees.

The TER, once established, shall establish criteria in consultation with the RSR for determining who becomes a train operator, taking into account inter alia , the need to promote SMME development and introduce new entrants to the rail market with regard to the relative size of operators, their competitiveness and agility.

6.3.3 Intermodal Logistics

Issue

Operation Vulindlela determined "South Africa's production centres are in the middle of the country and minerals are far away from the coast, making industrial and import/export corridor management a strategic priority for South Africa. In 2019, freight demand in South Africa amounted to 446 billion tonne-km (305 billion tonne-km line haul, 132 billion tonne-km last mile and 9 billion tonne-km in pipelines and on conveyor belts). This tonne-km demand is disproportionate to the size of the economy. South Africa's tonne-km demand is almost three times less competitive than the world average; an extraordinary backlog from the outset.

"Despite a constant demand of 25% for rail's overall market share in tonnes shipped

between 2011 and 2019, it only achieved 23% (2011) and 16% (2019). If one excludes all export mining, rail only achieved a corridor general freight market share of 19% (2011) and 11% (2019). Further refinement of rail market share of long-distance palletised freight is even more bleak at 2% (2011) and 1% (2019).

"Since the middle of the 2010s, South Africa's truck fleet increased sharply. Not only did the heavy truck fleet grow faster than GDP, but extraordinary heavy trailer growth is also noticed. This is a result of an extreme efficiency drive. One of the major constraints on vehicle efficiency is depot turnaround time. By using more trailers, the industry is able to increase monetisation of expensive truck horses by preloading trailers, thereby eliminating horse empty legs.

"A return to density on corridors was a major and important focus of all the initial rail policy and strategy documents in South Africa, and the declining trends in rail corridor market share over the past two decades, [more than 16% in 2003 down to just more than 6% in 2020], can be regarded as a major policy failure."

Policy Statement

The DoT must ensure that:

a) A clear strategy is developed to create capacity for and shift the 30 billion tonne-km of rail-friendly general freight identified by Operation Vulindlela research currently on road to rail, in the next two years.

b) New service offerings by the incumbent, and third-party access are introduced in the short term to arrest the low and declining rail density in general freight.

c) Freight is transported for long distances in dense flows via rail between distribution centres, with road providing feeder services at both ends; and

d) The compilation of a road-to-rail strategy is undertaken for agricultural or rural freight in support of the development of rural economies.

e) The reform and investment path will facilitate the quadrupling of the general freight railway by 2050, especially as it creates a significant opportunity over time for many other players to become involved.

f) A stable policy environment exists, that treats rail and road 'slots' in the same way; and

g) DoT rail intermodal integrates with Special Economic Zones and Industrial Development Zones in the National Rail Master Plan.

6.3.4 Funding

Issue

Funding adequacy for the country's Cape gauge national rail network has been problematic since the South African Transport Services (SATS) dispensation, and arguably before that, from the time road transport emerged as a competitor.

Since deregulation of the road transport sector, the returns leveraged from the low-traffic density general freight rail network have been insufficient to fend off aggressive competition from other modes, stifling expansion into new business. To revitalise rail by repositioning it competitively and sustainably, additional sources will henceforth need to be found to fund aggregate rail investment requirements.

Policy Statement

Government will limit its funding contribution to rail infrastructure only, and leave train operators to fund their own rolling stock. This approach will reduce Government's overall financial obligation in respect of the national rail network, while still allowing it to influence the course of rail sector development.

Government's role is to support large scale capital investments in 'rail-and-below' and associated fixed infrastructure that are in alignment with the proposed Rail Master Plan and that have followed prescribed planning processes. This is appropriate given the high capital costs of rail investments and the economic benefits that flow from well-planned and implemented projects. The role of the train operators is to invest in 'above-rail' capital-intensive assets such as rolling stock, based on sound business cases.

The DoT will support the identification and sourcing of funding, additional to that which is raised by Transnet, from other sources, including but not limited to the equity and other long-term sources mentioned below.

Access fees paid by operators, or by sponsors in the case of subsidised services, will fund the Infrastructure Manager's cost of operations, including maintenance of the track and the rest of the permanent ways, stations and yards; and provision of the traffic management function.

6.3.5 Private Sector Participation (PSP)

Issue

PSP in the railway sector increased significantly during the 1990s in developing countries, with the financial crisis being a major driving force. As a result, these countries have had to explore PSP approaches as a way to augment public resources. The leveraging of the private sector through PSP in economic infrastructure projects has been an opportunity to harness skills and expertise from the private sector. There are several choices available for Government to take advantage of PSP, and the preferred model a country chooses will depend on that particular country's transport policy objectives. Globally, the predominant form of private sector involvement has been long-term concessions.

South Africa finds itself in a similar situation, where the current funding sources available to both the rail freight and passenger transport SOCs is inadequate, impacting negatively on these SOCs' ability to meet the level of service and infrastructure investment required. The high levels of borrowings and gearing facing SOCs, such as Transnet, exacerbates investment challenges, with the series of credit rating downgrades and the outbreak of the COVID-19 pandemic (pandemic) further intensifying investment challenges.

The pre-pandemic NDP earmarked the development of infrastructure as one of the key drivers for delivery on the aimed-for economic growth in South Africa. Increased infrastructure investments are required to meet the country's growing demand and eradicate historical backlogs. The NDP targets an increase in public infrastructure investment from the current level of 6.5% of GDP to 10% of GDP by 2030. The critical role that transportation plays in the economic growth of a country cannot be overly emphasised. Transport demand, both freight and passenger, is linked to the level of economic activity and developmental needs as it runs parallel to the growth of GDP.

The October 2020 South African Economic Reconstruction and Recovery Plan, with the ultimate end goal of pursuing an infrastructure-led economic reconstruction and recovery by reforming network industries through investment in infrastructure, has rekindled the urgency required to intensify efforts for partnering with the private sector.

Government's infrastructure delivery plan prioritises network industries to support a long-term increase in the productive capacity of the economy with the potential to

crowd-in additional private sector investment.

As part of prioritising infrastructure development for network industries, the modernisation of rail freight and passenger transport will receive immediate attention.

Transnet Freight Rail maintains a train operating monopoly on its Branch Line Concession programme:

- Transnet Freight Rail reserves the right to be the Train Operations Maintenance Provider. It defines a Concession as "the exclusive right to offer and render the Rail Freight Service and Passenger Services in respect of the Branch Line and the obligation to perform and undertake the Infrastructure Services including, but not limited to, the development of storage facilities, tourism and telecommunication opportunities and related ancillary services in all instances subjected to the terms and conditions of this [Concession] Agreement and the Ancillary Agreements".

- A Concessionaire is defined as "[a company] including any entity subcontracted by the Concessionaire to undertake Infrastructure [Operations and Maintenance excluding Traffic Management] Services but excluding the Train O&M Provider [Transnet Freight Rail] which would render, inter alia, the Train O&M Services [including Traffic Management]".

- "If the Concessionaire subcontracts another entity to undertake any Infrastructure Services (or substantial portion thereof), then such entity will be defined as the rail infrastructure services provider, and its subcontract with the Concessionaire will be annexed as a schedule to the concession agreement, with the proviso that no change of such subcontractor or amendment of such subcontract may be made without Transnet prior approval."

Policy Statement

Government appreciates that, although PSP appears to be a ready funding source, the modalities of realising that potential are complex and delicate.

