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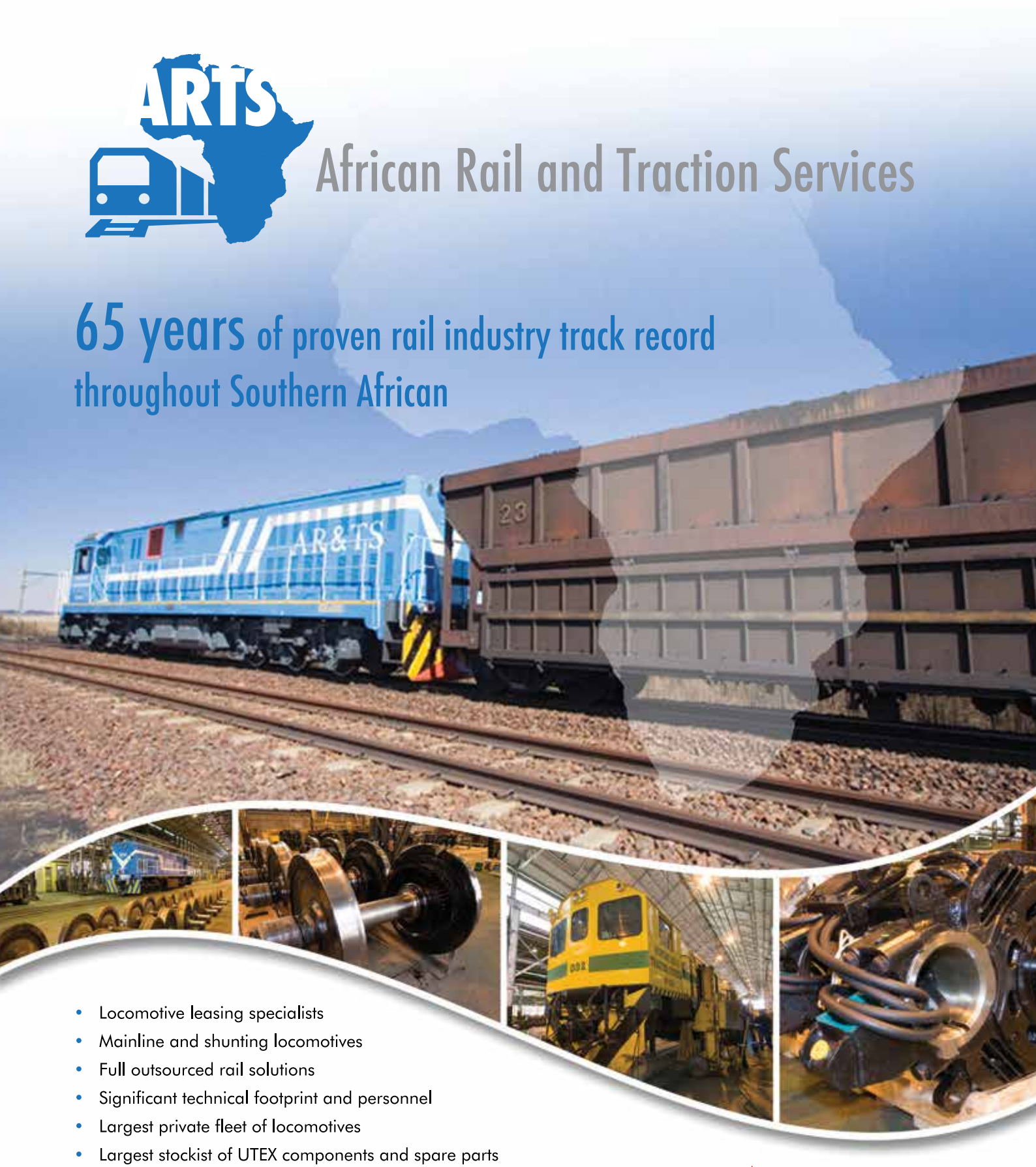

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The South African Green Paper

Viaduct at Landwasser on Switzerland's Rhaetian Railway – an incredible system through the mountains which shows what can be done on metre gauge,

Altitude at highest point on the Rhaetian Railway's Bernina Line.

Transport minister Dipou Peters, launching the Green Paper on national rail policy recently, said South Africa's rail infrastructure slows down the economy. "There are large volumes of rail-friendly goods being transported on the road, which has an adverse effect on the road infrastructure. Increasing numbers of trucks on South African roads not only cause damage but contribute to increased road carnage."

More than half of South Africa's rolling stock and rail network are more than 50 years old. "This impacts negatively on service delivery, especially the movement of freight and commuters." Obsolete rail infrastructure and rolling stock, inefficient operations and the underutilisation of the network have resulted in rail losing market share to road, with rail carrying 11% of the country's freight and road carrying 89%.

Bleak Picture

The worst part of this bleak picture she paints is its accuracy. It's spot-on. Continuing, she said only 9% of the world's railways use the 1,067mm Cape gauge, while 60% operate on standard.

So far, so good – but the conclusion that follows is way too simplistic: "Standard gauge is clearly the superior gauge and is, therefore, proposed as an appropriate gauge for the country in meeting future capacity demands. This is in line with an African Union resolution that all future railways on the continent should be on standard gauge."

Well yes, only the African Union hasn't been particularly conspicuous for down-to-earth, workable (and affordable) ideas for solving the continent's problems.

Granted, South Africa has ordered massively, to try to catch up with its critical rolling stock backlog. But were we to change the country's rail gauge – to bring things in line with 60% of other systems – none of those 3,600 new X'Ttrapolis Mega coaches we're buying are going to fit.

No problem! The Green Paper's authors suggest simply that commuter lines should stay with 1,067mm. That sounds like a great idea but what are the implications? I tell you what – it means duplicating virtually all the infrastructure in every urban area – one set of tracks for Prasa, another for TFR. (Much like the Gautrain route to Hatfield, side-by-side with TFR; four electrified tracks where two should have sufficed).

It Would Cost Transnet $110 Billion

Transnet's Siyabonga Gama, tha man who would have to cope with the realities of this scenario, didn't exactly say "Over my dead body!"

He did say unambiguously "It won't happen in my lifetime!", and spelled out some of the consequences. Converting the country's railways from 1,067mm gauge to 1,435mm would mean the end of running through to Namibia, Zimbabwe, Zambia, Tanzania or Mozambique, all of which use 1,067mm gauge.

All cargoes would need to be trans-shipped at the borders – a formidable, expensive and time-consuming business that would probably result in a wholesale shift back to using one-vehicle-all-the-way on the road. The cost of conversion would be formidable – in the region of $US110 billion, Gama estimates.

Not One of the 60%

Tempting though it might be to do what 60% of the world does, there are other railways doing their own thing, and not all that badly. The Estrada de Ferro Vitoria-Minas (EFVM), a 904km railway from Belo Horizonte to the port of Tubarao, moves 110 million tons of freight annually - 37% of all goods carried by rail in the whole of Brazil. Reportedly one of the most heavily used double-track lines in the Western Hemisphere, it runs trains of 330 wagons, and carries passengers as well. It doesn't conform with most world railways, though; the EFVM is metre-gauge.

Rollo Dickson - Editor.

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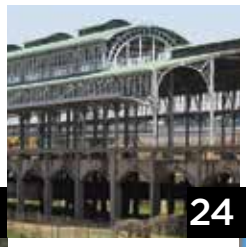

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P001984-002-2016	Introduction to Railway Projects and Processes	SRC Hall, UP	10-12 May
P001351-001-2016	Track Geotechnology	Innovation Hub	06-10 June
P001572-001-2016	Locomotive Systems, Performance and Maintenance	SRC Hall, UP	27 June-01 July
P002396-001-2016	Railway Asset Management	SRC Hall, UP	18-20 July
P002755-001-2016	Railway Safety Investigation	SRC Hall, UP	15-19 August
P000602-003-2016	Introduction to Multi-Disciplinary Concepts in Railway Engineering	Innovation Hub	19-23 September
P000603-001-2016	Wheel Rail Interaction	SRC Hall, UP	24-27 October
P000623-001-2016	Railway Infrastructure Maintenance Management	SRC Hall, UP	07-11 November
P001572-002-2016	Locomotive Systems, Performance and Maintenance	SRC Hall, UP	21-25 November

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The harbour at Cotonou (Wikipedia).

BENIN

TRANSNET AT COTONOU

South Africa's Transnet recently signed a contract in Cotonou, Benin, to advise on the port's container terminal. According to acting CEO Siyabonga Gama, the company aims to increase efficiency in port operations. It isn't a big contract, but demonstrates the direction Transnet is taking. It is already operating in other African countries including Mozambique, Botswana, Zimbabwe and Zambia. Most of these existing foreign activities are rail-related.

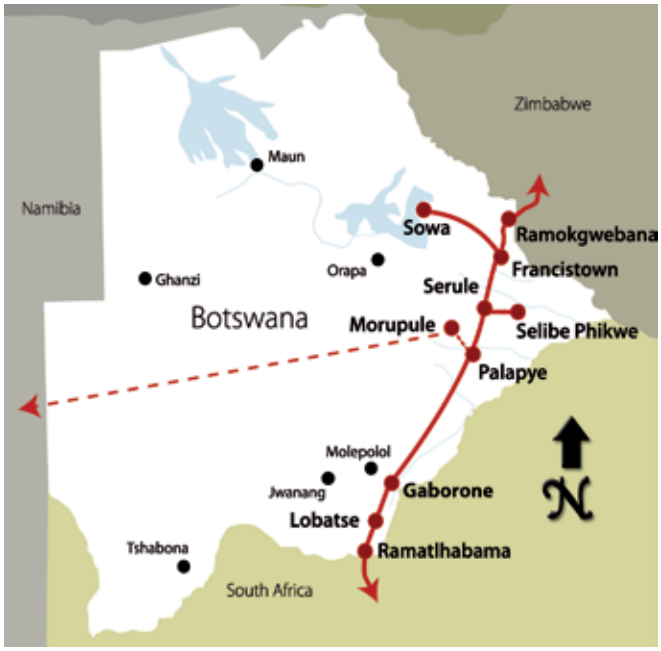
BOTSWANA

TRANS-KALAHARI LINE

In March 2014, Botswana and Namibia signed a bilateral agreement for plans to develop a 1,447km new railway for transporting export coal to Walvis Bay.

Though recent reports suggest that enthusiasm for the project has lessened following a substantial fall-off in far east coal demand, an office has been set up in Windhoek, to be staffed by six officials, three from each country. Robert Kalomo, heading the Namibian contingent, says a wide range of issues, such as legal and cross-border matters need to be agreed on before the project can proceed. It is envisaged that it will be developed by the private sector, which will need to find the necessary capital. These companies have not been identified as yet, he says. Expressions of interest have yet to be invited.

The initial project cost of $US15 billion, estimated in 2011, will no doubt need to be adjusted upwards. Prospective investors would need to find this amount, Kalomo says, with no government guarantees. They can of course approach institutions such as the World Bank and the African Development Bank for assistance. Once the two countries have resolved outstanding issues, this will make way for funding initiatives and tenders.



BURKINA FASO

BOLLORÉ INVESTS €30 MILLION

The Bolloré Group recently invested some €30 million in rolling stock for the metre-gauge railway it has operated since 1995 between Abidjan in Côte d'Ivoire and Ouagadougou, capital of neighbouring Burkina Faso. At a function to mark the arrival of six new locomotives it was noted by prime minister Daniel Kablan Duncan, of Côte d'Ivoire, that trade between the two countries topped $US495 million in 2014, compared with $165 billion in 2011.

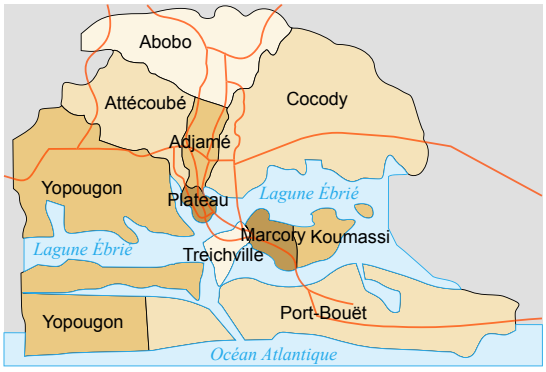
Bolloré Africa Logistics director Lionel Labarre said another nine locomotives are still to be delivered, adding that the firm intends to upgrade the station in Abidjan. At present, the line is carrying 300,000 passengers annually, a figure that could reach 2 million within a few years.

The station at Ouagadougou. Photo: Dr A Jones/Wikipedia.

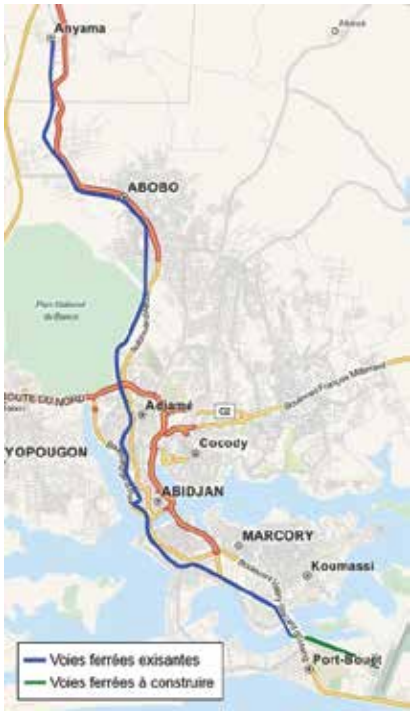
CÔTE D'IVOIRE

ABIDJAN METRO

A 37km route connecting the northern and southern suburbs via the city centre, and serving the Félix Houphouët-Boigny International Airport, has been devised for the city of Abidjan. Essentially the right-of-way is that of the current metre-gauge railway but a number of new bridges need to be constructed. A French-Korean consortium has signed a build-operate-transfer concession agreement. The consortium comprises Hyundai Rotem (33%), Bouygues subsidiaries DTP Terrassement and Bouygues Travaux Publics (33%), Keolis (25%) and Dongsan Engineering (9%). Hyundai Rotem is to supply rolling stock and signalling, Dongsan Engineering electrification, and DTP Terrassement and Bouygues Travaux Publics and will be responsible for engineering work. Keolis is to operate the line. Preparatory work is expected to cost $US40 million, funded with a bank loan, and construction is expected to take 5½ years. The first phase is due to be completed in 2019, with passenger services starting in 2020.



The communes of Abidjan (Wikipedia).



Proposed Abidjan metro (Wikipedia).

DJIBOUTI

DJIBOUTI & THE NEW ADDIS ABABA RAILWAY

The regions of Djibouti (Wikipedia).

The completion of a new $4 billion railway connecting the port at Djibouti to the Ethiopian capital Addis Ababa is expected to boost bilateral trade significantly. More than 90% of Ethiopia's imports arrive via Djibouti. With a population of around 94 million, Ethiopia's economy grew by more than 10% in 2014, according to estimates by the International Monetary Fund (IMF). The new 750km line will cut travel time considerably. Whereas the existing use of heavy road trucks takes two days to Addis Ababa, trains are expected to do the journey in 10 hours. At around 3,500 tonnes, capacity will be about seven times that of the old, metre-gauge railway. Chief executive of state-owned Ethiopian Railways Dr Getachew Betru expects trains to begin running early in 2016.

Djiboutian officials are hopeful that the railway will eventually be extended to South Sudan, the Central African Republic and Cameroon, thus connecting the Red Sea and the Atlantic Ocean.

The China Railway Group and the China Civil Engineering Construction Corporation are leading construction of the railway project, while the Export-Import Bank of China, China Development Bank, and the Industrial and Commercial Bank of China are providing financing. Chinese companies are to develop related infrastructure and port facilities in Djibouti, such as a new shipyard, highway and expansion of the Doraleh port. Plans also include creating extensive new warehouse and office space alongside the Djibouti Free Trade Zone. State-owned China Merchants Holding, which signed an agreement with the Djibouti Ports and Free Zones Authority in March, is set to lead construction on the $7 billion, 10-year project.

Meanwhile, Turkey has announced plans to build an economic zone in Djibouti for assembly and processing. According to Djibouti minister of finance and economy Elias Moussa Daweleh, Turkey plans to use a manufacturing base in Djibouti to export goods to East Africa and beyond. Developing re-assembly and manufacturing facilities is seen as key to further boosting GDP growth, creating jobs and diversifying the economy away from a reliance on transport services.

ETHIOPIA

FIRST ELECTRIC LINE IN EAST AFRICA

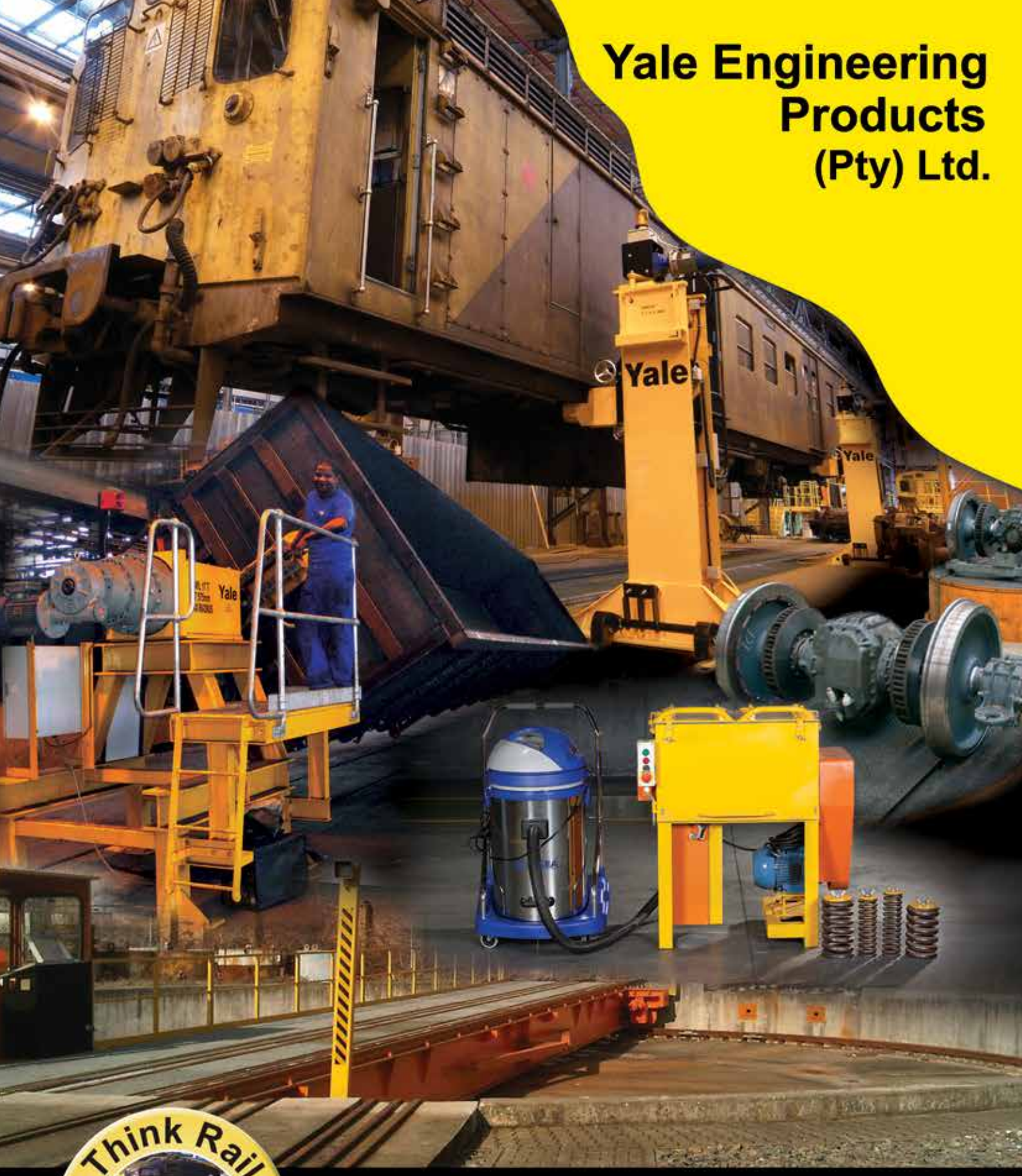
Ethiopia's Growth and Transformation Plan (GTP) seeks to boost economic growth and achieve middle income status by 2025.