It is against this backdrop, that the DoT will spearhead the development of a PSP Framework for the rail industry. This framework will aim to guide the collaboration

between the major SOCs and private sector companies to deliver new economic infrastructure projects in order to augment the current level on infrastructure projects.

The DoT recognises the important role that PSP can play in bridging investment and improving operational and managerial efficiency in the rail industry.

The department will therefore pursue policies that will create a conducive environment for PSP and will promote PSP in the provision of transport infrastructure and services. This pursuit of PSP should, however, not be construed as the privatisation of the South African Railways as there is no such policy reform on the table.

The PSP Framework for rail will cover broad railway PSP issues, ranging from the South African PSP context, different forms of participation, a clear procurement framework and the role of rail economic regulation, as well as detail on the number of opportunities and the areas of PSP in the rail industry.

Government will also consider the establishment of a dedicated concessioning authority and oversight unit responsible for overseeing the rail PSP process, with the capacity to engage all role players and facilitate the fair allocation of risk amongst all participants.

6.4 Passenger Rail

6.4.1 Urban Guided Transit (UGT)

Issue

Road congestion in the country's metropolitan areas is increasing relentlessly. Peak hour travel time is on average double that of the off-peak. People are consequently changing their travel behaviour and those who are able, shift their daily activities to travel outside the peak hour, a phenomenon known as peak spreading.

Metropolitan populations will experience further significant growth over the next decade, due to economic growth and urban migration, which will increase travel demand and car ownership, especially in Cape Town, eThekwini and Gauteng. Although future road plans exist, they do not keep up with increasing travel demand, and funding for their implementation is limited. If current trends continue, the road network will be unable to accommodate the traffic growth, resulting in worse congestion and ultimately in gridlock. Furthermore, travel demand immediately before and after peak periods will also increase, resulting in longer congested periods that make peak

spreading impossible. High congestion levels and long travel times negatively impact economic growth and commuters' quality of life. Crucially, all road-based transport is vulnerable to such service deterioration, while global socio- economic drivers and technological advances have substantially broadened UGT's solutions spectrum.

Transport Planners, in developing solutions for urban guided transit, do not presently have access to the full spectrum of technical solutions available i.e., heavy metro, automated light metro and light rail, automated guided transit, monorail and BRT (bus rapid transport). Failure to appreciate available technical solutions leads to sub-optimum minerals investment. Furthermore, metropolitan Integrated Transport Plans (ITPs) have a five-year horizon, thus making it challenging to include long-term assets such as rail in these plans.

Policy Statement

Government acknowledges that substantially enhanced urban guided transit (UGT) capacity is one of the most pressing transport problems currently confronting it.

Where the current urban rail network does not yet reach, and the need for rail services occurs, municipalities should also consider the development of other light rail systems such as streetcars.

The most appropriate UGT mode or sub-mode should be deployed to optimally align public transport solutions with transport demand in each urban corridor. Therefore, in developing such solutions, transport planners must consider the full spectrum of available UGT solutions.

Government will ensure that there is sufficient flexibility in guiding policy and strategy documents, as well as in grant frameworks supporting the development and operation of public transport, to allow municipalities to consider the implementation of the full spectrum of UGT modes viably and sustainably.

Where urban guided transit is indicated and shown to be feasible and sustainable, local authorities shall plan for the sub-mode with the highest appropriate capacity to form the backbone of their Integrated Transport Plans in consultation with the central Planning Component (Authority). Where UGT modes are implemented, they shall be planned to integrate with existing services so as to maximise the network benefits of the investment.

6.4.2 Regional Rapid Transit

Issue

The regional rapid transit rail sub-mode covers longer routes at higher speed in or near large city-regions or conurbations: Gautrain is the country's first example. It enables people to enter conurbations from outlying areas as urbanisation expands, to connect over fairly long distances within them, or to traverse them, without contributing to road congestion or becoming snarled up in it. It is sometimes known as suburban rail elsewhere in the world, or commuter rail in North America. Maximum speed is usually at least 160km/h and may go as high as 200km/h. Journey times are competitive with private cars, although maximum speed is too low to compete with air. Passenger train service speed should increase commensurately with journey distance to maintain acceptably short journey times, so journeys may even extend to a few hundred kilometres, say Gauteng to Polokwane. Infrastructure may be dedicated, as in the case of Gautrain, or shared with others overall, or part of a route, e.g., national railways and, in North America, freight railways.

Cape Town and the Winelands, eThekwini conurbation and the Durban–Pietermaritzburg corridor, Gauteng–Bloemfontein, Gauteng–Polokwane, Gauteng–Rustenburg and Mthatha–Buffalo City–Port Elizabeth, have regional rapid transit potential.

Policy Statement

Provincial governments shall develop business cases for further deployment of regional rapid transit, to integrate urban guided transit, i.e., heavy metro and lower capacity UGT sub-modes, and high speed or higher speed long-distance rail, to:

a) Maximise the total national economically-justifiable passenger rail catchment area by 2050.

b) Maximise the connectivity between urban, regional, higher speed and high-speed rail systems, as well as airports and their catchment areas.

c) Voluntarily minimise the number of motor cars that traverse urban areas by providing affordable, convenient, safe and secure rail service.

Note that, depending on economic geography and built environments, some of these goals may overlap. In such cases, solutions should complement rather than duplicate

one another.

6.4.3 Long-distance Passenger Services

Issue

By 2050, urban rail plus a dedicated high-speed route or two will not accommodate all the country's passenger rail requirements. Other authorities will have adopted Gautrain-type regional rapid transit solutions, and opportunities or potential for higher-speed medium and long-distance passenger services on portions of the high-performance national rail network will have emerged.

Classic 90km/h long-distance passenger trains currently require access to Transnet Freight Rail's freight-oriented Cape gauge national rail network, to deliver socio-economic services. Government may be obliged to retain them until it becomes economically feasible to introduce high speed trains on dedicated routes. Long-distance passenger rail service on non-high-speed routes will however remain beholden to the national rail network, initially on Cape gauge until it is re-gauged to form the standard gauge high performance national rail network. Mixing freight and passenger trains on shared infrastructure is neither easy nor impossible, but the traditional expedient of assigning priority to passenger trains by train working rule is no longer defensible in a business setting where both freight and passenger train operators must commit to specified arrival times.

Shosholoza Meyl is currently not fully funded and uses the Transnet Freight Rail national network for its operations. It provides paltry service for low-income travellers at ever decreasing frequency. However, because it is unfunded does not mean that its services cost nothing to provide: They currently come at the cost of reducing the quality and quantity of PRASA's other services. The Shosholoza Meyl service has all but ceased to operate as theft and vandalism on the Transnet Freight Rail routes severely impact PRASA's ability to provide services.

Policy Statement

The country is unlikely to find separate freight and passenger long-distance rail networks affordable for the foreseeable future. The DoT shall assess the ongoing value proposition and the competitiveness of the current long-distance services and examine in a robust and objective manner the business case for further investments in long-

distance services.

The DoT-led research programme must develop viable solutions to provide mixed freight and higher speed passenger routes for the current Cape gauge and future standard gauge, especially on the busy Gauteng – eThekwini corridor.

6.4.4 High Speed Rail (HSR)

Issue

HSR complements major conurbations of six million inhabitants or more each, which are separated by a journey of two to four hours duration (there are also many examples outside this range) where it typically displaces long-distance air and road passenger mobility. By comparison with classic long-distance passenger rail, it can bring the following benefits to the country:

a) Mobilise geographically separate areas to behave as a larger whole that multiplies economic opportunities for workers and businesses as a consequence of very much shorter journey times. This phenomenon, known as the agglomeration benefit, achieves higher aggregate economic growth than the sum of the separate areas.

b) Accelerate achievement of developmental objectives through higher economic growth. HSR is an essential enabler for the country's population to participate in ever-expanding economic opportunities, rather than the luxury that some commentators believe it to be.

c) Shift traffic from air and road to rail: HSR is the middle-distance overland passenger transport mode of choice.

d) Continue to provide sustainable long-distance mobility when rising energy prices have drastically curtailed air travel.

HSR operating at 300km/h or more requires dedicated infrastructure. The three-way contention between line capacity, track maintenance and crashworthiness is simply too great to contemplate low speed traffic on high-speed routes.

The NDP identifies mobility as a key function that cuts across the economy, environmental sustainability, spatial transformation, global connectivity, state

capability, social cohesion and health. To function optimally, South Africa needs reliable, economical and smooth-flowing rail corridors that act as the backbone of public transport in linking the various modes of transport.

HSR systems reinforce accessibility and strengthen inter-regional as well as intra-regional relations. Salient features provided by HSR includes decrease in travel time, improved safety, comfort, punctuality and frequency of train services. HSR intensifies intercity economic links and over time, creates an urban/regional development ecosystem along the HSR corridor region.

Policy Statement

The DoT will develop a HSR Framework to provide the foundation for the prioritisation of HSR corridors in South Africa. The framework will determine the strategic objectives for HSR in South Africa and determine the criteria to be used in determining and prioritising HSR corridors. Feasibility studies on proposed high-speed rail services will be conducted by the DoT based on the framework. This criterion varies from country to country; however, the following criteria are universal and will be considered:

a) metropolitan population size, pairing of cities and existing transit systems;

b) socio-economic impacts on city pairs and combined per capita GDP;

c) distance, transit connections, mega region location and level of highway and airport congestion levels; and

d) demand forecast for passenger volumes and financial feasibility.

6.4.5 Funding

Issue

Urban rail and urban guided transit: Government's capital allocation has increased significantly in recent years to modernise infrastructure and rolling stock, to position the sector to serve as an urban mobility backbone. However, the capital investment programme will take many years to achieve its intent. Only then, with greater market share and higher ridership, will it realise more cost effective and sustainable operations. Meanwhile, PRASA's operating subsidy is not concurrently trending upward, resulting in an unsustainable shortfall. Noting further the substantially increased capacity that rail and urban guided transit must contribute to avoid intolerable road congestion, and to support climate change mitigation, all spheres of government

will need to revisit the quantum of funding contemplated for UGT.

Regional rapid transit: The country's first application was a PPP (public-private partnership) between Gauteng Province and a concessionaire, which enabled the province to bootstrap its rail capacity in quick time. The model has demonstrated workability in situations where a concessioning authority's payment obligations and a concessionaire's service delivery obligation can be precisely aligned and specified.

Long-distance and higher-speed passenger services: Existing Shosholoza Meyl services are being reviewed. Depending on financial viability, it may be necessary to fund higher-speed long distance services on the high-performance national network.

High speed: This sub-mode typically involves complex funding arrangements that, in addition to customary commercial and national sources, may include export credit, foreign direct investment, inter-governmental agreements and supplier credit. As a greenfields project in the country, with limited or no inter-operation with the rest of the high-performance national rail network and or regional rapid transit networks, it will be possible to precisely specify the high-speed system boundary and performance requirements, to minimise project and funding risks.

Policy Statement

Investment in passenger rail networks is a public good and must be funded by Government.

The respective spheres of government must apply their own funds to support rail investments that are included in the Rail Master Plan and within the planning processes relevant to that sphere. The DoT will support large-scale capital investments in passenger rail infrastructure that are in alignment with the proposed Rail Master Plan and that have followed prescribed planning processes. Beyond that, as in many countries, the responsible authority may engage other interested entities to co-fund passenger services and or attract private sector participation, thereby to leverage their ability.

Government will continue to review its allocation for operating subsidies to fund the cost of meeting the service needs of passenger rail to the extent that operating revenue falls short of operational costs of efficient and cost-effective passenger rail services.

Municipalities and provincial governments will prepare strategies and funding

proposals for funding a shift from road to rail as part of their planning processes (ITP / IPTN / BEPP). The DoT must review the urban passenger transport funding mechanisms and support municipal and provincial governments where proposals are found to be feasible.

6.4.6 The future of Urban Rail

Issue

Around the world, urban rail generally has always been a local government function. It is better managed at local level by people who are in touch with local needs. Most of them are not physically interoperable with national networks because it is not necessary. India and Russia are notable exceptions, both with a heritage of less than exemplary urban rail systems. India has recently devolved urban rail from national government to state governments which implement projects through joint ventures with local governments, an institutional arrangement that is rapidly delivering best practice urban mobility. Russia is moving more slowly in the same direction.

The National Land Transport Strategic Framework (NLTSF) is clear that urban commuter rail management is a local government function. The NLTSF states that local rail services must be procured and managed at local government level, to ensure consistency with local Integrated Transport Plans and urban development programmes. The New Growth Path envisions creating workable urban transit solutions by increasing investment in public transport, resolving existing public transport policy issues, and devolving transport management to local government.

The NLTSF requires that feasibility studies regarding devolution of passenger rail services to metropolitan municipalities be carried out. The existing institutional arrangements exhibit three flaws. First, PRASA is not positioned to mediate contending requests for service from metropolitan municipalities, and indeed experiences a funding shortfall that should not be devolved. Second, any inability to agree on a rail solution simply defaults to a road solution. Third, PRASA's present one-size-fits-all technology is well suited to high-capacity routes, but does not admit lower capacity UGT, thereby once more defaulting modal choice to road for all but the highest density routes.

The NLTSF requires that feasibility studies regarding devolution of passenger rail

services to metropolitan municipalities be carried out. eThekwini and Cape Town have already done so and established Transport Authorities, thereby assuming management authority for urban rail, although PRASA still delivers the actual services. However, their separate bus and rail system maps do not show intermodal interchanges with one another: The arrangement seems to be a work in progress. Ekurhuleni, Johannesburg and Tshwane are engaged in establishing a Gauteng Transport Authority, while Nelson Mandela Bay is investigating the establishment of such an authority. They have already made advances toward urban rail devolution.

Notwithstanding such developments, it has long been asserted that local government does not have the capacity to manage urban rail. Noting that the combined value of assets in the Cape Town, Ekurhuleni, eThekwini, Johannesburg and Tshwane municipalities, excluding vehicles on their roads, is more than six times the value of PRASA's assets, including rolling stock, these metropolitan municipalities have already demonstrated capacity to take on general management of entities the size of the commuter railways in their jurisdictions. Noting further that Gauteng Province got a regional rapid transit railway up and running from scratch in less than five years, one must conclude that the foregoing assertion lacks substance.

Policy Statement

In accordance with National Land Transport Act and National Development Plan provisions, that transport functions be assigned to the most appropriate sphere of government, the DoT will, together with provincial governments where necessary, proactively identify capacity gaps within the metropolitan municipalities, if any.