The construction of the new electrified railway from Addis Ababa to the Red Sea port of Djibouti – the first electric line in East Africa - is a key component of the GTP. Two Chinese companies are building the $US2.8 billion line. One of these is working from Mieso to the Djibouti border at a cost of $1.2 billion, of which 70% is financed by the Export-Import Bank of China and 30% by the Ethiopian government. Another Chinese company is building the Addis Ababa to Mieso segment.

Though the obvious economic benefits of the new electric line are widely recognised, the old, historic railway it is replacing will not be forgotten. The French-built diesel-powered metre-gauge train went out of service in 2008. However, employees still arrive at work at Dire Dawa every day, only to sit among the abandoned rolling stock and imported French machinery. They still receive a monthly stipend from the company, run now by the Ethiopian government. The European Commission-funded project to rehabilitate the old railway at a cost of $55 million stalled due to a contractual dispute.

The 750 employees of the old line – down from 2,000 - maintain a sense of pride at having worked for the French company. Many speak French. But whether the legacy of the Chinese in Ethiopia will have as strong an imprint as the French remains to be seen. Unlike the French, Chinese workers are unlikely to settle in Ethiopia permanently. Cultural exchanges are limited to simple greetings exchanged in Mandarin between Chinese and Ethiopian workers.


Old Ethiopian metre-gauge train at Dire Dawa. Photo: Dietmar Fiedel.



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ADDIS LRT IN SERVICE

The new 17km Addis Ababa north-south light rail system – the first light rail in sub-Saharan Africa - began public service on Sunday 20 September. A special appeal was made to local residents for the utmost care when crossing rail lines. Ethiopian Railway Corporation deputy general manager Tilahun Sertse says the project has created job opportunities for over 600 citizens to date.

The east-west light rail line, 21km, will open shortly.

China's Export-Import Bank provided loans to cover 85% of the $US475 million project with the remaining 15% financed by the Ethiopian government. The system is designed to move 15,000 passengers per hour in each direction.

Each passenger unit has capacity for 286 and there are 41 stations.

Light rail in Addis Ababa (Wikipedia).

KENYA

INDIAN SUPPORT FOR EAC MASTER PLAN

Relations between the East African Community (EAC) and India are set to get better especially in the areas of trade, cultural exchange and development cooperation, following a new commitment. India High Commissioner to Tanzania and representative to the EAC Sandeep Arya, presenting his credentials to EAC secretary-general Richard Sezibera, at the EAC Secretariat in Arusha, said his country was keen on strengthening trade and cultural ties with the five-member regional bloc which date back several centuries.

He cited the support granted to the community by India in the preparation of the East African Railways Master Plan, the implementation of which he said would revolutionise the transport sector in the region. In 2013, the Exim Bank of India identified 15 African countries, including Kenya, Tanzania, Uganda, Egypt, South Africa and Nigeria, as good investment destinations.

RVR & STANDARD GAUGE

Rift Valley Railways (RVR) and its principals Qalaa Holdings are confident that their metre-gauge railway will be competitive, once the new standard gauge line (SGR) from Mombasa to Nairobi is complete. Citing case studies in Australia, Japan and many countries in South America which have more than one railway, they are certain that RVR will remain important despite the more modern SGR.

KENYA STATION CONSTRUCTION BEGINS

Station construction has begun on Kenya's new standard gauge railway. In addition to the Nairobi eastern station, there are to be stations at Mombasa, Emali, Kibwezi, Mtito Andei, Maiseny and Voi.

RVR MARKETED AT CAIRO CONFERENCE

Rift Valley Railways (RVR) is currently at the midpoint of a $US287 million capital investment and turnaround programme, to revitalise the railway, that began in January 2012, Qalaa Holdings managing director and head of transportation and logistics Karim Sadek announced at a recent one-day conference in Cairo. "Since the start of the programme," he explained, "we have invested $US126 million in modern rail operating technology, rebuilding infrastructure, expanding haulage capacity and developing modern rail operating skills in RVR's 2,000 strong workforce. Today we are seeing improved safety and reliability, increased capacity and a significant improvement in the overall efficiency of the operation."

RVR freight train.

He highlighted the competitive advantages of rail as the most efficient, cost-effective and environmentally friendly mode of transporting goods in East Africa. He introduced Rift Valley Railways (RVR) as a unique door-to-door transport and customs-clearance service provider that can help local exporters from Egypt, Kenya, Uganda and South Sudan tap into new markets and grow the volume of intra-regional trade. "Making use of rail is commercially advantageous for us all," he emphasised "This is the first of many engagements that we want to have with Egypt. We see huge potential, and while there are still challenges, we believe that we are on the right track."

WAGONS FROM CHINA FOR RVR

Qalaa Holdings managing director and head of transportation and logistics Karim Sadek announced recently that Rift Valley Railways (RVR) has purchased 500 flatcars from China North Railways (CNR). The first batch of 120 wagons was due to arrive in East Africa at the end of September.

"These new heavy-duty wagons are a real game-changer for us," he explained. "It means we can carry much heavier goods, increase security and become more efficient in loading and offloading."

RVR container train at Mombasa.

RVR station scene at Nairobi

RIFT VALLEY ORDERS MORE WAGONS

Rift Valley Railways, the company concessioned to operate the Kenya-Uganda metre-gauge railway, has placed an order for 120 additional wagons at a cost of $US6.36 million. The new wagons have a capacity of 60 tonnes each, 20 tonnes more than the present fleet. In the longer term, 400 wagons are to be added, says RVR general manager (concession and external communications) Sammy Gachuhi. He told the East and Central Africa Rail and Road Infrastructure Summit in Nairobi that $126 million had been spent on modern rail operating technology, the rebuilding of infrastructure and in expanding haulage capacity "Rising freight volumes, declining incidents and less blockage time are a testament to the success of the range of measures so far implemented under our turnaround programme," Gachuhi said.

TWO CHINESE MANAGERS FINED

Two managers of the China Road and Bridge Corporation have been fined after admitting bribery in a court in Kenya. Liu Yabin, a senior official of the company, and Tang Ju, a liaison officer, both pleaded guilty to offering and paying bribes to Kenya highway representatives, according to a spokeswoman for Kenya's Ethics and Anti-Corruption Commission. The men were arrested after offering bribes to highway officials on 4 and 5 September. They had been stopped for overloading their trucks with construction materials.

China Road and Bridge Corporation reportedly denied that Liu worked for the company.

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RVR GAINS PRESTGIOUS AWARD

Rift Valley Railways (RVR) is Qalaa Holdings' primary investment in the African transport sector, with a 25-year concession to operate 2,352km of track linking the Indian Ocean Port of Mombasa to the interiors of Kenya, the Ugandan capital Kampala and the northern part of Uganda. RVR was recently awarded the prestigious IOSH Railway Group's International Award for health and safety, with on-the-job injuries at its Nairobi workshops declining by a dramatic 90%.

KENYA STD GAUGE TO BE EXTENDED

The new standard gauge railway under construction between Mombasa and Nairobi is to be extended northwards by 120km to Naivasha, in terms of an agreement with China Road and Bridge Corporation (CRBC) signed by Kenya Railways. China's Exim Bank, which is funding the $US 3.6 billion Mombasa-Nairobi phase, will finance the new section as well, but no detail of the amount involved has been announced. The extension will serve the country's geothermal production centre. Naivasha is developing as an industrial and agricultural hub.

NEW KENYA RAILWAY AHEAD OF SCHEDULE

The $US3.27 billion Nairobi-Mombasa standard gauge railway is due for completion in June 2017. The second phase, to Naivasha, is due to be finished in 2019. According to Kenya Railways managing director Atanas Maina, the implementation of civil works was 49% finished at the beginning of September, at which time more than 400km of the railway corridor had been constructed. This means that the project is running ahead of schedule.

Yu Xiangdong, a project manager from the China Communications Construction Company - the parent company of China Road and Bridge Corporation (CRBR) - explains that construction of the stations, railway corridor, bridges, underpasses and overpasses has been divided into sections, each with its own construction camp.

Tracklaying between Nairobi and Mombasa is to begin in November, says Julius Li, CRBC's external relations and co-operation manager. The first phase will start from Mtito Andei working towards Mombasa, covering the Tsavo area. The second phase will run from Emali to Nairobi. Construction of bridges, culverts and drainage at most stations is almost complete, together with clearing part of the railway corridors.

Freight trains will operate at 80km/h, passenger trains at a maximum of 120km/h. At least 50 locomotives are expected to be imported to run on the line, eight being for passenger trains.

Locomotives for the first phase have docked at the port in Mombasa. Kenya Railway Corporation hopes to have a transaction adviser from an experienced firm in place shortly, to help select a private management operator for the line.

Construction loco on Kenya's new standard gauge railway

MOROCCO

HIGH-SPEED SERVICE CENTRE INAUGURATED

During a visit to Tangier late in September, French president Francois Hollande and Morocco's King Mohammed VI inaugurated a service centre for trains of the future Tangiers-Casablanca high-speed line, which is to cost approximately $US4 billion. The first train for the new line was delivered by the French group Alstom in June. The Tangier-Casablanca high-speed rail line will be the first on the continent of Africa.

Tangier hosts the biggest car factory of French firm Renault in North Africa and Tanger-Med Port, one of the largest ports on the Mediterranean and in Africa.

MOZAMBIQUE

BEIRA-ZAMBIA EXPRESS FREIGHT

According to Agençia de Informaçao de Moçambique in Maputo, new fast goods trains have been introduced from Zambia to the port of Beira via Zimbabwe, covering a distance of over 1,000km. The report quotes Candido Jone, executive director of the central division of the Mozambican Ports and Rail Company, Caminhos de ferro do Moçambique (CFM). Jone says the first train, comprising 20 container wagons, took two days from Zambia to Beira. The trains will stop en route only to change crew or locomotives.

According to CFM chairman Victor Gomes, a study conducted recently by the Southern Africa Railways Association (Sara) pointed to the need to reactivate a total of 11 "corridors" and initially selected eight, the first being that to the port of Beira. Essentially, he said, the aim is a return of the cargo traditionally carried by railways, such as fertilisers on the trains leaving the port of Beira and copper on those arriving from Zambia. At a technical meeting in Beira, Mozambique's CFM, the National Railways of Zimbabwe and Zambia Railways Limited discussed issues including railway safety, handling and cargo transport time, including rolling stock such as locomotives and freight wagons.

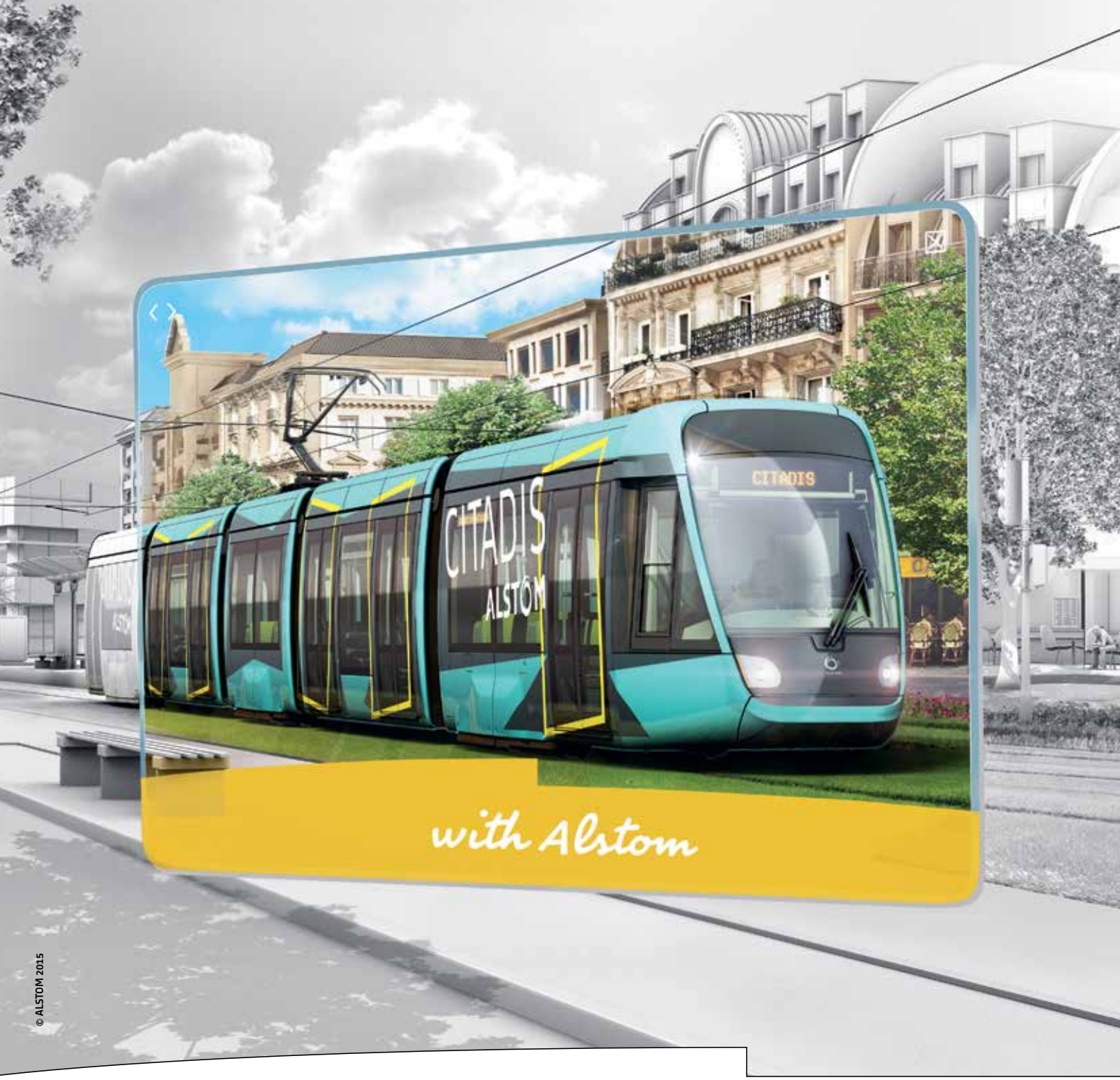
NAMIBIA

TRANSNAMIB BUYS 90 TANKCARS

According to TransNamib acting CEO Hippy Tjivikua, an agreement signed in late September with China Railway Materials (CRM) of Hong Kong is an important milestone in a 10-year agreement with Dundee Precious Metal Tsumeb. In terms of this, the railway is to buy 90 tankcars for the transport of sulphuric acid from Tsumeb to Arandis.

The tankcars will comply with specifications provided by Dundee Precious Metals Tsumeb. The acquisition follows a previous purchase by TransNamib of tankcars from CRM.

CRM chairman Hu Zhengyong expressed satisfaction with his company's relationship with TransNamib.



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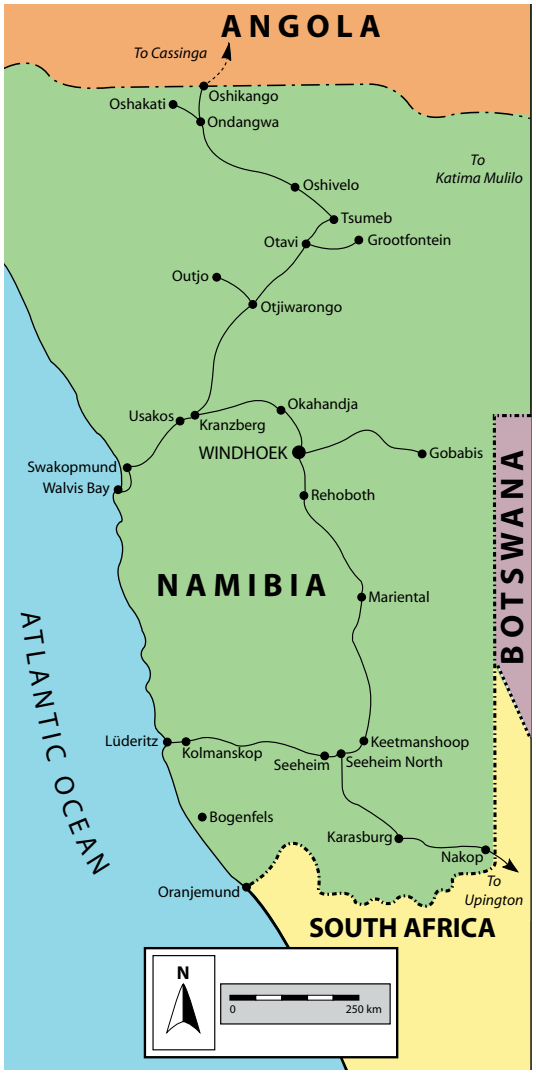

NAMIBIA: N$4 BILLION FOR TRANSNAMIB UPGRADE

Earlier in 2015, TransNamib chairman Pieter Oosthuizen spelled out the realities of the situation at TransNamib, emphasising that an amount of N$9 billion was needed to refurbish the country's dilapidated railway. Works and transport minister, Alpheus Naruseb, recently announced that the government has set aside N$4 billion for the railway. This will be used to rebuild the line from Kranzberg to Tsumeb. Naruseb said a special cabinet committee is looking into the situation with regard to state affairs at TransNamib and progress has been made.