The department will develop a devolution strategy for the future of urban rail in South Africa in alignment with the Integrated Urban Development Framework. Thereafter it will capacitate municipalities as necessary and devolve operational subsidies for urban commuter rail to all of them to be managed as part of their Comprehensive Integrated Transport Plans. Until the responsibility has been devolved, PRASA shall manage operations and maintenance of their urban rail systems.

The following parameters need to be dealt with in undertaking urban rail devolution to municipalities/Transport Authorities:

a) The institutional framework of the metropolitan region/Transport Authority which will assume the system.

b) The ownership after transfer of right of way and properties located in it.

c) The operating and maintenance model to be implemented by the receiving metropolitan region.

d) Compensation and pensions of existing staff to be transferred.

e) Staffing and operating costs.

f) Evaluation of the operating subsidies in relation to each region

g) The financial capacity of the metros.

Government recognises PRASA's substantial commitments to recapitalise the commuter rail fleet, and that the project development phase requires a stable setting. The next phase of urban rail positioning, assignment of responsibility for managing all urban rail functions to metropolitan municipalities, including planning, funding, procurement, operations and maintenance, shall be initiated once the strategy for devolution of urban rail has been concluded and approved.

Noting however that intolerable road congestion may require acceleration of UGT investment before completion of PRASA's present recapitalisation commitments, requests from metropolitan municipalities for assignment of the urban rail function to them will be considered sympathetically. This acceleration will enable them to increase the contribution of rail-based UGT capacity to their Comprehensive Integrated Transport Plans.

The lighter UGT sub-modes - Light Rail, Automated Light Metro, Automated Guided Transit and Monorail - do not exist in South Africa, so no sphere of government has experience thereof. Nevertheless, to exploit all opportunities for urban guided transit and to initiate movement toward assignment, the aforementioned sub-modes shall, as for BRT, be assigned directly to the municipal sphere of government, as well as to provinces where coordination between municipalities is required. This policy position intends to provide opportunities for building rail and urban guided transit capacity in local government. Where appropriate and necessary, they should use PPPs to concession routes, transfer technology and develop skills.

6.4.7 Passenger Rail Concessioning

Issue

Introducing competition in passenger rail or commuter rail is regarded as unworkable in general as it is subsidised all over the world and intended as a public good that serves the majority of urbanised people.

Consideration to concession should be made in instances where PRASA or SOEs cannot effectively run commuter services or extend the passenger rail service. This will assist the government to achieve its policy objectives of movement from road to rail. PPPs represent an appropriate basic funding vehicle that will include technology transfer and skills development.

Note that while Transnet has some experience in establishing concessions on its network, this will be new to PRASA.

Policy Statement

Government, being aware of the risk associated with the state of the infrastructure to entice private sector investment, will invest in rehabilitation of the passenger rail network to a level where vertically integrated passenger concessions become viable.

Government commits to introducing concessioning of passenger rail lines in support of its strategic objective to move passengers from road to rail. This must be implemented in consultation with the SOEs which own rail infrastructure. PRASA must develop skills to attract and manage sophisticated funding vehicles. Where municipalities, provinces or PRASA identify improvement or extension, they should consider private sector participation as a possible funding vehicle.

6.4.8 Interchange and Intermodal Facilities

Issue

Much of the country's passenger rail infrastructure dates from a time when road transport was a work in progress, airlines were in their infancy, people who travelled by air did not travel by train, feeder and distribution services were not in the lexicon, and ICT had not been conceived. Even major stations in Johannesburg, Cape Town and Durban were rebuilt as long ago as 1951, 1961 and 1980 respectively. The youngest of these is 42 years old, and since then seismic economic, political and social changes have reshaped the country and its notions of integrated transport.

Positioning rail as the backbone of a passenger transport system therefore requires

Intermodal Station Design that recognises the requirements of fitting a railway into its catchment area. Many lessons can be learned from Europe where most of their main railway stations which were built in the 19th and early 20th centuries are well integrated with urban mass transit subway systems (some subway routes are of similar age), with modern UGT, and with bus and taxi road transportation solutions.

Design of complex multimodal public transport systems cannot accommodate every conceivable trip on a single route or in the same vehicle; hence interchange stations are required to connect with other routes and or other rail operators, while intermodal facilities are required to connect with other transport modes. These functions are mentioned separately to distinguish them, but in practice they may be physically integrated and located on the same site.

Exact correspondence between modes, e.g., cross-platform movement, is ideal but neither essential nor always feasible. Hence passengers frequently transfer between modes or routes on foot, for a short while being mode-less and open to alternatives. The minibus taxi industry is adept at creating or finding new opportunities, hence the country's significant railway stations are already abuzz with taxis. Evidently intermodal connections originate spontaneously when there is opportunity to exploit synergy between two modes. Thus, while railway policy must address the facilities required to make intermodal movements convenient, orderly and safe, planning of location and modal mix must rest on findings from evidence-based research.

Policy Statement

Transport Oriented Development (TOD) must be anchored in the DoT's National Rail Master Planning Process.

Government recognises that even in a well-designed and developed mobility system, many passenger journeys will require one or more modal and / or intermodal interchanges. The quality and range of facilities provided at such sites shall ensure a convenient and pleasant experience that encourages passengers to plan their routes without regard for mode, with assurance that any interchanges they encounter will work seamlessly.

Whilst PRASA is responsible for modernisation of its commuter rail stations, local authorities and operators of the railways and other modes involved shall cooperate to provide, operate and maintain modal and intermodal interchanges.

6.4.9 Rail Tourism

Issue

Rail tourism can contribute valuable foreign earnings to the country's economy and create jobs in a labour-intensive industry. Operators such as Blue Train and Rovos Rail sell experiences, not mobility. Short journey time is not a requirement, and frequently longer is better, because it allows broader and deeper experiences for passengers. Cuisine, luxury, natural beauty, nostalgia, places of interest and service are some important constituents of their offers. In addition to normal business and hospitality acumen, delivering such experiences requires enthusiasm and passion, particularly when operating and maintaining steam locomotives and coaches from a bygone era. Such operators necessarily use the rail infrastructure of others: Access to the networks of others is therefore crucial to tourist train owners and operators, but network operators may view them as a nuisance.

Policy Statement

The DoT encourages rail tourism from the perspectives of diversifying the country's tourism offering into its interesting railway heritage, particularly in the global market, and of creating jobs.

Tourist train operators have the right to negotiate a fair access fee with network operators, and an obligation to abide by reasonable conditions that the latter may impose. Rail Tourism as a service offering will be afforded the same third-party access treatment as any other rail service. Once established, the Transport Economic Regulator shall oversee such transactions.

Where appropriate, Infrastructure Owners will approach provincial and local governments to co-fund investment in rail tourism.

6.4.10 Universal Design

Issue

Universal design, sometimes referred to as inclusive design or universal access, involves providing infrastructure and services that accommodate the needs of people with disabilities and people at all stages of life. This policy approaches universal design from the perspective of passengers: Universal design of railway premises for

employees and visitors is covered by applicable national universal design dispensation.

The country's Promotion of Equality and Prevention of Unfair Discrimination Act of 2000, amongst others, requires all levels of government and their agencies to plan and demonstrate how they promote equality and prevent discrimination. This is a universal design access plan for public transport. The country signed its commitment to the United Nations Convention on the Rights of People with Disabilities in 2007.

It has developed a Universal Design Access Plan (UDAP) development framework, which includes rail, to assist authorities such as provinces, municipalities, state-owned entities and transport providers, to develop networks or services that meet National Land Transport Act of 2009 requirements.

The plan provides the means to deal with all universal access issues. It also provides the basis for communication on universal access issues between the transport provider, state-own entity, municipality or province and national government.

Policy Statement

All public transport modes and networks must provide inclusive service to accommodate passengers with special categories of need.

As the government department that carries obligations under departmental and national legislation, as well as international commitments, the DoT shall, in consultation with operators, ensure that all rail infrastructure owners and operators comply with universal design guidelines.

The DoT will implement a compliance monitoring process to assess the status of universal accessibility across the entire rail network.

In line with its Implementation Plan to Guide the Provision of Accessible Public Transport Systems in South Africa (Accessible Public Transport Strategy), all new transport systems and work related to new transport systems must be universally accessible. Existing systems must be upgraded over time to the same standard or to provide the same outcome.

These two elements form the basic UDAP structure. In addition, any funds provided for public transport or to public transport, whether rail or any other mode, shall meet the same goal. Thus, a universal design access plan is required for any form of public

transport that uses funds provided by government.

6.4.11 Affected Corridors and their Timing of Standard Gauge Implementation

Issue

The country's total long-distance rail network, including connections with neighbouring countries, constitutes the heritage that planners must reshape as the major element of infrastructure investment. Rail's relatively low operating costs dilute its relatively high fixed costs as haul or journey distance increases, so commercially viable rail freight hauls tend to be long distance (exceptionally heavy traffic over shorter distances is possible, e.g., a mine exporting minerals through a nearby port).

Classic passenger train journeys tend to be shorter because people are reluctant to undertake long-duration journeys on slow Cape gauge routes. The existing Cape gauge national rail network has therefore defaulted to a freight orientation. Several existing mainlines include portions that are constrained by tight curves with low-speed limits, some as slow as 50km/h. The road highway between Johannesburg and Durban is 29% shorter that the rail route, which follows easier contours along the Tugela River. Such situations are unacceptable for time-sensitive freight services, let alone passenger services. In rolling out remedial infrastructure interventions, the following constraints will determine the actual revitalisation programme timing:

a) The assumption that the present Parliament completes the legislative process, that the National Rail Master Plan is completed within the short- to medium term thereafter, and that engineering and procurement for short lead time (i.e., selected brownfields) projects can commence construction with alacrity.

b) The standard planning-to-operations-commencement cycle must be fast-tracked, as this cycle often takes many years for greenfield projects and somewhat less for brownfields projects which are given fewer land acquisition and environmental impact issues.

c) The disruptive impact of construction on existing national network services, as well as the commercial benefits of strong inherent competitiveness: Completing projects quickly eases both constraints, favouring long corridors such as Gauteng to Cape Town, eThekwini, Musina, Nelson Mandela, and

eThekwini to Cape Town via Nelson Mandela as the foundation of the high-performance standard gauge national network with other routes to follow.

d) Assignment of urban guided transit: No local urban guided transit plans to address road congestion exist at present, so new infrastructure could take 10 years or more to commence operations. Further rolling stock for existing urban networks could be procured in a shorter time.

e) Provincial reserve: The National Rail Policy will advise Transport Authorities to exercise their authority in implementing regional rapid transit: Operations commencement would exceed a decade after enactment.

f) The rate at which the construction industry can deliver constituent projects, and state and private investors sustain the requisite funds flow: From international experience, national gauge-change projects take around 25 years from ramp-up to demobilisation.

g) The opportunity drivers for 300+ km/h trains in the Gauteng–eThekwini corridor could reach critical mass from around 2030 onwards, placing such trains on the critical path for rail revitalisation.

h) Substantial climate change improvements are expected by 2030, while all related interventions must be complete by 2050.

i) The mining industry will lead heavy haul investment requirements in the light of the state and development of global markets for the commodities in which it trades.

Policy Statement

The DoT shall prioritise and accelerate a staggered standard gauge implementation on major rail corridors that will constitute the standard-gauge high-performance national rail network, to ensure that new commercial, industrial, mining and / or residential spatial developments are afforded maximum opportunity to align and integrate their plans with freight and passenger rail transport opportunities.

To the extent that increasing urbanisation extends beyond the natural reach of Cape gauge urban rapid transit, standard gauge regional rapid transit must be provided. Where such routes are conveniently close to portions of the standard-gauge high-performance national rail network, sharing the same infrastructure or right of way must

be considered, together with provision of incremental line capacity for passenger services, so that they do not adversely affect freight services.

The minimum high-performance network will include the important eThekwini to Cape Town via Nelson Mandela, Gauteng to Cape Town, and the eThekwini, Musina and Nelson Mandela corridors, which will ideally be cleared for double-stacked containers and, depending on the outcome of feasibility studies, may also provide capacity for 160- 200km/h passenger trains on some sectors.

Heavy haul lines must be treated separately. The remaining life of existing mines and the life expectations for new mines are germane to contemplating retention of Cape gauge trains or regauging them, given South Africa's success of running the longest mineral trains. The mining sector is best informed and equipped to make the correct call to align rail transportation investment with mining investment.

The DoT shall engage the mining sector to create effective, funded, integrated and responsive rail logistics solutions to support the country's mineral extraction, beneficiation and export objectives.

7 Roles and Responsibilities

This chapter identifies the roles and responsibilities of the spheres of government in relation to the entities that are obliged to deliver freight and passenger rail services in their respective jurisdictions.

The Constitution of the Republic of South Africa of 1996 identifies the legislative responsibilities of different spheres of government regarding freight and public transport. Transport is a function that is legislated and executed in the national, provincial and local spheres of government.

7.1 Department of Transport

The White Paper on National Transport Policy of 1996 identifies the different subsectors of the transport sector, namely airports, pipelines, ports, railways and roads, as well as the cross-modal functions of public transport and freight.

The DoT shall provide regulatory oversight and coordinate all government and other investments in the rail sector. It is responsible for legislation, policy formulation, co-ordination of its implementation, strategic planning and leadership, applicable equally to freight rail and passenger rail. It shall develop and co-ordinate all policy and high-level planning decisions relating to rail revitalisation, to reposition rail as the backbone of the country's land transport system by 2050.

The DoT conducts and supports sector research, to set strategic direction of subsectors and assign responsibilities to public entities and other levels of government. It sets norms and standards, and monitors implementation.

The DoT through the rail planning component will ensure that centralised planning is undertaken. In line with its integrated approach to transport planning, the DoT shall formulate a national rail strategy, to rebalance the historical underfunding of rail, incorporating planning for all sources of rail transport funding, whether public or private.

The Minister of Transport must provide rail regulatory oversight to all railway entities to ensure that they comply with the National Rail Policy. By accepting funding responsibility for the existing Cape gauge national network, in addition to its existing responsibility for PRASA's metropolitan networks, and later the standard-gauge high-performance national rail network, the DoT will have assembled a public rail network,

comparable in principle to the public road network, to which the TER will regulate access.