SIX NEW LOCOS FOR TRANSNAMIB

Thomas Konditi, GE Transportation Africa President and Hippy Tijvikua, Acting CEO of TransNamib. Photo: TransNamib

Six new C23EMP diesel-electric locomotives are to be delivered to TransNamib within 20 months in terms of a contract signed on 11 September in Windhoek by GE Transportation Africa president and CEO Thomas Konditi and TransNamib acting CEO Hippy Tijvikua. The contract is worth $US22.7 million.

The locomotives are to haul sulphuric acid from Tsumeb to Arandis in terms of a 10-year deal awarded by Dundee Precious Metals.

NIGERIA

THAT LOAN FROM CHINA

Recent reports in Nigeria suggested that a loan of between $US600 million and $1 billion from China was "diverted", and President Muhammadu Buhari has directed that an investigation be carried out. Chairman of the rail work group of the Nigerian economic summit Rowland Ataguba sheds more light on the matter.

The Lagos-Kano modernisation project, he explains, was to have been completed in 2010 but not even 20% is finished yet. According to former minister of finance Mrs Ngozi Okonjo-Iweala, the loan was in respect of the Lagos-Ibadan rail line and not Lagos-Kano, which was not among the projects listed for funding from the China Exim Bank.

This is not correct, Ataguba says. Lagos-Ibadan is actually Phase II of the Lagos-Kano project. Abuja-Kaduna is Phase I. The Lagos-Kano contract was awarded in 2006 by the Obasanjo government for $8.3bn. It was to be funded with a $2.5bn soft loan from the China Exim Bank and the rest from the excess crude account which, at the time, contained about $50bn. Obasanjo had secured the agreement of the three tiers of government for this funding arrangement. He had also obtained the approval of the National Assembly for the loan.

The contract was signed in October 2006 and the Chinese contractor immediately started work in November, 2006. Obasanjo left in May 2007, without making the stipulated down payment of about $2bn to the contractor. He paid only $250m and asked that the balance be obtained from the China Exim Bank loan.

President Yar'Adua set up a ministerial committee co-chaired by Mrs Allison-Madueke (minister of transport) and Usman Shamsudeen (minister of finance) to investigate the contract, and Yar'Adua seriously considered its cancellation. He was mindful however of the formidable cost of contract default and the implications for diplomatic relations with China. In the meantime, with no payment forthcoming, work stopped and the contractor ran into problems in China.

Eventually, rehabilitation of the Lagos-Kano narrow gauge was completed in December 2012 while Port-Harcourt to Gombe was reportedly completed in January 2015, but the scope of the contracts had

omitted a critical part of the infrastructure - the passing loops.

It was resolved that the contract would proceed in phases with Kaduna-Abuja as Phase I, Lagos-Ibadan as Phase II, Ibadan-Ilorin as Phase III, Ilorin-Minna as Phase IV, Minna-Kano and Minna-Abuja as Phase V. Clearly the project could cost more than the $8.3bn contracted in 2006 and take longer than four years. Indeed, Phase II from Kaduna-Abuja was only completed in December 2014. Phase II from Lagos to Ibadan was to be built in 2012 for $1.5bn but construction has not yet commenced. The then Minister of Transport, Idris Umar, said in 2012 that Lagos-Ibadan would be completed in 2015, being funded with $1bn of the China Exim Bank loan, with the federal government footing the balance of $500m. This is the $1bn Chinese loan that is now in dispute. Phase I (Abuja-Kaduna) was constructed at $874m, funded with $500m of the China Exim Bank loan, with the federal government making up the balance.

As only $500m of the original $2.5bn China Exim Bank loan has been used for the Lagos-Kano modernisation project, it is anybody's guess, Ataguba says, where the balance is. There were appropriations for the Lagos-Ibadan section in the budgets of 2012, 2013 and 2014, totalling N13bn but this has not started. While the Lagos-Kano project was floundering, supposedly due to lack of funding, the Jonathan government entered into another agreement - for $12bn - for the coastal railway from Lagos through Port Harcourt to Calabar.

NIGERIAN RAILWAY PENSIONERS

The Pension Transition Arrangement Committee (PTAD) is currently overseeing payment of Nigeria's railway pensioner's benefit in terms of the defined benefit scheme. According to the union, an amount was transferred by the management of Nigeria Railway Corporation (NRC) to the federation account without the consent of its members. At a recent national executive council meeting held in Ibadan, the union alleged that the decision of NRC management to transfer the said fund to the federation account was predicated on a "secret agenda" to eventually transfer the pension money into the railway management account so as to achieve direct control. In a statement signed by its national chairman Alhaji Abdulkadir Bida and general secretary Alhaji Rafiu Enesi Balogun, the union said the action of the NRC management was in disregard of outstanding pension liabilities. This "clearly demonstrated" lack of commitment to the pensioners' welfare despite evidence that NRC pensioners are among the least paid in the country.

The national executive council, according to Burda, strongly condemns the action of NRC management and resolved that the NRC should implement without further delay the decision of the pension board of trustees that all liabilities and assets of the NRC pension unit be handed over to PTAD in compliance with the directive of Head of Civil Service of the Federation based on the Pension Reform Act (PRA) 2004 and 2014.

The union "strongly appealed" to the Accountant-General of the Federation (AGF) to personally ensure that the N3.5 billion is transferred to PTAD so that the fund can be used to address part of NRC's pension liabilities.

RWANDA

RWANDA SENDS ENGINEERS TO KENYA

Rwanda has sent 10 engineers, technicians and artisans to train in Kenya. They will be directly involved in the technical works and details of railway construction for four weeks, acquiring the skills required when construction starts in Rwanda. "We want to avoid a situation where foreign construction firms working on the railway reach Kigali and complain there are no local skilled engineers and technicians," Rwanda's ministry of infrastructure Jules Ndenga explains. Studies on the link between Kampala and Kigali are expected to be finalised later in 2015. Work on the line is expected to start within two years. The Rwandan government has embarked on a capacity building programme to prepare local engineers to take up major technical positions when construction begins. The construction cost of the railway to Rwanda is estimated at $US1.2 billion.

TAZARA

MUNUNGA QUARRY TO BE REINSTATED

Mununga Quarry in Mpika is to be revamped and put back in full production. This will help the Tanzania-Zambia Railway Authority (Tazara) to reduce the cost of operations and earn income. The quarries at Mununga and Kaole (in Mbeya) are both owned by the railway. The two plants are able to produce high quality ballast for railway maintenance while aggregates, chippings, boulders, quarry and crusher dust are produced as by-products and sold to the public.

Due to obsolete machinery, the Mununga Quarry has been producing less than the railway requires, resulting in the purchase of quarry products from other suppliers.

Transport, works and supply deputy minister James Kapyanga says the Mununga Quarry is currently being reinstated. The Mununga and Kaole plants have the capacity to produce more than 2,000 tonnes of quarry products per hour each.

Mbeya station (Wikipedia).

TUNISIA DIESEL BID

Société Nationale des Chemins de Fer Tunisiens (SNCFT - the Tunisian National Railways) is inviting bids by 20 October for 20 metre-gauge Co-Co diesel-electric freight locomotives. They are to be used hauling phosphate in the south of the country. Single suppliers or consortia can tender, and though financing the deal is not critical, bids can include offers.

ZIMBABWE

AFRICA 2016 - GARRATTS TO VICTORIA FALLS

The 2016 Geoff's Trains tours to Zimbabwe tour will feature the NRZ premier class sleeper coaches used in 2015, including the twin dining car/lounge.

On Sunday 8 May 2016, it is expected that the National Railways of Zimbabwe (NRZ) will run a Mother's Day steam-hauled special out of Harare, probably to the Ruwa Country Club on the Mutare line. On Monday 9 May, Geoff's Trains run a steam charter using the class 16A Garratt, goods wagons and one coach, running from Harare station through the East End yard to Ruwa and back. After lunch, a second charter runs to Lochinvar, to the west of the city. In the evening the tour boards the NRZ premier coaches and leaves Harare for Gweru.

On Tuesday, 10 May, the National Military Museum in Gweru and the Dabuka Marshalling yard - the largest in Zimbabwe and the only hump yard - are visited. It is planned to spend most of 11 May travelling between Mbalabala and Heany Junction, using the class 14A Garratt. A diesel-electric locomotive will provide traction between run past locations, but will be moved clear for photographs. The Mbalabala to Heany Junction line proved popular in 2015. On Thursday 11 May, the railway museum at Bulawayo will be visited. Depart Bulawayo behind a class 15A 4-6-4+4-6-4 Garratt on Friday 13 May and run though the Hwange Game Reserve to Dete, with run pasts throughout the day. On Saturday 14 May the tour continues across the Lukosi River to Thomson Junction (TJ). Sunday 15 May includes the usual steam charter with the class 15A Garratt through Zimbabwe's only tunnel to New Hwange then back to TJ via the old main line, providing some of the best photo locations in the country.

Monday 16 May will be spent at the Hwange Colliery, which owns three class 15A Garratts, though these are out of service.

It is planned to visit the colliery either to photograph a hired Garratt in action, or to request that the tour of class 15A be used for some re-enactments around the washing plant.

Later, participants will journey from Thomson Junction to the Zanguja horseshoe curves in time for good afternoon light. On Tuesday 17 May, the tour heads for Victoria Falls, stopping at many great photo locations. Two nights are spent at the falls, with a number of daylight excursions to the bridge, both on the Zimbabwe and Zambian sides. The tour ends on Thursday 19 May.

For more information – www.geoffs-trains.com

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ONE STEP AHEAD.

WHAT TO LOOK FOR WHEN SELECTING THE RIGHT TAMPING MACHINE FOR THE JOB AT HAND

1. INTRODUCTION

Selecting the right machine for the particular track with regards to traffic, length, axle loading, number of turnouts, checked rail sections, splice joints, restricted track, etc, has become quite a science due to the very large variety of machines and their various features. To do so one needs to have a good understanding of the machine types available, their components and functions in order to select the most cost-effective solution.

2. A SPECIALISED TAMPING MACHINE FOR EVERY APPLICATION

Tamping machines can be classified as either plain track tamping machines specialised for high production on the open line such as the 09-3X (Figure 1) or universal tamping machines specialised for tamping of track in turnouts, crossings, around splice joints, checked rail sections and other restricted track (Figure 2). Universal tamping machines are equally capable of tamping plain track and would provide the same quality and production on plain track as a similar size plain track tamping machine. Plain track tamping machines can however not tamp turnouts. A further classification would be the design production capabilities of the machines.

The classification of plain track or universal and low, medium or high production is dependent on the design features of the machine.

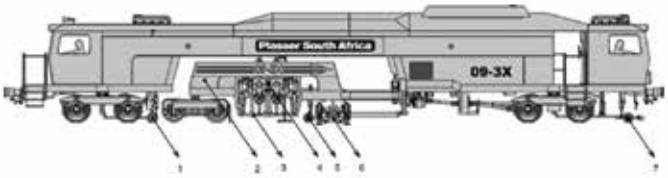

Figure 1: 09-3X Continuous action plain track tamping machine.

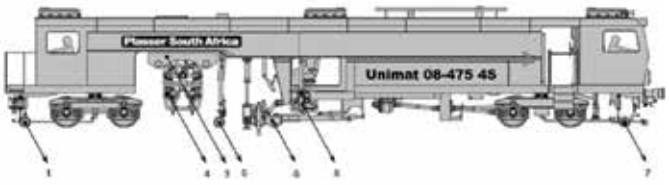

Figure 2: Unimat 08-475 4S universal tamping machine.

1 – Rear measuring trolley
2 – Satellite (continuous action)
3 – Tamping unit frame
4 – Tamping unit/s
5 – Centre measuring trolley
6 – Lifting and lining unit
7 – Front measuring trolley
8 – Third rail lifting device

3. TAMPING MACHINE COMPONENTS AND FEATURES

The following are features that must be considered when a machine is specified in a tender, and these features must be aligned with the traffic and line conditions where the machine will be working.

3.1. Lifting and aligning unit

Tamping machines are equipped with a combined lifting and aligning unit mounted in front of the tamping units between the bogies. There are various designs but they can generally be divided between lifting and aligning units for universal tamping machines and those for plain track tamping machines.

3.1.1. Lifting and aligning units for plain track tamping machines

Plain track tamping machines have a lifting and aligning unit with double roller clamps to grip the rail under the crown for high speed lifting and two flanged rollers which run on the rail crown to transfer the lateral force to the track for alignment. See Figure 3.

The positioning of two roller clamps per rail means that the application - even on fish-plated joints - is automatically secured. The lifting and aligning operation is controlled automatically by the measuring systems. As soon as the target values are reached, lifting and aligning operations are automatically cut out while the track is held in the correct position.

Figure 3: A typical lifting and aligning unit found on plain track tamping machines.

Figure 4: Specialised lifting and aligning unit found on universal tamping machines.

3.1.2. Lifting and aligning units for universal tamping machines

Because universal tamping machines are designed for tamping around areas of restricted track, their lifting and aligning units (Figure 4) have special features such as:

- lifting hooks which grip the rail under the crown or base for lifting in restricted track such as turnouts, checked rails, splice joints, etc;
- roller clamps for high speed lifting during plain track tamping; and
- either one or two flanged rollers which run on the rail crown to transfer the lateral force to the track for horizontal alignment.

3.2. Measuring system

A fully automatic measuring system determines the relative difference in the vertical and horizontal positions of the track at a centre measuring trolley [Figure 5 item (i)] between two reference points, the front (ii) and rear (iii) measuring trolleys. This system for tamping and geometry correction is called the compensation method.

The relative vertical alignment of the track is established with the use of a steel cord above each rail (iv), extended from the rear to the front measuring trolleys. The reference line for relative **horizontal** alignment is a steel cord (v), extended along the centre of the track.

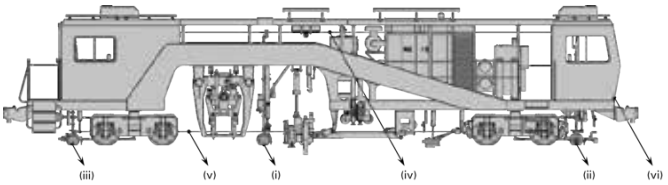

Figure 5: Location of measuring system components (08-16 SH universal tamping machine illustrated).

The measuring system works together with the lifting and aligning unit. It lifts the track to a uniform height, removing any vertical defects (Figure 6) in the process and simultaneously slews the track to correct any horizontal defects (Figure 7), leaving a uniform, level track behind.

Figure 6: Vertical alignment defects.

Figure 7: Horizontal alignment defects.

To ensure a residual lift after tamping, research has shown that the minimum pre-set lift should be around 20mm, providing enough space under the sleepers to rearrange the ballast stones. This will however depend on the ballast stone size; the larger the ballast envelope, the higher the minimum pre-set lift will be. Where a vertical alignment defect is encountered, the measuring system will detect the relative vertical difference in height and lift the track by the pre-set height as well as the depth of the vertical alignment defect (also referred to as a slack). (Figure 8). Horizontal alignment defects are corrected at the same time and work on very much the same concept.

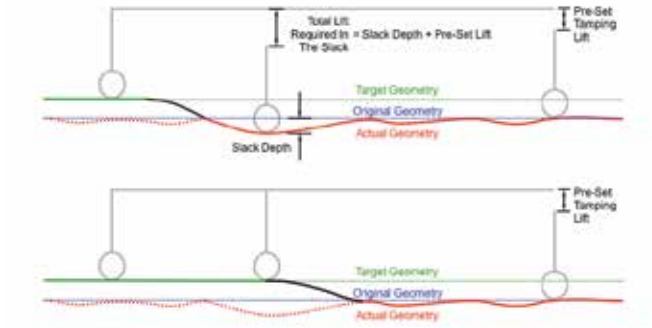

Figure 8: The lifting principle using the three measuring trolleys

However, defects which are shorter than the chord length between the front and rear measuring trolleys of the tamping machine can be corrected successfully. However, if the defects are longer than the chord length, the machine will follow these defects without removing them.

Figure 9: The use of optical (as illustrated) or laser equipment to permit removal of long wave defects

Tamping machines of high quality therefore use optical (Figure 9) or laser equipment (Figure 10), mounted on a mobile trolley which is moved 100 to 150 metres ahead of the tamping machine, depending on geography and other conditions. The tamping machine is guided by a straight line which is aimed at a target board on the front measuring trolley (see Figure 9). When the machine moves forward, the lifting and aligning wires are adjusted via remote control (or automatically with laser systems) so that the reticule of the viewfinder is lined up with the marks on the target board.

Figure 10: Laser guiding system.

This effectively lengthens the chord length to the distance between the rear measuring trolley of the machine and the position of the mobile trolley. This provides the utmost accuracy in the vertical and horizontal alignment of tangent (straight) track and is referred to as the precision method.

The measuring system can be supplemented with a computer-based system (for example the WIN-ALC system) which can be used to measure the track and for automatic calculations and/or setting of the offsets in curves. Especially on curves, the ALC avoids the time-consuming and potentially inaccurate measuring of the curve by hand. It also avoids the resulting alignment errors associated with hand measuring of curves and manual adjustment of the correction values on the machine.

3.3. Third-rail lifting device

Modern universal tamping machines are fitted with a hydraulically operated, telescopic third-rail lifting system on either side of the machine [Figure 2 item (8) and Figure 11], which is synchronised with the combined lifting and aligning unit. This clamp assembly provides controlled lift of the outside turnout rail (the curved closure rail) in the area of long sleepers during turnout tamping operations and eliminates the need for cumbersome, manually-placed track jacks, hydraulic hose reels and the related labour and maintenance costs.

Figure 11: Third rail lifting device.

The standard two-point lift on the long sleepers of a turnout leads to overstressing and damage to the rail fastenings due to the weight of the long sleeper, the added weight of the turnout rails, as well as the turning moment caused by the long sleeper being lifted at one end. The entire load is carried by the fastenings of the two rails (see Figure 12).

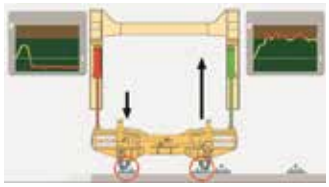

Figure 12: Without three-rail lifting.

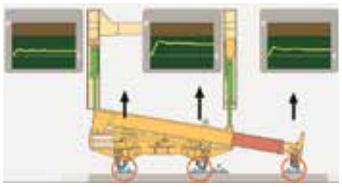

Figure 13: With three rail lifting.

An additional synchronised lift on the outside rail of the turnout distributes the weight of the sleeper and rails across three lifting points and eliminates the turning moment which reduces the lifting force at the middle rail by almost half (see Figure 13). Third-rail lifting devices are therefore essential to tamp turnouts effectively.