7.2 Department of Public Enterprises

The DPE as part of its responsibility to ensure the implementation of the National Rail Policy, will, inter alia:

- Conduct shareholder oversight of Transnet and its rail-related subsidiaries and divisions with specific focus on optimal governance and value creation.
- Ensure optimal restructuring of Transnet rail-related businesses to enable operational effectiveness and efficiency.
- Participate in government forums aimed at effective coordination between the policy, regulatory and shareholder management functions of government.
- Promote, as part of good governance, compliance by Transnet and other SOEs in its portfolio, with government's rail-related legislation, policies, strategies and regulations.
- The DPE must consult with the DoT in the development of a strategic intent statement and the shareholder compact of Transnet and its rail-related businesses.

7.3 PRASA

PRASA will continue to operate urban commuter rail and long-distance passenger rail, under the guidance and support of the DoT until the strategy for the future of urban rail has been approved.

PRASA will manage the current rolling stock recapitalisation programme until the last contract has been executed.

7.4 Transnet

Transnet's Freight Rail division will be most affected by the National Rail Policy pronouncement on third party access to the national rail network. TFR will therefore become both a rail asset owner, rail infrastructure manager and a train operator.

To enable third party access to the rail network, it will be necessary to determine corridor specific rail network access charges. Incumbent operators must therefore ring-fence their infrastructure endeavours in terms of accounting practices to make these figures credible. Third party access charges will be a function of the costs associated with these infrastructure related actions.

Transnet Rail shall manage national rail network operations and maintenance. It shall strive to maximise utilisation of line capacity. It shall also manage implementation of the infrastructure investment initiatives envisioned in the National Rail Policy and associated strategic plans. Strategic planning and funding of expansion, and the extension and upgrading of the public network assets shall be the responsibility of the DoT, except as otherwise agreed in whatever private sector participation arrangements may emerge. Ultimate ownership of public rail infrastructure will remain with government regardless of any private sector participation, but with due protection of the latter's interests.

Existing inspection and maintenance facilities, geographically distributed to serve the entire country, are currently all owned and operated by Transnet Engineering (TE). Third party operators may need their services, although they will be free to either undertake their own inspection and maintenance or outsource it to specialists in accordance with the prescripts of the RSR.

It is important for future rail sector skills development that Transnet's human capital currently involved in network infrastructure and train operation, be retained as it is essential for National Rail Policy implementation. Current expertise will have to lead development of skills for the expected much larger, future rail sector.

7.5 Transport Economic Regulator

The Transport Economic Regulator (TER) is to be established in terms of the Economic Regulation of Transport Bill. It is intended that the TER will oversee regulation of all transport modes, including rail. The Bill deals with the following aspects of economic regulation of transport facilities and services: price regulation, economic oversight of regulated entities, complaint investigation by the regulator, review of the regulator's decisions and hearing procedures. Establishment of the TER will be complementary to the implementation of third-party access to the national rail network.

7.6 Railway Safety Regulator

The RSR must promote and regulate railway safety through appropriate and timely application of the legislated support, monitoring and enforcement instruments.

Whilst railway operators remain responsible for railway safety within their respective areas of activity, the RSR must support and comply with national rail policies and monitor and enforce compliance with its enabling legislation, inter alia by:

a) Granting, amending, suspending or revoking safety permits subject, if necessary, to conditions;

b) Monitoring and enforcing railway safety by way of inspections and the issuing of non-compliance notices;

c) Accrediting appropriate training providers who will provide training and licensing for services in respect of safety critical grades;

d) Maintaining and monitoring a national information and monitoring system; and

e) Advising the Minister on any action or condition within the rail environment that poses a threat of harm or damage to persons, property or the environment, or that potentially does so.

The RSR must oversee management and execution by accredited service providers of a structure for filling safety critical grade positions. The RSR will issue licences for safety critical positions within the appropriate framework.

The following will be the guidelines for the safety critical framework (but not limited to):

a) The provision of training and refresher courses for safety critical grade positions;

b) The assessment of persons applying for safety critical grade licences; and

c) The issue of such licences to persons meeting the required standards.

7.7 Provincial Governments

The NLTA assigns to provincial government responsibility for formulating provincial transport policy and strategy within the national policy and strategy framework, and

planning, coordinating and facilitating of land transport functions in the province.

To revitalise rail and actualise its role as the backbone of an integrated transport system, provincial governments shall align their plans with the objectives and sequencing of interventions pursuant to National Rail Policy, as well as with other DoT strategies and plans. This applies especially to Gauteng, where PRASA's urban rail network operates seamlessly across metropolitan and other local government boundaries as a provincial system but, while the political process is underway, is not yet integrated with other modes and operators under the auspices of a transport authority.

Provinces shall exercise their rail function in respect of regional rapid transit services. Looking towards 2050, provincial governments must consider opportunities to deploy regional rapid transit to increase the reach of agglomeration benefits.

Where metropolitan and local municipalities can benefit from the integration of all public transport modes across their boundaries, the provincial sphere of government must ensure that they establish a coordinating body at a higher level.

7.8 Local Governments

The Integrated Urban Development Framework (IUDF) emphasises integrated logistics and mobility as a vital component of the country's economic infrastructure investment. The IUDF recognises that logistics and mobility, integrated with land-use planning, contributes to creating compact and connected, dense and efficient cities.

Public transport functions are performed more effectively at local level. This ensures more relevant plans, greater alignment between land use management and transport planning, improved accountability to citizens and greater economic sensitivity and nuance in planning. Supported by local government where required by provincial government, the DoT's Rail Planning Component and PRASA will undertake the extensive planning, implementation and operation of passenger rail and other UGT services to meet their future mobility needs.

8 Implementation Priorities

This chapter describes, at high level, the key modalities required to implement the National Rail Policy. High level achievements will generally follow the timing below:

a) Short-term objectives (by 2024):

- Accounting separation of Transnet Freight Rail's Infrastructure Manager and Train Operator completed;
- National Rail Policy approved;
- National Rail Bill enacted;
- Third party access commences;
- Recovery of commuter rail networks;
- Branch Line Concessions commences;
- SOEs publish their baseline network statements;
- National Rail Master Plan completed;
- Devolution of Commuter Rail Strategy completed.

b) Medium-term objectives (up to 2030)

- Local authorities complete planning for additional urban guided transit corridors;
- Commencement of the National Rail Master Plan implementation on priority corridors;and
- Conclusion of the business case for the first Standard Gauge Pilot Project [selected from freight, higher-speed or high-speed passenger options].

c) Long-Term Objectives (up to 2050):

- Conclude implementation of approved priority corridor projects for freight and passenger rail;
- Rail mode achieving its rightful position in an integrated national transport system; and

- Movement of rail friendly cargo and passengers from road- to-rail achieved.

8.1 Develop a National Rail Act

A National Rail Act shall be developed to realise the final policy positions. The DoT shall develop the National Rail Act, which must address the following:

a) The minimum elements of national rail policy;

b) The DoT's function in respect of developing a national rail policy;

c) The DoT's duty to consult with provincial and other stakeholders on the national rail policy;

d) Mechanism to implement, apply and enforce the national rail policy;

e) Sanctions in the event of non-compliance with the national rail policy;

f) Aspects determined in the national rail policy to receive immediate attention;

g) The mechanism to address a conflict between the national rail policy and the implementation of mandates by relevant entities; and

h) The establishment of a dedicated entity to administer the policy and relevant legislation; and ancillary matters.

8.2 Develop a National Rail Master Plan (NRMP)

Development of a coordinated and integrated Rail Revitalisation Programme is essential to direct rail investment processes in a way that accelerates achievement of policy objectives and maximises return on investment. The DoT shall champion the Rail Revitalisation Programme in conjunction with TFR, PRASA, provinces, local government, transport authorities and other significant stakeholders such as investors, operators, maintainers and suppliers. It shall include all projects associated with the proposed standard-gauge high-performance national rail network, as well as all urban rail projects associated with PRASA's strategic development plans, regional rapid transit projects by the Gautrain Management Agency and/or other provinces, as well as any rail projects undertaken by statutory transport authorities.

The Department of Transport shall establish a Rail Planning Component to develop a National Rail Master Plan (NRMP). It shall articulate the national centralised strategic plan that directs infrastructure investment initiatives over rolling short-, medium- and long-term horizons. The NRMP shall also identify network constraints and opportunities, as well as infrastructure improvements and expansions required to ensure safe, affordable and efficient movement of freight and passengers.

8.3 PRASA – Recovery Plan

PRASA's operational performance has deteriorated dramatically with Metrorail patronage declining from 634 million paying passenger trips in 2008/09 to only 125 million in 2019/20. This decline in patronage reflects PRASA's organisational failure and the decline in the quality and levels of service experienced by low-income commuters in the four largest metropolitan areas in South Africa.

The impact of theft, vandalism and neglect of infrastructure and operational assets, was felt well before the COVID-19 pandemic and resulted in the closure of rail services during lockdown levels 5 and 4. Indeed, the number of assets related to crime occurrences, including mostly theft and malicious damage, more than doubled between 2012/13 and 2019/20, with wholesale stripping of assets occurring during the lockdown periods.

In October 2020, the Minister of Transport appointed the Board of Control of PRASA with a clear mandate to urgently implement a Service Recovery Plan. This plan included accelerating interventions aimed at improving operational performance, expediting implementation of the modernisation programme, a priority focus on security interventions and fencing, recovery of signalling per way and station, undertaking a review of PRASA's organisational design and business model, developing capacity to manage PRASA's capital programme, and building capacity to support interventions aimed at recovering the system by establishing the requisite supplier panels through competitive bidding or other permissible means.

In April 2021, PRASA commenced with the implementation of the Service Recovery Plan prioritising the top ten high volume passenger rail corridors in the country for initial resumption of services. The roll-out plans for the selected corridors is informed by the level of demand for service resumption, the extent of the damage and the time required to recover and rehabilitate the corridor, as well as the exigencies of the roll- out of an

integrated security strategy that will ensure that recovered infrastructure is not exposed to further destruction.

The following ten corridors have been prioritised for full operation resumption between October 2022 and May 2023:

- Pienaarspoort - Pretoria,
- Leralla - Elandsfontein - Johannesburg,
- Naledi - Johannesburg,
- Mabopane - Belle Ombre - Pretoria,
- Saulsville - Pretoria,
- Pretoria - Kaalfontein,
- Daveyton - Dunswart - Germiston,
- Cape Town - Simonstown,
- Cape Town - Khayelitsha/Kapteinsklip,
- Durban - Umlazi, Durban - Kwamash.

The DoT will support PRASA to develop a costed and resourced, timebound and immediately actionable recovery plan, supported by robust monitoring and evaluation mechanisms to ensure the resuscitation of all rail corridors in the short- to medium term.

8.4 Monitor and Evaluate Policy Implementation

The DoT shall develop objectives, indicators and targets as well as monitor and evaluate policy implementation performance against them to ensure adherence. It shall identify deviations and reasons therefore, taking corrective action where necessary. The DoT, in consultation with the relevant stakeholders, shall review and evaluate the policy post implementation at five-year intervals to ascertain its impact on the sector and decide whether there is need for policy amendment.

9 Conclusion

The country's rail challenge cannot be represented as a single problem, but rather as an accumulation of many problems over many years. For most of its existence, the country's rail sector was taken for granted rather than nurtured. With hindsight, it was set up for dysfunction by choice of inferior colonial technology, later exacerbated by choice of monolithic organisational structure and direct parliamentary oversight. Each of these choices originally seemed perfectly rational, but over time they proved unable to support adaptation to new transport modes, as well as to emerging perspectives on society, the economy and the role of government.

Historically, the interventions that followed the South African Railways and Harbours (SAR&H) era did not fully recognise all the underlying problems. Unbundling monolithic railways is challenging because, without the possibility of cross-subsidising, the sustainability of each entity needs to be recognised and provided separately. The South African Transport Services (SATS) dispensation represented a transition from parliamentary oversight to a commercialised outlook, but the next intervention, based on the De Villiers Report, stopped investment in loss-making activities without recognising the presence of the railway renaissance. The steady loss of long-distance passenger traffic, largely attributable to low-speed narrow gauge not fully supporting modern passenger rail, appears to have numbed sensitivity to passenger matters. Ultimately leaving Transnet alone to steward the national network has prejudiced the outcome toward freight: Inadequate provision was made for funding the country's rail requirements as a whole, and passenger rail in particular. Lastly, legislation rendered rail investment opportunities inaccessible except to PRASA and Transnet, whereas their prime competitor, road transport, was essentially accessible to all, largely through publicly-funded infrastructure and the absence of obstacles to investment.

The desired road to rail shift will not take place given rail's present low inherent competitiveness, inadequate funding and dysfunctional institutional arrangements. The further road to rail shift to achieve United Nations-led greenhouse gas emissions reduction is not on the present statutory agenda, and hence out of reach without specific intervention. There are two options to shift traffic from road to rail: By regulatory coercion, with the unintended consequences that will inevitably accompany traffic shifting from a high-performing sector to an ailing sector; or by the course set out in the National Rail Policy, namely remedial investment, plus market and institutional

interventions to lift rail's inherent competitiveness to renaissance standards and then reposition rail as the backbone of the national transport task. While the proposed interventions have been categorised to facilitate comprehending and designing them, they must be applied concurrently as an interdependent suite.

Rail's institutional arrangements must support a dynamic, responsive relation with the task environment to facilitate continuous and rapid adaptation to shifting requirements and opportunities, and to avoid degenerating to a state of near-stasis.

Rail funding must be substantially increased, to redress and rebalance investment between rail and road. This requires expansion of funding sources, including operators to provide their own rolling stock so that rail can exploit the same business model as other transport modes. Government shall take the risk of investment in, and ownership of, rail infrastructure. Standard gauge will be implemented on the high-performance national rail network to minimise risk to investors and to be part of the dynamic global rail equipment and funding market.

Rail will be positioned to be inherently competitive by redeveloping and, as appropriate, regauging the specific routes of the current Cape gauge rail network to a standard gauge high performance national rail network. The three Cape gauge urban rail networks will be, depending on the need, operationally ringfenced if their track gauges differ.

Regulated competition will be introduced in freight and passenger services that will use the high-performance national rail network. Competition may also be beneficial for commuter services.

The country has a substantial railway problem. Nevertheless, rail's future is bright in the total transport domain, where new transport forms are set to complement it rather than compete with it. The National Rail Policy interventions will position rail robustly for this future. Now is the right time to intervene. The situation will not improve by itself, and the timing is right to support the quantum rail repositioning that will be required by 2050.