3.4. Tamping units

Due to the variety of requirements for tamping, such as production capabilities, specialised units for tamping turnouts etc, a large variety of tamping unit designs are available to fulfil these specialised requirements. The following are features that set the different tamping units apart:

3.4.1. Number of sleepers tamped per cycle

The number of sleepers that are tamped per cycle (insertion) determines the production capability of the machine. Single sleeper tamping machines are still very common since high production is not always required and a lower production at a lower machine price, though higher unit costs, can be preferred.

High production machines are extremely cost-effective when their capacity is optimised, especially on high density lines. The fewer number of occupations required to maintain the tamping cycle required for the traffic throughput may bring about higher income to the railway when the opportunity cost of traffic is considered. In other words, if fewer occupations are required to tamp the track, more trains can be running, resulting in more income for the railway.

Single Sleeper.

Two Sleeper.

Three Sleeper.

Four Sleeper.

Figure 14: Examples of tamping unit layouts.

If necessary, multiple sleeper units can be switched to single sleeper tamping where sleepers out of square or poor sleeper spacing or restricted track are encountered.

3.4.2. Specialised turnout tamping units

In turnouts where track is restricted, some of the tines may hit an obstruction such as the switch blade or curved closure rail of the turnout portion. This problem is addressed through the use of split tamping units.

Split tamping units are in principle longitudinally divided in two (field side and gauge side), and can be raised and lowered individually for unparalleled versatility (vertical split). See Figure 15.

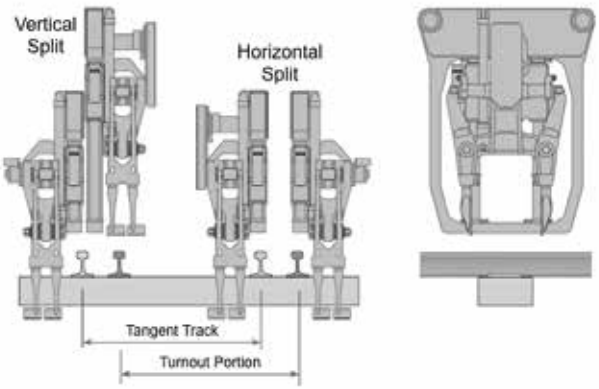

Figure 15: The use of split units to avoid tines hitting obstructions.

Each one of the total of four units can be lowered and put into action separately from the other. Furthermore, some split units can individually be displaced laterally as well (horizon split) to find the best area in the restricted track to enter the ballast. The split units can be locked together, in which case they will act like conventional plain track tamping units.

The units can also be displaced laterally on horizontal guide columns so that the tamping tools are centred exactly over the area to be tamped.

3.5. Auxiliary satellite frame for continuous action tamping

A conventional tamping machine must move from sleeper to sleeper for the tamping operation. The machine must therefore accelerate and brake again between tamping insertions and is referred to as index tamping. Though this principle is still used on many modern tamping machines, its production capability is limited by acceleration and braking limitations. The limit for index tamping using a two-sleeper tamping machine is around 33 sleepers per minute. Therefore, only lower production, lower cost and specialised tamping machines use index tamping.

To increase tamping production rates, continuous action tamping was developed whereby the tamping units are mounted to an auxiliary satellite frame which runs on its own axle/s, separate from the main frame. This principle is common on high production tamping machines used on most high capacity lines around the world. Continuous action tamping allows continuous motion of the main frame while the cyclic braking and acceleration for the tamping action is performed by the auxiliary frame. Only around 20% of the machine mass must therefore be braked and accelerated.

Figure 16: The tamping units are mounted to a separate frame on continuous action tamping machines.

When this principle is combined with multiple sleepers tamped per insertion, very high tamping rates are possible. The 09-3X tamps three sleepers per insertion and achieves very good results in South Africa.

The continuous action principle is available on universal tamping machines as well as providing utmost production on both turnouts and plain track. These machines combine continuous action tamping with up to two-sleeper split tamping units and integrated dynamic stabilisation combined in one machine. The DYNA-CAT (Figure 17) is a good example of one such machine and is a very productive machine in South Africa.

Figure 17: DYNA-CAT Universal tamping machine.

3.6. Wheelbase

Wheelbase refers to the distance between the centre of the bogies or centre of two single axles of the tamping machine. During the tamping process, the track is lifted at the lifting unit by at least 20mm to ensure a residual lift. Where a vertical alignment defect is encountered, the lift increases progressively by the depth of the defect as was illustrated in Figure 8.

The importance of wheelbase is illustrated in Figure 18, which shows the maximum rail stress (EN-standard limit) vs the lift applied by the machine at the lifting unit on tangent track with UIC60 rails and concrete sleepers.

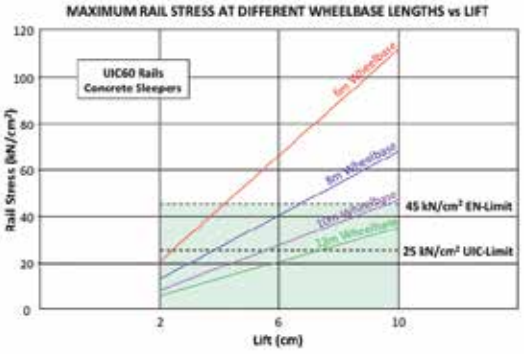

Figure 18: Maximum rail stress versus lift applied by tamping machine

Tamping machines with different wheelbases were then used to lift the rail, the rail stress established and the results plotted.

The graph clearly shows that tamping machines with a six-metre wheelbase cannot lift more than approximately 40mm before the maximum rail stress is exceeded, due to the bending radius of the rail. Considering that the minimum maintenance lift by a tamping machine is already around 20mm, a six-metre wheelbase machine will not be able to even lift out a vertical alignment defect exceeding 20mm in one pass without overstressing the rail and creating a potential future rail break. This machine will therefore not be appropriate for heavy haul lines where a larger ballast stone is used.

For this and other reasons such as weight, smaller machines are not able to lift turnouts sufficiently, especially those on concrete sleepers. They should therefore not even be considered, because not only will they damage this expensive track component but will also be unable to correct the geometry.

3.7. Dynamic track stabilisation

Dynamic track stabilisation can be a feature or component of the machine where it is an integrated part of the machine such as the Dyna-CAT or it can be a stand-alone machine where stabilising is integrated in the process.

Stabilisation is even more important after ballast cleaning, to avoid speed restrictions that are normally imposed to allow the track to settle and increase its resistance to lateral displacement before the line can be opened at normal track speed. This settlement is normally irregular and requires re-tamping soon after.

The dynamic stabilising machine sets the track in horizontal oscillation while applying a controlled static vertical load (Figure 19). In this way the track is actually “rubbed” into the ballast which settles in a dense homogenous matrix of which the resistance to lateral displacement is up to 70% of what it was before ballast cleaning.

Figure 19: Stabilising units located between the bogies.

Independent studies have shown that the stabilising machine increases the durability of the geometry after tamping by up to 30%, thereby reducing interruptions to income-generating traffic and damage to track material.

Today dynamic track stabilising is an integral part of tamping and ballast cleaning on nearly all high capacity railway lines around the world.

Spotlight
SOUTH AFRICA

MOLEFE & SINGH APPOINTED PERMANENTLY

The South African cabinet has approved the permanent appointment of Brian Molefe as chief executive of Eskom. He has been acting in this position since March 2015. Anoj Singh has been appointed Eskom's chief financial officer, he held a similar post at Transnet. Minister of Public Enterprises Lynne Brown says she has begun the process of filling both positions at Transnet.

TRANSPORT MINISTER LAUNCHES NERVE CENTRE

Photo: GAPP architects

"Government is serious about uplifting the lives of its people," Passenger Rail Agency of South Africa (Prasa) acting CEO Nathi Khena said at the launch of the new Gauteng Nerve Centre by Transport Minister Dipuo Peters. It is hoped to commission the centre by the beginning of 2016. Minister Peters said she was impressed with the facility which ensures communication with commuters regarding interruptions to train services. In addition it will monitor stations via closed circuit television, and enable the controllers to spot criminal activity.

"I am happy about the integrated communication centre which means the people at the stations will be informed on what is happening because the centre would have picked up a challenge that is there, but also in terms of intervention for correction or attending to the challenge that also for me is very important," the minister said. The new system, she added, will be a great benefit to train drivers who will no longer need to use cellphones to communicate with the controllers. The centre aims to address challenges facing Prasa as a result of infrastructure and technology reaching the end of its designed lifespan, giving rise to poor levels of reliability and predictability.

Similar control centres are planned for Durban and the Western Cape, at a later stage.

TRANSNET FREIGHT RAIL – TOP EMPLOYER

According to the Top Employers Institute, "Our comprehensive research concluded that Transnet Freight Rail (TFR) provides an outstanding employment environment and offers a wide range of creative initiatives, from secondary benefits and working conditions, to performance-management programmes that are well-thought-out and truly aligned with the culture of their company." Accordingly, TFR has been officially certified as one of South Africa's top employers for the year 2016.

Acting chief executive Ravi Nair is delighted. "This achievement," he says "is proof of our collaborative efforts over the years to not only deliver freight reliably but also transform our culture in creating good working conditions for our employees. We are close to achieving our Market Demand Strategy goals and becoming one of the top five railway operators in the world".

DIAZ EXPRESS

The Diaz Express is an enterprising tourist operation which uses the existing Transnet rail system in the Mossel Bay area. Sightseeing journeys are run from Hartenbos to Mossel Bay and to Great Brak River in three Wickham railcars. Two are ex Spoornet/ TFR, while the third is ex-Zimbabwe type 40, leased from a private owner. All excursions feature views over the Indian Ocean (with a ringside seat for whale-watching during the season), river estuaries and indigenous plant life.

Diaz Express: Wickham railcars

MONTANA CHALLENGES PP REPORT

Passenger Rail Agency of South Africa (Prasa) former CEO Lucky Montana has asked the High Court in a 57-page affidavit to review and set aside the public protector's report entitled "Derailed". The public protector, Prasa and the minister of transport are listed as first, second and third respondents. Montana said he did not have access to all the documents and information she relied upon. This prejudiced his ability to challenge the report's "factual inaccuracies".

Montana contends that the public protector wrongfully applied legal status to Prasa's supply chain management policy. This renders her conclusion "unconstitutional, unlawful and invalid."

TRANSNET'S GAMA ON BRANCH LINES

Transnet says it is spending nearly R5 billion on revitalising branch lines. Current government strategy, says acting CEO Siyabonga Gama, identifies the transport sector as one of the significant drivers of the economy, since transport plays a critical role in enabling mobility and access to economic and social activities. Branch lines, constituting nearly 40% of Transnet Freight Rail's (TFR) route network, have been neglected for a long time. Almost half are closed or see no service. Funding remains the key risk factor, but it is generally accepted that private sector investment needs to play an important role. Nearly 50% - some 7,300km - of the branch line network is active, serving customers as feeder lines into the greater TFR system. Branch lines generally are being revitalised to reinvigorate economic activity in small and rural areas and to continue serving customers in the business units integral to the Transnet's Market Demand Strategy (MDS). During the past three years of the MDS, Gama says, more than R400 million was spent to keep these lines operational. Branch lines, he asserts, remain important for economic development, particularly of rural areas and small towns in the country. Reopening and operating closed lines sustainably requires different strategic, funding and operating models to that of main lines.

Continues on Page 26

Continued from Page 25 "Transnet's Gama on Branch Lines"

In the course of the past two decades, South Africa has undergone a measurable shift of freight cargo and passengers from rail to road due largely to under-investment in rail infrastructure. Road transport conglomerates, operating large truck fleets, carry most of South African goods today. Of 693 million tons of inland freight moved in 2003, 74% went by road and 26% by rail. In 2011, road transport moved 88.8% of freight; rail moved only 11.2%. Airfreight carried 350,000 tons.

Revitalising branch lines could assist in reclaiming ground lost to road freight, given that an advanced logistics network is the backbone of industrial development and makes it attractive to foreign investment as well as globally competitive.

The railway, which carries about 180 million tons of cargo annually, is divided into primary (high-density) and secondary (low-density) networks.

Reviving many closed South African branchlines is going to be a challenge. Photo: Jacque Wepener.

In November 2010, TFR told parliament that over 100 private sector companies had applied for concessions to operate 3,255km of branch lines in South Africa. Over a third of the closed lines (1,202km) are in the Eastern Cape and 563km in the Free State.

Gama believes that though branch lines are currently a relatively under-utilised part of the country's transport infrastructure, it is expected that their revitalisation could unlock economic potential of both the country and region.

Klinkhamer's historic trainshed, today.

In its original setting: Klinkhamer's trainshed at Park station in the 1930s.

The trainshed at Esselen Park; training for signalmen.

KLINKHAMER'S PARK STATION

Between 1896 and 1897, a magnificent steel structure was fabricated in Rotterdam, Holland, to the design of one Jacob Klinkhamer. It was sent out to South Africa and erected as Johannesburg's main station. When the new station was completed in 1952, Klinkhamer's structure was dismantled and moved to the railway training college at Esselen Park. In 1995, it was moved gain, this time to Newtown, where it was to form the nucleus of a "world class" transport museum. For 20 years it has stood at Newtown, empty and unused. Now a housing development is going up around it and Transnet appears to have lost interest. A new home at Sandstone Estates in the Eastern Free State might be next on the itinerary of this very historic structure – all that is needed is a generous donation to cover the costs of transport and re-erection – and whatever Transnet wants for it. There don't seem to be many alternatives, other than the scrapyards.

TRANSNET TREADS WARILY

In the wake of the 16% drop in the value of the Rand this year, Transnet is treading warily. According to acting chief executive officer Siyabonga Gama, the parastatal will be favouring funding for expansion from local investors, avoiding offshore sources for the moment. It intends raising R10.5 billion in debt including bonds before the 31 March end of the 2016 financial year. Since 1 April 2015, R17.3 billion has been obtained. The dismal performance of the Rand, meanwhile, has not increased the cost of repaying existing foreign debt – this is fully hedged.

Transnet is considering up to R200 billion in cuts to its capital expansion plans over the next three years, as the global demand for iron ore and coal stalls. The utility, four years into a seven-year plan to spend R336.6 billion expanding railways, pipelines and ports, has decided to cut projects that are not sure to generate revenue. Capital spending over the next three years in terms of the plan is likely to drop between R100 billion and R150 billion because demand for iron ore is falling and volumes being shipped are not matching with the capital expenditure. However, plans to expand the coal and manganese lines will not be affected. Transnet spokesperson Mboniso Sigonyela said capital expenditure plans are unchanged.

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GAUTRAIN AUGMENTS SERVICE

For the duration of the Sandton ecomobility event during October, Gautrain services were augmented. Two eight-coach trainsets were introduced from 05:56 from Hatfield and at 07:26 from Hatfield to Park station in Johannesburg. The afternoon peak started about 40 minutes earlier than usual, from about 14:45. There were 10-minute headways. Between 16 and 30 express buses operated from Montecasino and between 10 to 12 express bus services from Brightwater Commons. The Sandton CBD was closed off to private vehicles and motorists were urged to use public transport and other non-motorised forms like walking and cycling.

Gautrain reported a passenger increase of 7.7%, with 60,120 passengers on the first Monday in the month, compared to the normal average of around 55,800. Gautrain buses carried 512 more passengers.

Photo: Gautrain Management Agency.

PRASA INVITES TENDERS

Prasa tenders advertised:

- Tender HO/PT/DM/0096/09/2015 - Manufacture and supply 48kg/m rail for the Braamfontein and Salt River Depots and 120km/h project.
- Tender HO/PT/DM/0097/09/2015 - Manufacture and supply of 48kg/m, 57kg/m and 60kg/m turnouts for the Braamfontein and Salt River Depots and 120km/h project.

The 120km/h project is aimed at raising the current prescribed limit of 90km/h (100 on certain sections).

TRANSNET LOOKS BEYOND SOUTH AFRICA

A new division, Transnet International Holdings, is being set up to actively pursue business beyond South Africa's borders, including the Middle East. By 2025, it is hoped to have 25% of group revenue sourced internationally, compared with about 4% at present. The concern has current operating interests, mostly rail-related, in Mozambique, Botswana, Zimbabwe and Zambia. It aims to expand and share its expertise in ports and pipelines.

GAUTRAIN AT MODDERFONTEIN

The first phase of a residential development has been launched at Modderfontein New City, north-east of Johannesburg. The 1,600 hectare site was acquired by Hong Kong property developer Shanghai Zendai from AECI in 2013. South African chief executive of Zendai Development SA Anthony Diepenbroek says more than R400 million has been spent on roads, electrical, water and sewerage infrastructure in 12 months. A 200-bed hospital is almost complete and a Gautrain station is being planned. Zendai Development SA had to build the proposed station at their own cost. He said the platform and underpasses were built at a cost of R55 million in terms of an agreement with the Gautrain Management Agency that the developer would build the station.

GAUTRAIN ANNOUNCEMENTS IMPRESS

A blind traveller, complimenting Gautrain on the ease with which those who are sight-impaired are able to use the system, was especially impressed with the clear public address announcements. "As a blind person, you really get to notice how bad the sound quality of public address systems can be."

Photo: Christopher Venter, www.blindscooterguy.wordpress.com

BACK TO RAIL: BUSINESS BREAKFAST

Ravi Nair, acting CEO at Transnet Freight Rail (TFR), who was previously general manager of TFR's steel & cement division, provided an update on TFR's "Back to Rail" strategy at a business breakfast held at the Sunnyside Park Hotel on 27 October. He provided feedback on Transnet's rail infrastructure implementation in support of its Market Demand Strategy and explained its nature, extent and timelines. Dr Dinesh Kumar, an associate director with KPMG Services, Johannesburg, South Africa and regional country leader for supply chain and procurement practices, looked at opportunities for integrating rail transport into the supply chain. Cobus Rossouw, chief business development officer at Imperial Logistics, responsible for the multimodal collaboration between Imperial Logistics and Transnet. This initiative brought together TFR's efficiency in long-haul rail transport with Imperial Logistics' road freight logistics, distribution and end-to-end value chain management expertise.

TRANSNET FREIGHT RAIL AUCTION

The latest auction took place on 17 September. Peter Bagshawe reports:

- Lot 14, Union Express Dining Car 243 was withdrawn from the sale - “Asset closed by owner”.
- Eleven of the fifteen lots on offer were sold, the rest not making the reserve.