10 Abbreviations and Glossary

AfCFTA	African Continental Free Trade Agreement
Alignment	Means the straights (or tangents) and curves (horizontal alignment) and the gradients and vertical curves between them (vertical alignment) of a railway line. Unless otherwise stated, alignment means both horizontal alignment and vertical alignment.
AREMA	American Railway Engineering and Maintenance-of-Way Association
Assignment	Legally giving to an entity full responsibility for a function, including planning, funding, implementing and operating.
ATP	Automatic train protection
AU	African Union
Breakthrough Improvement	Breakthrough improvement involves major improvements in key business areas. These are often ongoing, long-term problems that can only be solved through focused, dedicated resources working for a limited period of time. Due to the investment in time and resources, breakthrough improvement projects are typically selected by a management group. A breakthrough improvement goal is expected to be 70% or more.
CIS	Commonwealth of Independent States

Continuous Improvement	Continuous Improvement ("CI") is a continuous quality improvement approach to achieve lasting improvements in small incremental improvements. CI (also known in Japan as "Kaizen") was conceived by Edward W. Deming as a 4-stage cycle: Plan ahead and understand what you intend to achieve; Do – execute you plan with scientific precision and rigour; Check if you have achieved your outcomes and Study the reasons for any variances; and Act to embed the learnings of the cycle and then lead into the next CI cycle's planning.
Core Network	That part of rail network (excluding the Branch Line and other branch lines) that is Transnet's primary rail network, designated by Transnet as such, from time to time, at its sole discretion.
Devolution	An intermediate step to Assignment, whereby an entity is responsible for planning a function, but other elements thereof are executed by others.
DoT	Department of Transport
DPE	Department of Public Enterprises
GDP	Gross Domestic Product
GHG	Green House Gases responsible for the greenhouse effect including carbon dioxide, methane, nitrous oxide, and water vapour (which all occur naturally), and fluorinated gases (which are synthetic).
GMA	Gautrain Management Agency

High Performance	Optimal rail market share in rail-natural market spaces.
High speed	Applied to passenger trains that run on dedicated infrastructure at a maximum speed of 300km/h or higher.
Higher speed	Applied to passenger trains that, in some situations may share infrastructure with other trains including freight trains, with a maximum speed of around 200km/h.
ICT	Information and communication technology
Infrastructure	Railway infrastructure includes railway lines and other structures, buildings and equipment, together with the corresponding land, located on railway premises, designed for the management, passenger or freight transport, and for the maintenance of the infrastructure manager's property for these purposes. Railway line is defined as a railroad that has a start and an end, together with its adjacent strip of land, and includes line sections, buildings, structures and equipment designed to manage rail traffic, together with their corresponding land. Therefore, railway infrastructure comprises railway lines (together with buildings, structures and equipment designed to manage rail traffic and their corresponding land) and other buildings, structures and equipment, together with their corresponding land, located on railway premises, designed for the management, passenger or freight transport, and for the maintenance of the infrastructure manager's property for these purposes. All these elements make up railway infrastructure as a whole. Sole "structures, buildings, and equipment, together with their corresponding land", can form part of railway infrastructure as well, provided that they are "located on railway premises and designed for the management,

	passenger and freight transport, and for the maintenance of the infrastructure manager's property for these purposes". Such structures also include the so-called service facilities, which provide access to the equipment required for train service. Similarly, railway lines located on railway premises in an area where no other structures or buildings are present, are part of railway infrastructure.
INDC	Intended Nationally Determined Contribution
IUDF	Integrated Urban Development Framework
LTPF	Long Term Planning Framework
NATMAP	National Transport Master Plan
network operator	The person or persons who have the ultimate accountability for one or more of the following: (a) the safety of a network or part thereof including the proper design, construction, maintenance and integrity of the network; (b) ensuring compliance of rolling stock with the applicable standards of the network; or (c) for the authorising and directing of the safe movement of rolling stock on the network as defined in the National Railway Safety Regulator Act no. 16 of 2002.
Network Statement	"Access Conditions (general access requirements, how to apply for a train path, general business / commercial conditions, operational rules, exceptional transports, dangerous goods, rolling stock acceptance process, staff acceptance process); Infrastructure (extent of network, network description, traffic restrictions, availability of the infrastructure, passenger stations, freight terminals, service facilities, infrastructure); Capacity Allocation (description of process, schedule for path requests and allocation process, allocation of capacity for maintenance renewal and enhancement, non-usage/cancellation rules, exceptional transports and

	dangerous goods, special measures to be taken in the event of operational disruption, performance regime); Services (minimum access package, track access to service facilities and supply of services, additional services, ancillary services); and Charges (charges for passenger train services, charges for freight train services, charges for testing train services, payments under the possessions regime, billing arrangements)." (HS1 Network Statement – valid from 17 August 2009. Regulatory Affairs Manager. London. Available at: www.highspeed1.com)
NLTA	National Land Transport Act, 2009
NMT	Non-Motorised Transport
NRMP	National Rail Master Plan
PFMA	Public Finance Management Act, 1999
PICC	Presidential Infrastructure Coordinating Commission
PRASA	Passenger Rail Agency of South Africa
Rail market spaces	For freight rail any of: heavy haul, heavy intermodal, or general freight; and for passenger rail any of: high-speed, regional rapid transit, urban rapid transit, as well as the lighter urban guided transit modes. Also referred to as "Rail sub-mode".
Rail network planning	Rail Network Planning refers to the planning, forecasting and assessment of the rail network as a system. This can include functions such as network capacity modelling, operating costs planning, timetable planning, rolling stock capacity assessments, freight and passenger demand forecasting, revenue forecasting, shift from road-to-

	rail planning, and rail market share estimation.
Rail sub-mode	Synonym for "Rail Market Spaces".
Revitalisation	The process of investment-led interventions and institutional reform to ensure High Performance rail.
Regional rapid transit	Means rail service that integrates conurbations (e.g., Gauteng City Region) by providing several services per hour with 160km/h or faster trains that stop at major nodes only. Sometimes called Commuter (US) or Suburban (UK). PRASA's Metrorail provides services formerly known as suburban, but they do not fit the contemporary definition of regional rapid transit.
Regulated Competition	Competition between two or more train operators on shared infrastructure provided by a single operator and regulated in terms of the TER Act. Where any entity is involved in both above rail and below rail operations, it shall be deemed to be a single operator, whether or not above- and below rail accounts are separated.
Rolling stock	Railway vehicles, including both powered and unpowered guided vehicles such as locomotives, freight wagons, passenger cars and non-revenue maintenance vehicles.
RSR	Railway Safety Regulator
SADC	Southern African Development Community
SAPS	South African Police Service
SAR&H	South African Railways & Harbours
SATS	South African Transport Services
SIP	Strategic Integrated Project

SOC	State Owned Company
TER	Transport Economic Regulator
TE	Transnet Engineering
TFR	Transnet Freight Rail
TNPA	Transnet National Ports Authority
Transit	Means fixed-route, fixed schedule public transport.
UDAP	Universal design access plan
UGT	Urban Guided Transit, which subsumes Heavy Metro,
UIC	Automated Light Metro, Light Rail, Automated Guided Transit, Monorail and Bus Rapid Transit.
US	International Union of Railways
Vertical integration	United States
Vertical separation	Means that a single entity operates all fixed rail infrastructure (below rail) and all rolling stock (above rail) under its control.