Lots not sold:

- Lot 3: (2 Cabooses at East London)
- Lot 15: (5 Cement Tankers at Saldanha)
- Lot 16: (7 Wagons at Middleton)
- Lot 17: (1 Wagon at Molteno)

Sale details:

- Lot 1: (32 wagons at Komatipoort TSB Sugar Mill) R730,000 (R1,463/t)
- Lot 2: (6 wagons at Komatipoort) R79,000 (R1,328/t)
- Lot 4: (3 class 6E1/8E Locos at Umbilo, Durban) R228,000 (R1,648/t)
- Lot 5: (5 10M coaches at Salt River,) R13,800 (R1,213/t)
- Lot 6: (1 coach at Waterval Boven) R15,800 (R1,158/t)
- Lot 7: (92 wagons at Deal Party, Port Elizabeth) R1,490,000 (R1,309/t)
- (R1406/t in Sale 115)
- Lot 8: (1 class 8E loco at Capital Park, Pretoria) R150,000 (R2,010/t)
- Lot 9: (2 class 7E2/3 locos at Pyramid, Pretoria) R235,000 (R1,845/t)
- Lot 10: (3 cement tankers at Brakpan) R91,000 (R1,381/t)
- Lot 11: (2 wagons at Mkuze) R25,600 (R771/t)
- Lot 12: (9 wagons at Hammanskraal) R172,500 (R1,673/t)

This gives an average of R1,286/t, continuing the trend of lower prices (R1,510/t for Sale 115, and over R2,100/t for the previous two sales).

Two more lots were added during the day:

- Lot 14: One scrap coach no 243 (photos-documentation says 234) (wooden body) being sold with bogies at Voorbaai. The starting price was R9,000
- Lot 15: Five scrap cement tankers being sold without bogies at Saldanha
- The documentation shows three type XBJ5 (peaked tank) 18014984/16537/17169 and two XBJ10 (dropped tank)
- 18016367/16952, whilst the photos show four type XBJ5 (18014984/16357/16537/17169) and one type XBJ10 (18033253)! Start price R62,400.

TFR & PCB

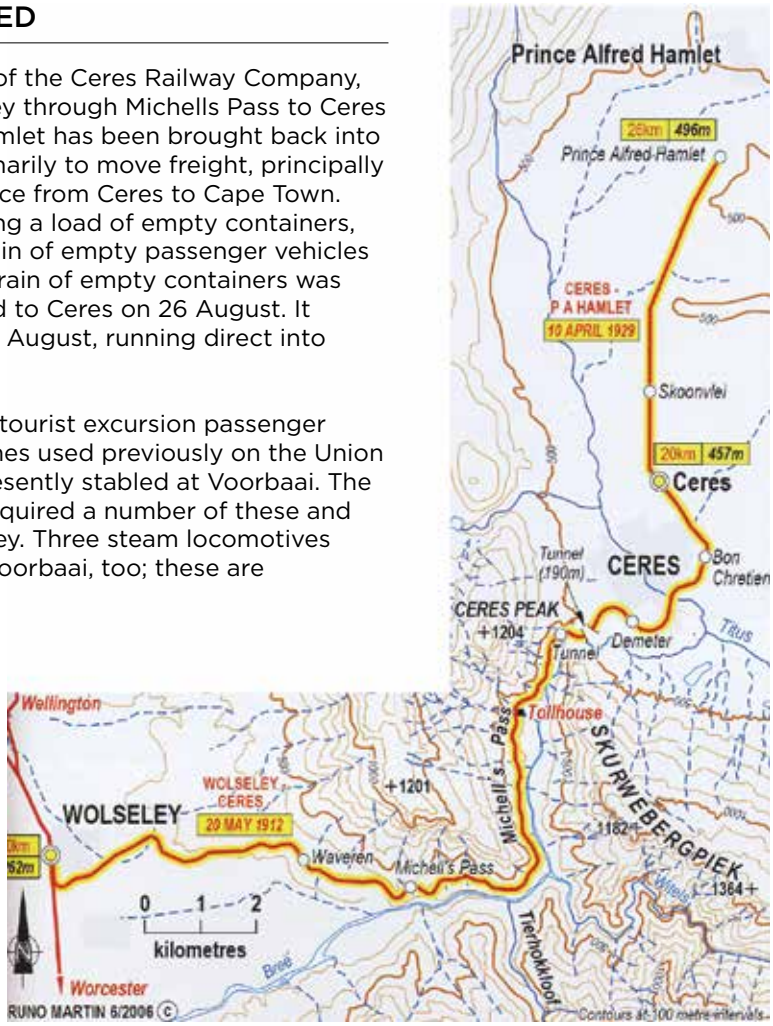
In terms of regulations issued by the Department of Environmental Affairs (DEA) in July 2014, entities in possession of equipment with polychlorinated biphenyl (PCB) concentrations of greater than 500 parts per million were required to remove it on a planned phase-out basis for subsequent incineration and disposal. The regulations required all PCB holders to register with the DEA and submit a phase-out plan. Transnet Freight Rail (TFR) used PCB oils and PCB-contaminated materials as insulation in electrical equipment. The company has registered as a PCB holder and submitted a phase-out plan to the DEA. Although PCBs were never manufactured in South Africa, they were imported for use in equipment used for electricity generation and distribution. A yellowish viscous liquid with distinct odour, PCBs held remarkable thermal stability and only broke down at temperatures of more than 1 000°C. The material was highly resistant to acids, alkalis and oxidisers and is insoluble in water.

CERES LINE REOPENED

Mainly under the auspices of the Ceres Railway Company, the 26km line from Wolseley through Michells Pass to Ceres and on to Prince Alfred Hamlet has been brought back into use. The objective was primarily to move freight, principally fruit and agricultural produce from Ceres to Cape Town. The first test train, conveying a load of empty containers, ran on 3 August 2015. A train of empty passenger vehicles followed on 20 August. A train of empty containers was operated from Bellville yard to Ceres on 26 August. It returned fully loaded on 27 August, running direct into Cape Town docks.

Another intention is to run tourist excursion passenger trains on the branch. Coaches used previously on the Union Limited tourist train are presently stabled at Voorbaai. The Ceres Rail Company has acquired a number of these and has moved them to Wolseley. Three steam locomotives have been acquired from Voorbaai, too; these are undergoing rehabilitation.

The first has had it's boiler hydraulically tested and has been run in light steam, moving under it's own power for the first time in 11 years. It is hoped to introduce passenger service shortly.



Reopened Ceres branch. Map by Bruno Martin.

TEMBELA KULU: FEMALE TRAILBLAZER

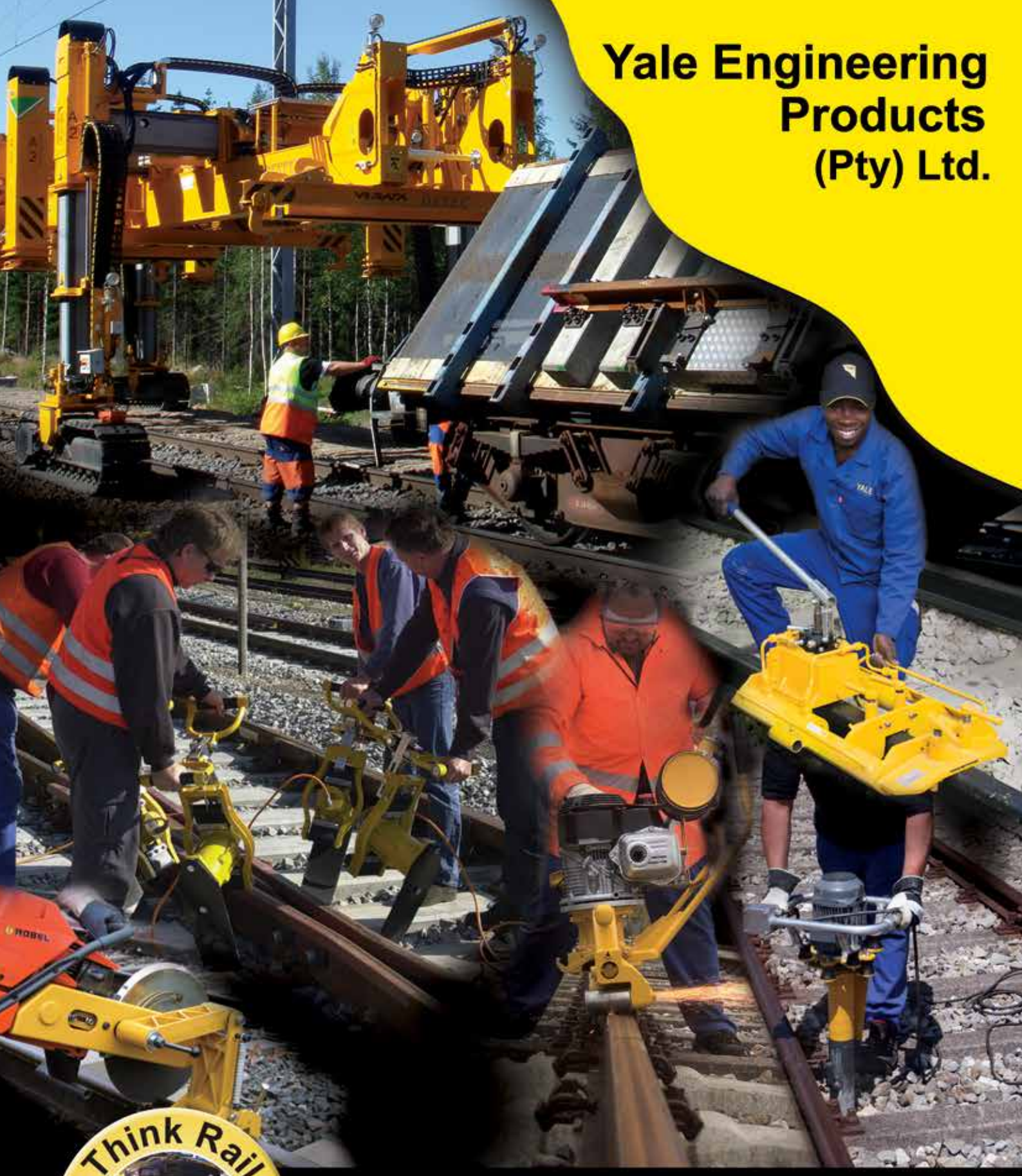
Tembela Kulu (centre) - winner of the 2015 BWASA businesswoman of the year award (government category) – holds a degree from UCT, an honours degree in business administration from Stellenbosch, and is studying towards an MBA at Regent Business School. Currently she is Gauteng provincial manager for the Passenger Rail Agency of South Africa (Prasa).

NEW LOUNGE AT DURBAN STATION

A new air-conditioned lounge for long distance train passengers opened recently at Durban station. The venue, featuring ample seating and internet access, can accommodate about 100 people and has its own toilet, kitchen and information desk facilities. The lounge is conveniently situated at the entrance to the platforms.

FREE GAUTRAIN RIDES FOR KIDS

In terms of an arrangement agreed by the Gautrain Management Agency and Freedom Park, pupils from a number of schools experienced Gautrain travel and a heritage tour of Freedom Park in the course of September and October 2015. Freedom Park hosted the scholars, who were drawn from different backgrounds.



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Low-level platform at Gouda

BUSES REPLACE TRAINS AT GOUDA

Metrorail has introduced buses to replace the train service at Gouda station, which is unsafe for passengers, according to the Railway Safety Regulator (RSR). Some of the reasons listed include holes in the platforms, which are "dangerously low in relation to the tracks", the absence of toilet facilities, insufficient lighting and platforms of inadequate length. Metrorail says upgrading work will commence in 2016.

APPLE EXPRESS

Much has been written about the dormant 610mm gauge Apple Express, the laudable aims of its supporters and the promises of an imminent return to operation. The line has been unused – and unmaintained - for some five years. Recent photos of the iconic van Stadens bridge, 44km west of Port Elizabeth on the 285km Avontuur narrow-gauge line, cast doubts on its condition and suitability for use by trains - and might not satisfy the Railway Safety Regulator. The bridge, 78 metres above the river and 156m in length, is the highest narrow-gauge railway bridge in the world, and the second highest rail bridge in South Africa.

The bridge at van Stadens

Photo: Craig Dean

SELL OFF THOSE OVERSIZED TRAINS

Writing in Business Day, Chris Thurman observes: "While it certainly wouldn't fix Prasa's problems, as the rand slides to unprecedented lows, one way of ameliorating the mess would be to sell off all those oversized trains Prasa bought not too long ago, to an overseas buyer. We could offer a substantial discount and probably still make a small profit in rand terms. Call it making the best of a bad situation."

PRASA CARRYING PASSENGERS ILLEGALLY

Section 22 of the National Railway Safety Regulator Act (Nrsra) provides that no railway operation may be undertaken unless the applicable safety permit has been issued.
In the case of the new Afro4000 locomotives, the RSR gave permission for them to haul test trains. without passengers on board. The regulator in fact only grants "test" clearance certificates, whereas - in order to carry passengers - "operational" certificates are required. An operational certificate is only granted when the RSR is completely convinced that it is safe for the locomotive to haul trains carrying passengers. Specifically, parliament's portfolio committee on transport has been told, the train that derailed at Modder River in August was operating on test authority but carrying passengers illegally, therefore putting their lives at risk.

No trains today: station at Simon's Town

SAND AT SIMON'S TOWN

There hasn't been a train at Simon's Town since February. A retaining wall collapsed, resulting in sand everywhere. The electric signals still work fine, though there aren't any trains to take notice. Regional manager Richard Walker expects the trains to be back in January next year. He explains that repair work was delayed because of Department of Environmental Affairs regulations. "These require that we submit an environmental management plan on how the work will affect the environment."

Regular commuters are unimpressed. Twelve months to draw up a plan and get it passed – you could import a locomotive from Spain in half the time, one traveller complains.

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International Heavy Haul Conference to be held in South Africa

It is expected that some 1,500 delegates will attend the 2019 event. This will generate very positive publicity for South Africa and its rail operations.

TFR executive manager: strategy and long-term planning Brian Monakali.

South Africa last hosted an international heavy haul conference in 1997, in Cape Town. At that time, the host company - known then as Spoornet – already operated two heavy haul lines of considerable length. Now, due to the efforts of the South African Heavy Haul Association (SAHHA), the next conference of the International Heavy Haul Association (IHHA) is to be held in South Africa in 2019.

Railways Africa spoke to Transnet Freight Rail (TFR) executive manager: strategy and long-term planning Brian Monakali, who chairs SAHHA, about this success.

"Putting a winning proposal to the IHHA was a combination of factors," Monakali explains. The SAHHA executive started organising more than a year ago by opening a South African heavy haul chapter, something which gave the South African proposal considerable credibility. What makes this success more notable is that China was among the other contenders and also put a strong case forward for hosting the 2019 event.

"The South African heavy haul team was actively involved in the conference held in Perth, Australia from 22 to 24 June 2015. The conference provided an opportunity for the IHHA to hold its board meeting where Monakali presented South Africa's bid to host the 2019 event.

Building on the success of the 2014 SAHHA Conference in Johannesburg, members of the South African chapter submitted eight papers which were accepted for presentation at the conference in Perth.

TFR engineer-in-training (EIT) Kihisha Suleman presented two papers at Perth. The first was prepared by herself and Owen Phiri, also an EIT, and was entitled *Aluminothermy welding management using Lean Six Sigma methodology on the South African coal export line*. The second presentation. prepared in collaboration with Justice Ngoato, was entitled *Study of the development and growth of transverse defects in the Transnet Freight Rail network*.

TFR general manager: logistics integrator Pragasen Pillay presented a paper jointly prepared by himself and colleague Tamara Govender. This was entitled *The evolution and operational impact of AC-DC wire-distributed powered trains on the South African coal export line*.

TFR principal engineer Robert Fröhling presented three papers, the first produced by himself and Eduard

Continues on page 38

Photo: Craig Dean

SAHHA Workshop

On 8 and 9 October, the SAHHA and University of Pretoria co-hosted a two-day technical workshop where international and local speakers gave presentations on the latest developments in maintenance, operation and design aspects of heavy haul operations. This was an opportunity for delegates to hear about the recent IHHA conference in Perth, and key lessons learned there.

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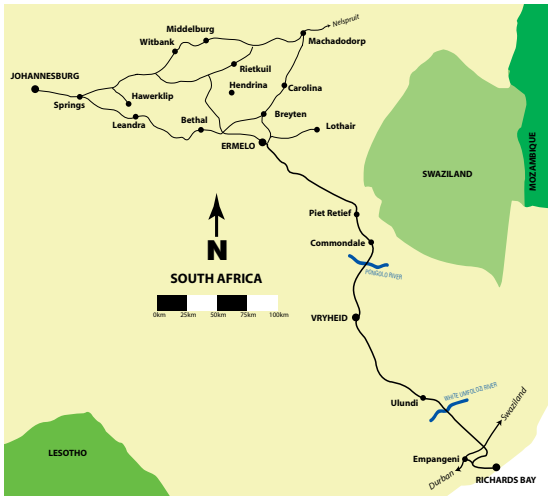
Ore and Manganese Line



Coal Line

Reitmann, with the title *Cape gauge track geometry quality - what is acceptable?* The second - *Development of a condition reporting system based on experience gained from a prototype system* - was a collaboration with Georg Hettasch, and the third, produced by Fröhling and Ulrich Spangenberg, had the title *Mitigating severe side wear on 1:20 tangential turnouts*.

Professor Hannes Gräbe from the University of Pretoria (chair in railway engineering) and Dylan Jacobs from Transnet Capital Projects co-presented the paper *Determining the neutral temperature of continuous welded rail - new insights and observations*. In addition, Fulvio Busatta from the University of Cape Town presented the paper *Structural health monitoring of the Olifants River viaduct*.

As part of the opening sessions of the conference, Brian Monakali gave a presentation on the latest developments in South African heavy haul operations.

Of the 200 papers presented at the Perth conference, the IHHA committee selected 10 for best paper awards. One of these was that by Robert Fröhling and Ulrich Spangenberg.

"All these factors combined to show that South Africa was keen to be the next host," Monakali says, commenting that there were noteworthy contributions from the Australian contingent. "I noticed that the heavy haul industry is currently emphasising technological development – new and better ways of doing things."

From his experience at the conference, Monakali is recommending the adopting of yet more advanced infrastructure maintenance techniques to Transnet. "We need to increase the frequency of infrastructure inspection and be able to have the inspection equipment on operating trains."

Explaining why there is a need for specific heavy haul associations and conferences, Monakali explains that the technical challenges encountered in running high axle-load railways are far more severe than in passenger and general freight operations. "In the early days of heavy haul, rail operators in South Africa and other parts of the world encountered many problems such as frequent derailments."

It is expected that some 1,500 delegates will attend the 2019 event. This will generate very positive publicity for South Africa and its rail operations.

Monakali found it interesting that South Africa's heavy haul operations are held in esteem by other world players. Achieving what we have on Cape Gauge is seen as particularly remarkable. "And now that we are starting to almost double the length of lines in the heavy haul category - with the conversion of the manganese line and the construction of the 500km Waterberg line - we will be an even more meaningful player in the future," he says.

"Here at home, the growth of heavy haul lines will strongly assist in the success of Transnet's Market Demand Strategy," he concludes.

Waterberg – Key to South Africa's Future Energy Needs

In order not to disrupt traffic on the existing Lephalale to Pyramid line, upgrading to carry greatly increased tonnage is being carried out in phases. Eventually, it is intended this line will carry 24 million tons a year.

However, Monakali explains that a completely new heavy haul line is planned, to run from Lephalale to Ermelo. The pre-feasibility study for this is nearing completion. He expects that a start will be made on the full feasibility study before the end of the year, taking about 18 months to complete.

Much of this work will be done by Transnet's own design team but external assistance will be called in as and when needed, Monakali says. However, board decision to signal the start of construction is still at least two years away.

A separate project is the construction of a rail link from Lephalale to Mahalapye in Botswana. To date, studies on this link are at an early pre-feasibility stage. It would be to Botswana's advantage to have a direct rail link from its coal fields in the east of the country to a major port. It has already sent a pilot coal train through Zimbabwe and on to Maputo successfully. At the same time, there are indications that interest in building the 1,600km Trans-Kalahari line to Walvis Bay has gained momentum.

Strategically, South Africa needs coal both for export and domestic power generation. Clearly a shorter 815km route for Botswana coal through South Africa to Richards Bay would be advantageous – for South Africa as well as Botswana.

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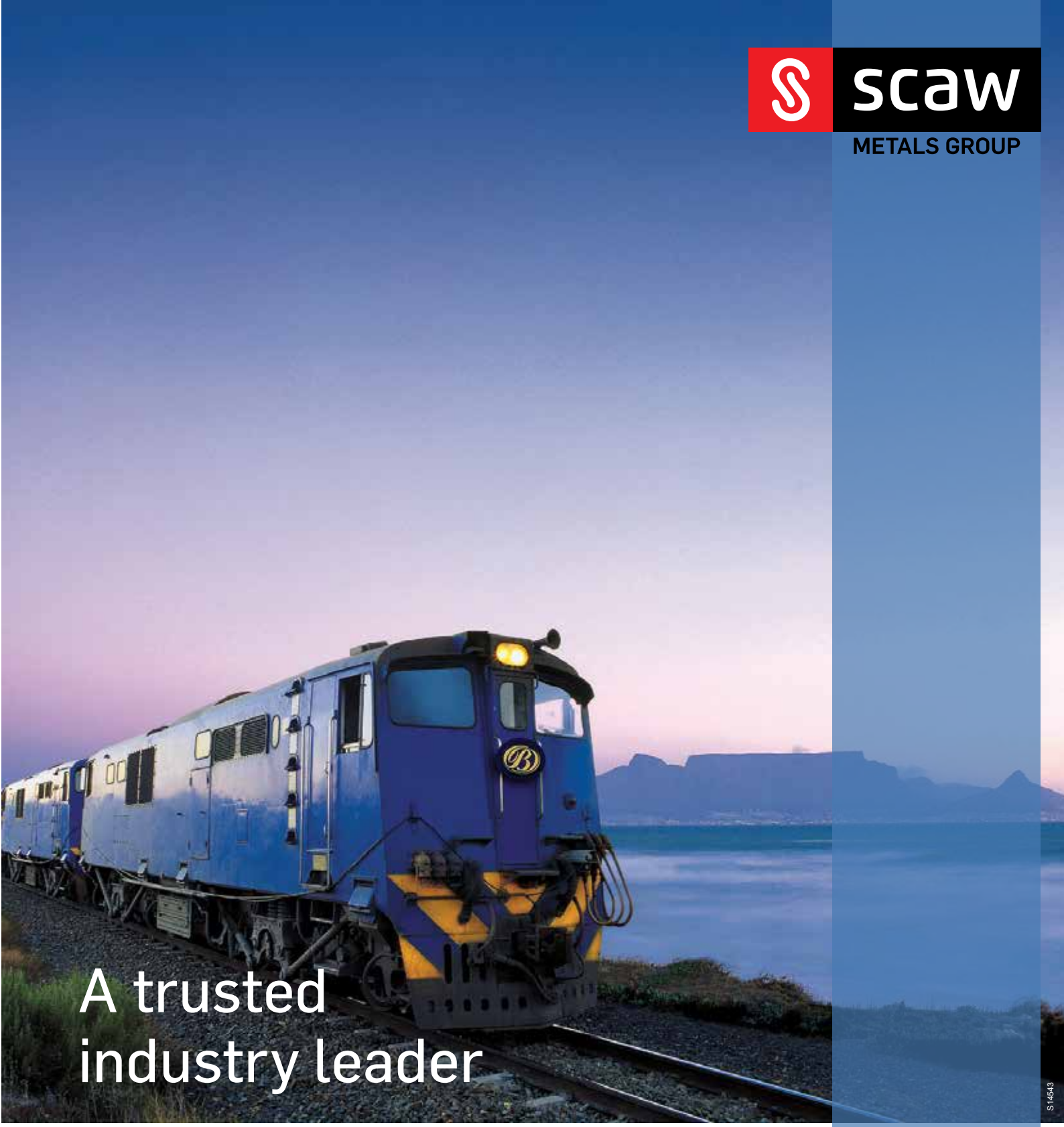

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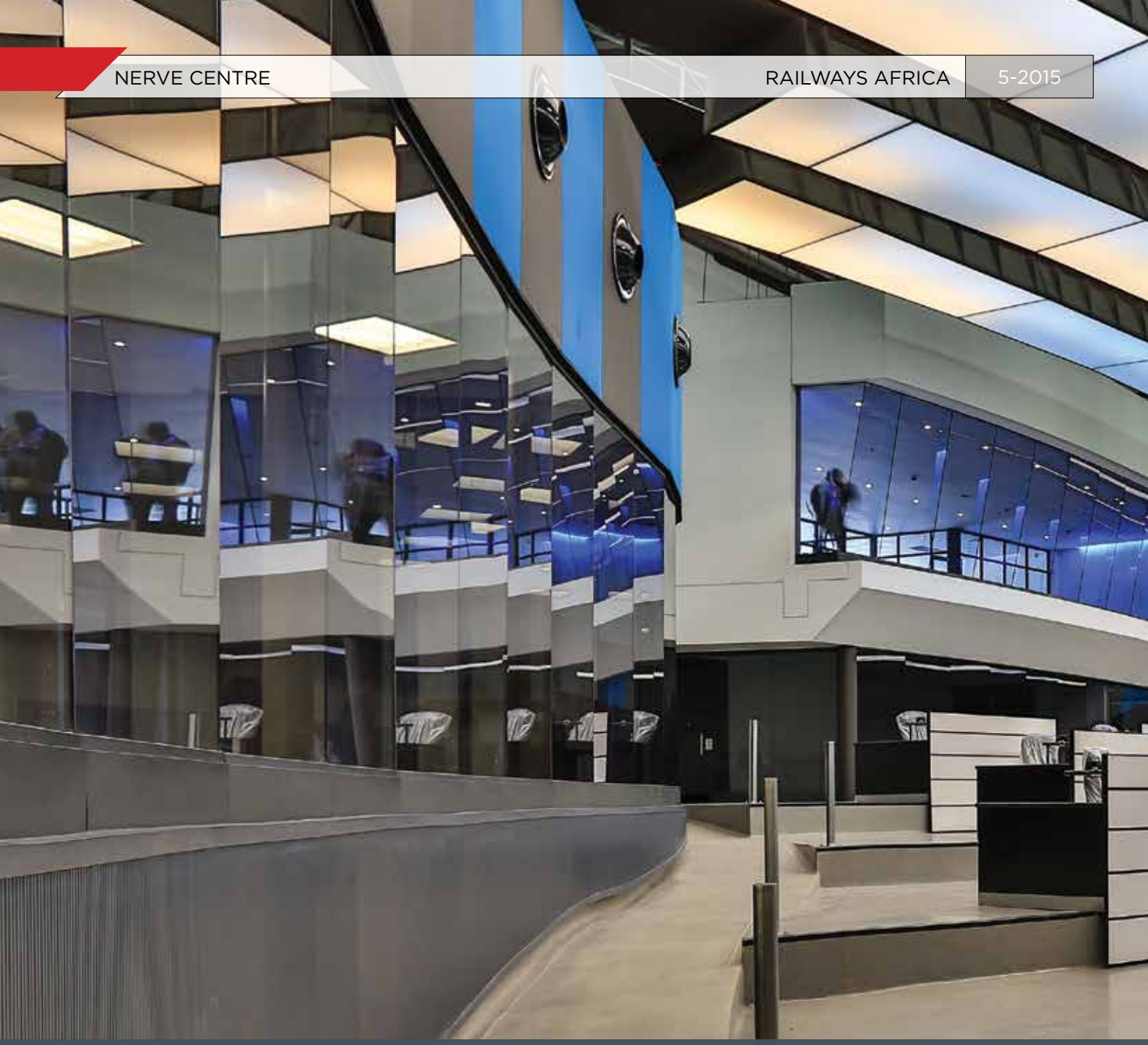
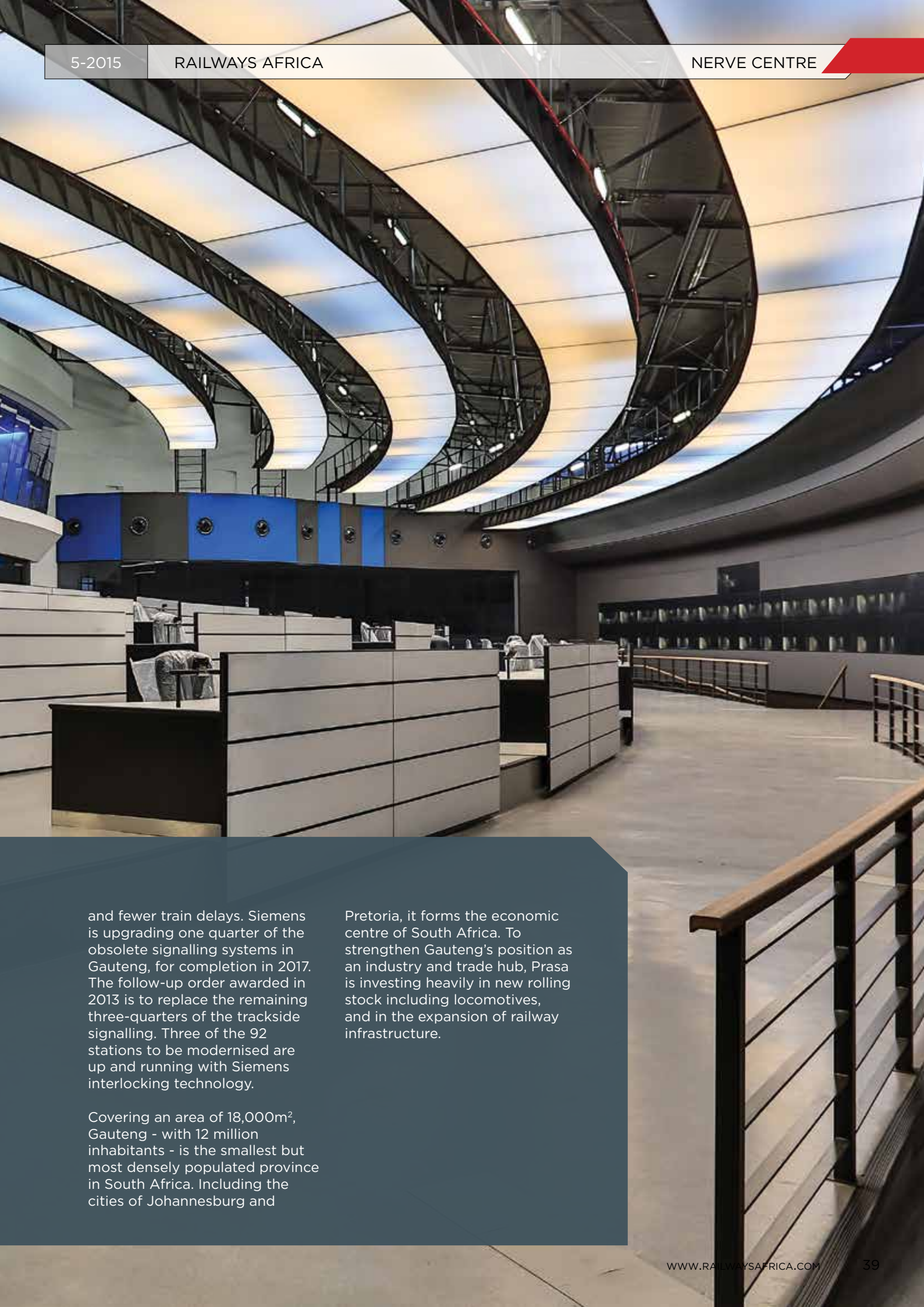


Gauteng Nerve Centre Completed

The new state-of-the art Gauteng Nerve Centre (GNC), providing centralised rail traffic management for the Passenger Rail Agency of South Africa (Prasa), has been completed by Siemens at Kaalfontein near Johannesburg. When it comes into full use from January 2016, replacing 35 existing control rooms, it will constantly monitor each and every one of the over 600 trains in operation every day, enabling the controllers to respond immediately to any operating failure, accident or other incident.

The new building, covering an area of around 3,400m^2, acts as an "eye" overlooking the entire passenger rail network. At the heart of the GNC, the control room is equipped with a video wall over 52 metres long and two metres high, monitoring all train movements and displaying traction power supply, weather information and operational data. The train movements are controlled via 30 multi-screen work-stations, each fitted with an integrated communication module, combining telephone, trunked radio and GSM-R communication. The GNC also includes the centralised control of passenger information, monitoring equipment for the overhead contact line and closed circuit television at stations.

The signalling systems currently in use in the province are obsolete. They comprise a mix of technologies, some dating back to the 1930s. Upgrading the trackside equipment has been designed to reduce the headway between successive trains from 15 minutes to around 2.5, thus increasing operating capacity and ensuring greater flexibility, a higher level of safety



and fewer train delays. Siemens is upgrading one quarter of the obsolete signalling systems in Gauteng, for completion in 2017. The follow-up order awarded in 2013 is to replace the remaining three-quarters of the trackside signalling. Three of the 92 stations to be modernised are up and running with Siemens interlocking technology.

Covering an area of 18,000m^2, Gauteng - with 12 million inhabitants - is the smallest but most densely populated province in South Africa. Including the cities of Johannesburg and Pretoria, it forms the economic centre of South Africa. To strengthen Gauteng's position as an industry and trade hub, Prasa is investing heavily in new rolling stock including locomotives, and in the expansion of railway infrastructure.

Making cities more competitive: the economic case for public transport.

The Economic Case for Public Transport

Speaking at the Transport Forum Month-of-Transport-Celebrations on 1 October 2015, Gauteng Provincial Government director of legal and policy research Advocate Alma Nel presented her research into Making cities more competitive: the economic case for public transport.

"South Africa faces significant public transport challenges," she said. One of these is the effect on the economy and transport availability by one of apartheid's legacies - urban sprawl in our cities - and the fact that the road systems due to this favours use by private motor vehicles.

Public transport services are important in many ways. They provide mobility, can shape land use and development patterns, generate jobs and enable economic growth, and support public policies regarding energy use, air quality and carbon emissions.

"Public transport," she went on, "is the lifeblood of a city's economy and you cannot have a smart city without highlighting the important role played by public transport. Investment in public transport is crucial in improving the quality of life and economic vitality of our cities."

In Gauteng, the majority of residents travel by bus, rail or minibus taxi; but there is a steady increase in residents who rely entirely on private car use.

The introduction of BRT and the Gautrain provides opportunities and indicates that transport in Gauteng is developing into a system of high-speed connecting hubs with a strong support base of feeder services.

"We still support bus nodes through subsidisation," Nel said, "Not forgetting the continued discussions with the taxi operators and associations to further enhance our transport system, specifically through the current discussions towards incorporation of this mode into the public transport operations grant."

The Gautrain complements and supplements the other public transport modes in Gauteng, allowing citizens a safe, efficient and reliable solution.

With the expected global increase in urban populations - 27% over the next 30 years according to UITP - and the rapid urbanisation rates in Africa, the provision of a safe and secure rail system like Gautrain in a fast developing Gauteng Province, becomes a top priority. The Gautrain feasibility study found that on average it is five to ten times safer to travel by rail transport, compared to road. Poor transport infrastructure marginalises the poor and limits the ability of many members of society to move freely, and makes all travel less safe. The Gautrain brings independence to all, especially to women, learners and people with disabilities. It therefore assists in lowering the socio-economic cost of travel to society.

Investment in public transport can be expensive, but the benefits are much greater and projects like the Gautrain help towards achieving long-term economic sustainability. Government is committed towards providing South Africans with safe, accessible public transport. This has been emphasised at national, provincial and municipal level as an aspect that requires immediate attention.

The transformation of public transport requires consistent inter-government cooperation and coordination. "This is a daunting task," said Nel, "and will require the setting of clear public transport indicators such as reduced travel times, reduced costs, to lessen the percentage of household income spent on transport and the determination by the relevant transport authorities of the nature and size of vehicles to be used, including regular renewal of the public transport fleet and access to transport."

In closing Nel stated that in order to ensure their own economic prosperity, it is up to the commuters to take advantage of these systems and support their growth, and to push for a future that doesn't see congested roads and more unnecessary road fatalities.

Economic Regulation and Competition in Railways

Ms Kgomotso Modise (DDG: Transport: Department of Public Enterprises) presenting: "Economic Regulation and Competition in Railways" Photo: Transport Forum

The answer may lie in the competition of railways.

Essentially, this will remove barriers to entry and allow third party access to monopoly railway infrastructure.

Result in lower fares, additional services through utilisation of spare capacity, and will apply pressure on cost.

Furthermore, reduction in monopolies over single geographic corridors and lessen profitability, as well as creating a loss of economies in scale and density and loss of integration and coordination.

At the recent Transport Forum (Transport Month Celebrations), held on 1 October 2015, Kgomotso Modise, deputy director-general: transport: Department of Public Enterprises, addressed the issue of *Economic regulation and competition in railways*.

"Historically", she stated, "network industries - including the railways - were national monopolies." They suffered from lack of investment commensurate with economic growth, and lack of innovation to respond to dynamic logistics requirements. The effect was the inability of railways to remain competitive, resulting in investment curtailment and deregulation of road transport. This had a major impact on the performance of railways, and ultimately a decline in railway market share on the national transport scene.

There are two types of mechanisms at government's disposal to deal with market failures - economic regulation and competition policies (antitrust regulation).

Regulation can create stability. But it can also hinder the competitive dynamics necessary for a healthy financial environment. Globally speaking, general policy trends encompass the deregulation of road transport, the regulation of railways, and the introduction of competition in railways. "More noteworthy however, the trend is moving towards collaboration," said Modise. She was speaking of the trend towards collaboration between the road and railway industries, as well as the public and private sectors.

Arguably, the deregulation of road transport is intended to deal with rail inefficiencies such as service and price, but the effect has been to allow the road transport sector to expand significantly, and competition has intensified. At the same time, investment in railways declined significantly, due to various policy decisions of the day. Railways lost the transporting of many commodities - especially manufactured goods - over many routes, mainly the shorter ones, but in some cases on entire long-haul routes. This came at a cost, including externalities such as damage to the road networks, accidents, etc. Furthermore, road infrastructure costs were covered mainly by taxpayers while railways remained self-funding, resulting in skewed operational costs and therefore unrealistic prices between roads and railways.

"Once we move freight to the road it is difficult to move it back to rail because of the expenses incurred." Modise pointed out.

The answer may lie in competition in railways. Essentially, this will remove barriers to entry and allow third party access to monopoly railway infrastructure. Additionally, it will create non-discriminatory rules for the allocation of paths and for access charges. This will result in lower fares, additional services through utilisation of spare capacity, and will apply pressure on cost. Furthermore, it will reduce monopolies over single geographic corridors and lessen profitability, as well as creating a loss of economies in scale and density and loss of integration and coordination.

However, economic regulation in railways - which means the regulation of access - access charges, haulage prices, and levels of service would allow entry and exit into different markets, depending on their profitability. It will create stability of prices vs profitability, and create value of service pricing and equalise discrimination.

So looking to the future of South Africa Modise asked, "What can we provide? What can we do to address the needs of the country and ensure enough capacity going into the future?" The first critical step would be defining the goals and objectives of economic regulation and competition policy in developing and implementing policy reforms. Railway technical skills are very crucial in the implementation of rail economic regulation, to ensure that the decisions taken into account are in line with rail industry realities. National transport strategies may differ, but broad government policy aims and principles for transport should be coherent when applied to the sector as a whole, independent of mode.

"We must look at our own challenges," said Modise. No single best model for economic regulation of railways exists. Instead, regulation should be custom-designed to achieve government objectives for the whole transport sector, taking account of other aspects of railway reform. Lastly, she explained that government actions are always influential and often decisive in helping or hindering a successful railway.

Why the **Luxembourg Protocol** will Boost **Railway Investment** in Africa

by Howard Rosen

Howard Rosen is an English lawyer based in Switzerland who has advised on legal and strategic aspects of international railway rolling stock finance transactions for over 25 years. He is chairman of the Rail Working Group, a global not-for-profit industry association, based in Switzerland, focused on promoting the adoption of the Luxembourg Rail Protocol worldwide.

The strategic direction has been agreed at the highest level: to prioritise investment in the railways across Africa. But where will the money come from?

The African Union (AU) argues that lack of infrastructure in Africa is reducing growth by up to 2% a year. The African Development Bank stated in 2013 that the cost of transporting goods in Sub-Saharan Africa is the highest in the world. The WEF 2015 Africa Competitiveness Report calls the region's infrastructure shortfall a "critical bottleneck" to reaping the benefits of increased regional integration (today only 11.3% of trade in Africa is intra-regional). The 2012 report of the UN/AU Programme for Infrastructure Development in Africa (PIDA) predicted an increase in African transport needs of 600% to 800% between 2010 and 2040.

Railways could transform the continent, but currently plays an insignificant role. No wonder, with rail density of one kilometre of rail track for every 357 square kilometres of land. Compare this with the United States' one kilometre of track for every 43 square kilometres, and Germany, where the ratio is one to under 10. And it is getting worse. Between 2005 and 2011, usable rail tracks in Africa shrank from 58,000km to 50,000km.

Moreover, railways are not just essential for economic growth but a crucial part of any sustainable development agenda. Yet, according to the UNIFE 2014 world rail market study, annual investment in new railway rolling stock in Africa has been about 4% of global procurement, averaging just over $2bn per annum.

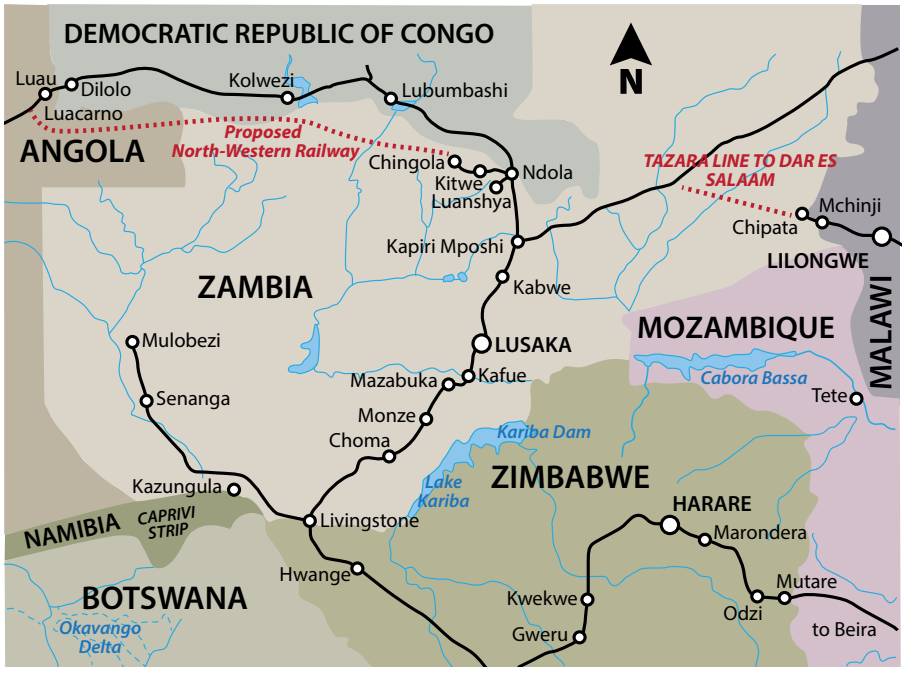
More Rail – But Who Pays?

True, the position is gradually changing. Large rail projects are under way in countries such as Kenya, Ethiopia and Mozambique, and there are plans to bring railways to Burundi and Rwanda. The $475 million, 34km Addis Ababa Light Rail Transit project opened in September – sub-Saharan Africa's first light rail service. But these projects stretch states' financial resources to the limit. The new Mombasa to Nairobi line has raised Kenya's external debt by about 17%. Implementing plans to extend the line north to Naivasha will increase this even further.

Other costs flow from the fact that the African rail system operates on three incompatible rail gauges. While AU policy encourages new rail using the European standard gauge, standardisation will have a heavy price. South African Transport Minister Dipuo Peters recently called for the conversion of her country's 20,000km of track to standard gauge. This alone could cost up to $110 billion. How is this all to be paid for?

According to UNCTAD, African countries invested an average of 15% to 25% of GDP in transport infrastructure from 2005 to 2012. India and China invested about 32% and 42% of GDP respectively in the same period. Richer countries in Africa can draw on their own resources and borrow on the capital markets, although this has limits, particularly when commodity prices fall. Loans are provided by states, notably China. Nevertheless, a recent PIDA report highlights an annual funding gap for infrastructure of close to $50 billion.

There is clearly an urgent need to attract investment from the private sector and for states to work with banks, investment funds and institutional investors to cover this shortfall. Yet, as another PIDA report also acknowledges, to do this countries must "ensure a competitive market based on clear legislation with enforcement of commercial law and transparency in procurement." The report continues: "The absence of enabling legislation and regulations, a lack of local skills and a poor understanding of public-private partnership (PPP) risk allocation are all bottlenecks currently preventing many countries from fully unlocking private sector interest, particularly on regional



New lines proposed in Zambia

projects. But if put to broader use, PPPs hold the potential for true transformational impact."

A Radical New Tool

Provision of rolling stock is of course a critical part of any PPP (for example "Build Operate Transfer" structures) between the public and private sectors. In any new rail project, the cost of rolling stock represents between 25% to 30% of total expenditure over the life of the PPP. Fortunately there is a radical new tool coming to allow states to lay off that cost to the private sector. This is the Luxembourg Rail Protocol to the Cape Town Convention on International Interests in Mobile Equipment, which will play a key role in bringing private capital to support existing and new rail projects by facilitating banks and other funders providing finance for rolling stock procurement.

Once in force, the Protocol will offer a new global system of international security rights for secured creditors (secured lenders and lessors). It delivers the legal framework for new and cheaper sources of private sector finance for railway equipment, with the advantage that a creditor can provide capital secured on the collateral of the financed assets, and not just have to rely on the credit status of the borrower. The new system will apply whether the debtor is state-owned or private. Indirectly it will lead to a more competitive and dynamic rail industry worldwide, and bring important social, environmental, developmental and economic advantages, as well as new business opportunities.

By giving lessors a clear set of rules protecting their interests, it will open the way to the provision of rolling stock in Africa through operating leasing. This will lower barriers to entry for new operators – currently a high risk, and therefore high-cost business - and create a system for more efficient use (including sharing) of existing and new railway equipment across the continent, moving the industry towards more standardised equipment and more consistent technical support and maintenance.

This is not a theoretical need. Grindrod Rail's rolling stock leasing joint venture, GPR Leasing, already offers leasing solutions for railway equipment across Africa. According to GPR's Divisional CEO Jacques de Klerk, the capital-intensive nature of rolling stock, as well as the ageing African fleet, present a huge need for rolling stock leasing solutions, the preferred model worldwide. He adds: "With the opportunity come risks, and for rolling stock leasing companies to survive in Africa, they need to have the ability to track and trace their assets, ensure the locomotives are maintained in line with OEM standards, and that they have the ability to uplift their assets on client non-payment."

A Common, Coherent System

The Luxembourg Rail Protocol sets out a common and coherent system for railway rolling stock finance. It establishes clear creditor rights both during the financing term and on termination due to default, insolvency, or otherwise where the creditor holds an "international interest" in the asset as set out in the Protocol. The new "international interest" arises from security created on the rolling stock in favour of three defined categories of creditors. These are: a lessor under a lease, a conditional seller under a title reservation agreement, and a secured lender. In each case, the counter party (lessee, conditional purchaser, or chargor) must have its principal place of business in a country that has ratified the Protocol.

The Protocol applies to all railway rolling stock in the broadest sense, from conventional rail locomotives and wagons through to light rail and metro trains, trams and even cable cars. The international interest can (and should) be registered on closing of the financing at an international registry to be based in Luxembourg. This is because if there is more than one international interest created on an asset, the first registration will have priority unless the creditors agree otherwise. The new registry will be entirely electronic, accessible via the internet, and searchable by the public 24/7. Prospective purchasers

Diesel multiple-unit set in Nigeria.

and financiers will be able to see, in real time, if another party has a claim on the asset about to be purchased or financed.

The Protocol also recognises and regulates a state's right to prevent repossession in the public interest in specific circumstances; deals with security rights in rail assets created prior to the Protocol coming into force; and guarantees parties' rights to choose the law applicable to the security or lease agreements.

One consequence of this new system is that for the first time in the rail industry, there will be a life-long, unique identifier for each item of rolling stock, issued by the registry and fixed permanently on the asset. This will bring interesting additional industry benefits, facilitating instant asset location tracking as well as helping with insurance issues and accurate maintenance records over the entire asset life.

Station scene on Mozambique's Nacala line. Photo: Roderick Smith.

The Protocol will be particularly important for ensuring a creditor's security when the rolling stock crosses borders, not just because the creditor's rights will be recognised in the same way in each of the states where the rolling stock happens to be (as long as that state has ratified the Protocol), but also making multinational financing easier, since the same rules will apply in different jurisdictions.

However the Protocol's application to pure domestic transactions, where none of the parties, or the financed assets, are outside the same country, will also be important, as currently there are rarely clear rules on a creditor's security position in any given state, or even a local title registry.

This new instrument will preserve capital for governments and save money for borrowers and lessees because the increased legal certainty for a creditor will not only lower risks generally, leading to greater readiness by banks, institutions and other private investors to provide funding for rolling stock procurement at a cheaper rate, but will also facilitate significant savings by reducing banks' capital requirements under "Basel III". In a recent presentation in South Africa, a major bank estimated that the positive difference in funding rates if the Protocol were operating would range from 0.45% to 1.9% over a five year period, depending on the customer's credit status.

Tried and Tested – and Coming Soon

The system is already tried and tested. The Cape Town Convention and a protocol applying the Convention to aircraft was adopted in 2001 and is now operating in about 60 countries, including many African states, with the aviation international registry in Dublin. It is a remarkable success: over 500,000 registrations covering 110,000 aircraft objects with an estimated value of over $US500 billion since it started operations in 2006. Moreover, export credit agencies in OECD member countries are permitted by a special OECD industry understanding, in defined circumstances, to offer lower financing rates for airframes and aircraft engines where the Aircraft Protocol applies.

The Luxembourg Rail Protocol was adopted in 2007. The European Union has already ratified the Protocol (in respect of its competences) and a growing number of European countries, as well as countries outside Europe, including South Africa, have either ratified the Protocol or are working towards this. The registry is expected to begin operations in 2017.

New standard gauge railway under construction in Kenya.

Every country in Africa should ratify the Luxembourg Rail Protocol at the earliest opportunity. There are no downsides (the costs of registrations should be easily outstripped by savings on documentation and cheaper finance rates). This new framework will relieve the state from significant financial burdens, create fresh sources of investment for the rail industry and thereby attract entrepreneurs and investors, as well as help underwrite Africa's economic development in the coming decades. It will also make future financing more focused and transparent, and empower African manufacturers, operators, lessors and financiers to provide solutions for Africa's needs in this area.

The commitment by African leaders to a major expansion of the rail sector, as a key component of a sustainable growth and development agenda, has already been made. The logic is undeniable and construction has begun. The only question is how to pay for it. By facilitating cost-effective private sector finance for rolling stock, the Luxembourg Rail Protocol will provide an important part of the answer.

For more about the Luxembourg Rail Protocol, visit www.railworkinggroup.org

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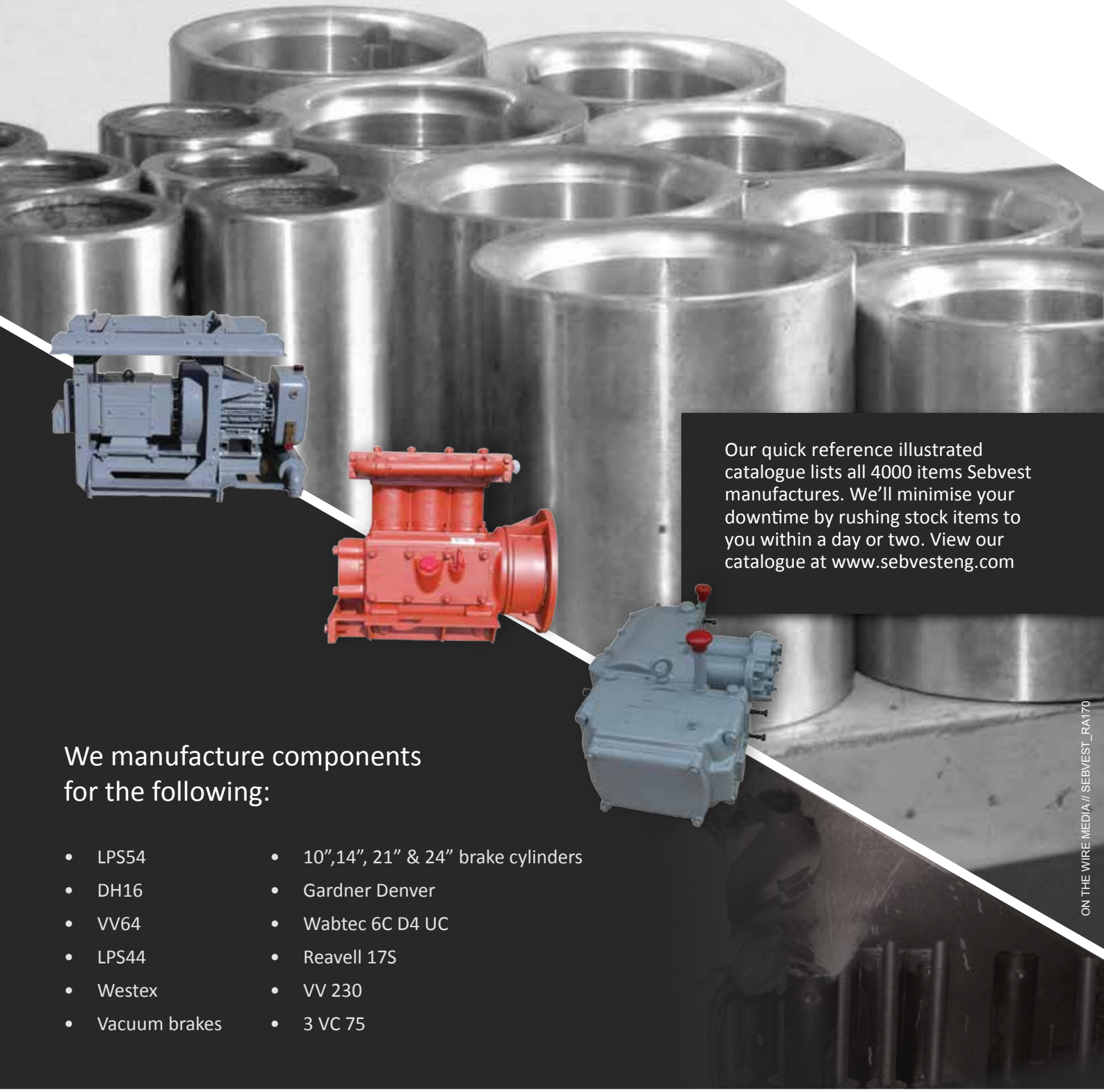

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ACTOM: SECOND YARD PROJECT

Actom Signalling has been awarded a further contract to provide and install semi-automated yard control systems at 13 Transnet Freight Rail stations around the country, following its earlier successful completion of a similar assignment.

"We view the award as affirmation of our success with the earlier project in developing an effective and efficient yard control system," said Actom Signalling's general manager Peter Colborne.

The new project, awarded in mid-August 2015 and scheduled for completion in December 2017, is for yard control systems at Kazerne, Natalspruit and Springs in Gauteng; Newcastle and Vryheid in Kwazulu-Natal; Witbank, Belfast, Nelspruit, Komatipoort and Oosbank in Mpumalanga; Phalaborwa and Thabazimbi in Limpopo, and Rustenburg in North-West Province.

"The initial project was very challenging as it involved converting the conceptual design into a commercial system against tight time constraints. Having overcome those hurdles in the first phase, we expect things to run much more smoothly this time round," Colborne says.

The new yard control is semi-automated and replaces existing manually-operated mechanical systems in which the points have to be thrown by an operator on the ground. Yard operators are provided with two alternatives for operating points, using either a trackside push-button or a local control panel (LCP) that, although a remote control system, is located in a line-of-sight position so that the operator can see the points or series of points he is controlling.

The basic elements of the yard control system: an axle-counter detection point, an indicator and a points machine.

The earlier project, executed between mid-2012 and the end of last year, comprised five yard control contracts for a total of 10 stations in Gauteng, Kwazulu-Natal, Western Cape, Northern Cape and Eastern Cape.

Actom (Pty) Ltd is the largest manufacturer, solution provider, repairer and distributor of electro-mechanical equipment in Africa, offering a balanced combination of manufacturing, service, repairs, projects and distribution via its 40 distribution outlets throughout Southern Africa.

A major local supplier of electrical equipment and services, Actom holds numerous technology, distribution and value added reseller agreements with various partners, both locally and internationally.

SASRE – ANOTHER YEAR OF EXCELLENCE

Excellence in engineering is something that most people take for granted. We don't expect the wheels to come off our cars, or that trains will derail. This excellence is driven by the maintenance of standards and by research and innovation.

The South African Society of Railway Engineering (SASRE), which held its annual gala dinner on 21 August, is one of the more dynamic players, pursuing an active role in maintaining and improving standards, and extending the boundaries of engineering knowledge.

Throughout the year, about once a month, SASRE invites one of its members to make a technical presentation to the society. At the end of the year, awards are given for the most illuminating papers. This year the winning award was presented to Pat Smit of DCD Rolling Stock for his presentation *Passive hydraulic steering (the Jika) for bogies*.

Transnet Freight Rail's Neels van Bergen won an award for his presentation entitled *Train design processes*.

Addressing the guests, SASRE chairman Jan de Beer observed that there were considerable forces, both positive and negative, bearing on and potentially changing South Africa's rail industry.

On the positive side there is massive investment into the rail arena of nearly R500 billion. Pressures on the industry however include the Public Protector questioning the way we do business. Thuli Madonsela recently released what has been termed "a damning report" on the Passenger Rail Agency of South Africa (Prasa)

The downturn in prices paid for export minerals, de Beer observed, has had an impact on sectors of the economy such as mining. In addition, railway union demands for more money coupled with allegations of exploitation will drive up national logistics costs.

With this news in mind, de Beer asked what the future role of engineers should be? Government is demanding a decrease in transport expenses to reduce the cost of doing business. Anyone who understands income statements will see that this is a major challenge.

HARTING CELEBRATES 70 YEARS

September 1st 2015 marked the 70th anniversary of the family-owned and managed company HARTING. The Harting success story started just a few months after the end of the war in 1945, and since then the company has advanced to become a globally renowned technology group.

Wilhelm and Marie Harting launched the company "Wilhelm HartingMechanischeWerkstätten" in a 100m² repair workshop in Minden. Wilhelm Harting, an engineer, had headed an aviation company in Berlin. Following a hazardous escape from his homeland, he decided to take the step to self-employment.

Initially, the fledgling company produced articles in daily use such as economy lamps, hot plates, irons and waffle irons. Marie Harting set off on a bicycle to deliver the products in the immediate region, and bartered food as payment.

Already, in the year 1947, Harting was represented at the first Hannover Trade Fair. The company experienced dynamic growth, and soon needed more space. In 1950, the move was made to the neighbouring Espelkamp, a settlement of refugees that was beginning to prosper.

The company succeeded in boosting sales year after year, introducing a steady stream of new and innovative products such as musical boxes, electrical medical devices, cigarette vending machines, magnets and connectors.

Following the sudden and unexpected death of Wilhelm Harting in 1962, Marie managed the company on her own until her sons Dietmar and Jürgen came on board in the late 1960s. In 1973, Jürgen Harting lost his life in a tragic accident at the age of 32.

Up to 1987, Marie and Dietmar Harting headed the company but Marie died in 1989. In March 1987, Margrit Harting assumed the position of managing partner. Thus for more than a quarter of a century, the Hartings headed the technology group on its way to becoming a global company.

Today, Margrit and Dietmar Harting are engaged in very close cooperation with their son and daughter, Philip F W Harting (senior vice-president connectivity & networks as well as president/general partner) and Maresa Harting-Hertz (senior vice-president finance and purchasing as well as president/general partner.) The third generation assumed the position of general partners at the end of 2013.

Today, Harting is present on all continents with a total of 12 production sites and 42 sales companies. The Harting range of products and solutions comprises connectors, device connection technology and network components. Harting products connect machines and facilities via data, signal and power.

Harting has great expectations pinned especially on business revolving around integrated industry topics and issues. These activities are consistently expanded. As Philip Harting explains: "We are accompanying our customers on their way to Industry 4.0 with tailored and modular solutions."

This course can only be charted in connection with qualified and highly motivated employees, which is why training and further training holds high significance at Harting. And in the company's seventieth year, their resounding success once again justifies Harting's course. In the last 2013/14 business year (to 30 September), sales advanced by an impressive 13% to €547 million, reaching a new high point. The number of employees rose to around 2,400.

"Nevertheless," de Beer continued, "in assisting the rail transport system in Southern Africa, the challenge is on the table to help provide an affordable and sustainable rail industry, as well as re-routing products from road to rail."

Quoting the Engineering Council of South Africa, de Beer said "(the role of the Council) is to ensure that South Africa enjoys all the benefits of a strong, competent, growing, sustainable and re-presentative engineering profession which is able to provide all the expertise necessary for the socio-economic needs of the country and is able to exact a positive influence in South Africa".

To do this, the following are essential:

- Standards
- Norms
- Practices
- Competency
- Ethics

"What are you doing in your business to achieve these criteria?" he asked.

The role of a professional, he suggested, is to apply his or her knowledge and skills in the interest of humanity and the environment, to execute their work with integrity and sincerity and in accordance with generally accepted norms of professional conduct and honour the standing of the profession.

"The challenge for us is what we can do to change public perceptions. I leave that to you, to do what is necessary to get into the newspapers with successes and positive news."

South Africa's economy has felt the burden of plummeting prices paid for export coal and other minerals, lower state subsidies and more costly imports by international suppliers. This has resulted in fewer job opportunities, and calls by receivers of services for lowered costs. In turn, this has seen reduced turnover, and with job losses, the inevitable socio-economic impact on workers and their families.

The challenge de Beer put to those present was, as rail industry suppliers and supporters, were their businesses compliant with the needs of all legislation and community requirements?" Do you live up to the social demands that are placed on us by society and government?"

"Is it not time that we trust one another to ensure skills transfer and respect those who have gained their experience by working through the ranks?" he asked in conclusion.

Dr Andrew Shaw
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"Our forecasts present a positive picture of a growing market for transport infrastructure, but it is important to ensure that this money is invested carefully and wisely, delivering increasing value to the funders, including all of us as users, taxpayers or investors."

Global Transport:

Infrastructure Investment Predicted to Reach Unprecedented Levels

Transport infrastructure investment is projected to increase at an average annual rate of about 5% worldwide between 2014 and 2015, according to an analysis released by PwC Africa.

The analysis on transport infrastructure spending to 2025, for which Oxford Economics provided research support, estimates the scale of current transport infrastructure investment and assesses the prospects for future investment from now to 2025.

Sub-Saharan Africa (SSA) is expected to have the fastest average annual growth rate of over 11%, while Asia-Pacific remains by far the largest transport infrastructure market, with investments increasing from $US557 billion to nearly $900 billion over the forecast period. However, transport infrastructure investment levels in Western Europe are expected to take a long time to recover, due to continual fiscal austerity – returning only to 2008 levels in 2022.

Dr Andrew Shaw, Transport & Logistics Leader for PwC South Africa, says: "Since the global financial crisis, spending on infrastructure has been constrained by the general squeeze on government expenditure in developing countries, while the long-term infrastructure gap continues. In some growth countries like Indonesia and India and many rapidly growing countries in Africa, the lack of transport infrastructure investment continues to inhibit growth. The recent fall in commodity prices has however reduced the viability of a number of large transport projects in Africa, particularly where these are directly related to coal, iron ore and other high-volume mineral exports.

"In some developed countries, the global financial crisis has increased support for investment in roads and other infrastructure, to drive economic and employment growth. Many infrastructure projects around the world suffer from obstacles such as local political opposition, technical challenges or other unexpected issues. Better design can help to avoid claims and disputes in the construction phase, while better procedures for project planning, preparation and approval will allow projects to be built much faster. But in many growth markets, the major issue for governments is that they lack experience in how to prepare the projects.

"Our forecasts present a positive picture of a growing market for transport infrastructure, but it is important to ensure that this money is invested carefully and wisely, delivering increasing value to the funders, including all of us as users, taxpayers or investors."

According to the report, investment in sea ports is predicted to grow the fastest, at 5.8% on average per year over the forecast period, while airport investments are expected to slow down to an annual growth rate of 2.6%.

Roads will likely remain the biggest area of investment, especially for growth markets. This is partly due to the rise in prosperity, and as a result there is expected to be more ownership of motor vehicles in developing countries. Trucking in Africa continues to remain the dominant provider of inter-regional trade and as countries across the region grow, so will the demands for improved road infrastructure.

By contrast, railways are forecast to see relatively strong growth in advanced economies with mature transport markets like Western Europe, where there is a growing opinion in favour of public transport – and particularly in the UK and Spain, where high-speed networks are expected to undergo further development.

Other highlights of the report:

Asia-Pacific

Large-scale development of transport networks will continue in many Asia-Pacific economies, given the shift in economic power from the West to the East, the rise in Asian wealth and rapid urbanisation. Significant investment in road infrastructure to accommodate ever more cars, along with investment in public transport to relieve congestion in urban areas, is expected. Strong growth in sea port infrastructure is also expected to support expansion in international trade.

Western Europe

The analysis predicts that transport infrastructure investment growth in Western Europe will be

moderate in the near future, given the already well-developed transport networks in many of the advanced countries, as well as continuing fiscal constraints and a high demand for more social infrastructure, especially in healthcare infrastructure spending, will likely be limited to targeted schemes for relieving traffic congestion. Rail investment, however, is poised for growth.

US and Canada

Given the maturity of transport networks in the US and Canada, investment is expected to grow by an average of just 3% per year over the coming decade. Overall, a decline in the US-Canada share of global transport spending – from 14% in 2014 to 11% by 2025 – is expected.

Latin America

Rising wealth levels in Latin America are expected to drive strong increases in car ownership and, in turn, a need for investment in road infrastructure. Road spending is expected to increase by an average of 11% per year between 2014 and 2025, more than double the world average rate. Increased prosperity will likely also generate demand for other forms of transportation: in particular, investment in sea ports is expected to grow at a similar rate to that in roads due to both increased consumer demand and commodity exports. Airport spending is also expected to increase, particularly during the first half of the forecast period as the first stage of development of the new airport in Mexico City gets under way.

Middle East & SSA

While mega-projects such as the metro for Riyadh and Qatar airport grab headlines, roads still make up the largest sub-sector for transport spending in the Middle East. The rate of car ownership is expected to increase sharply over the coming decade; consequently, the investment in roads is expected to increase as well – by almost 116% over this period to reach $31bn per year by 2025. SSA is the fastest growing regional infrastructure market, with a projected average increase in transport spending of over 11% per year from 2015 to 2025. Most of this growth is expected in roads and ports.

Russia and Central & Eastern Europe

While the Former Soviet Union/Central Eastern European (FSU/CEE) countries currently devote a smaller percentage of infrastructure investments to transportation than the global average, this is projected to change over the forecast period. For most of the FSU countries, investment in good transport networks remains relatively important due to the need to transport extractive outputs to other markets. Spending on ports, in particular, is expected to increase an average of nearly 10% annually from 2014 to 2025. In contrast, non-mineral exporting countries like Poland and Hungary will have much slower growth in transport spending.

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Tanzania's DIKKM line

For many years, economic growth in East Africa has been hamstrung by the lack of an efficient railway network. The metre-gauge railways serving the two regional majors, Kenya and Tanzania, renowned for efficiency forty years ago, deteriorated badly in recent times through underinvestment and indifferent maintenance.

In terms of the current East African Railway Master Plan, members of the East African Community have resolved to build new standard gauge railways in a network linking the various countries. Kenya started construction of its new line from Mombasa in May 2014 with a signing ceremony between the governments of Kenya and China (which is assisting with financing).

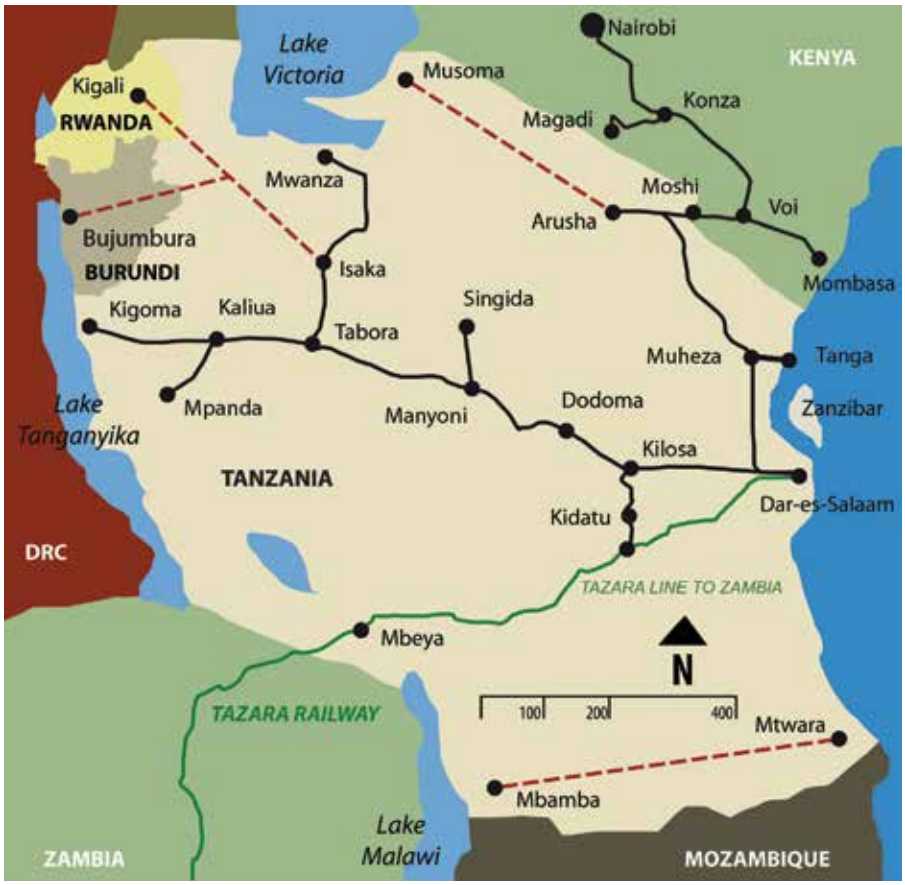
Tanzania took a step forward recently with preparations for its own new standard gauge railway which will start at the port of Dar es Salaam. In July 2015, the governments of Burundi, Rwanda and Tanzania called for expressions of interest (EoI) in constructing what it calls the DIKKM line, DIKKM being an acronym derived from the major points served - Dar es Salaam, Isaka, Kigali, Keza and Musongati.

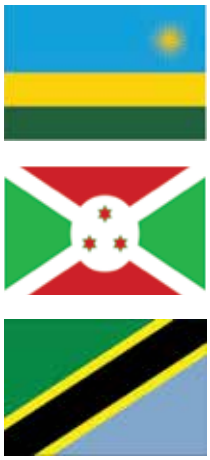
Rukia Shamte, executive secretary of the Central Corridor Transit Transport Facilitation Agency (CCTTFA), based in Tanzania, notes that as the regional project involves three countries, the CCTTFA will be the coordinating body. It has formed its own delivery mechanism with the participating states, which will coordinate the project and monitor progress, thereby ensuring that implementation continues on schedule. The 1,661km DIKKM involves the construction of a new 970km standard gauge track from Dar es Salaam to Isaka in north-eastern Tanzania. From Isaka, a completely new route is to be built to the town of Keza, near the borders of Rwanda and Burundi. At Keza, two new lines will run to Musongati in Burundi (107km) and Kigali in Rwanda (494km).

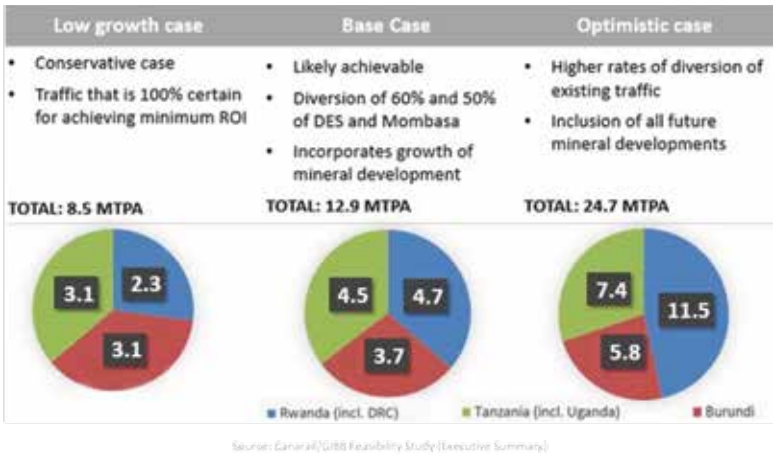
The capacity of the existing metre gauge railway – were it to have adequate infrastructure and rolling stock – is about five million tons a year, Ms Shamte explains. According to estimates, it is currently carrying only about 2% of this. A feasibility study of the DIKKM project by Canarail/GIBB was completed in 2014. Among other things, it investigated possible private-public partnership options. In addition, the study's analysis of existing and potential traffic flows projected that rail tonnage would double to 10 million tons by 2020 and, by 2050, that figure could nearly double again.

Present station at Dar es Salaam Photo: Richard Grönstedt.

Trains on the existing metre gauge railway. Photos: M Torrington and the Tanzanian ministry of transport.







Currently, major upgrades are being carried out at the port of Dar es Salaam in anticipation of it handling greatly increased rail freight volumes.

The new railway will be built primarily for freight though passenger trains will also be operated. Asked whether the governments of the respective countries would subsidise passenger services, Ms Shamte explains that subsidisation by a "reluctant government" might be necessary. "Doubtless they (government and the rail company) will work something out," she says. In terms of national bulk logistics, the coming of a railway will be a milestone for Rwanda and Burundi, neither of which has any rail service at present. Both countries being landlocked, freight has to be trucked either to a railhead in Tanzania or all the way to Dar es Salaam (approximately 1,000km). Roads in East Africa are, by and large, in poor condition, and the lack of an efficient railway compounds this logistical bottleneck.

Ms Shamte explains that there have been no recent revisions to the cost estimate for the project. According to the project website, www.dikkmrail.com, initial capital investment, including rolling stock, in the new standard railway are expected to be between $US5-6 billion. Of this Tanzania's share will be some 60%, Burundi's approximately 22% and Rwanda's share about 18%. The EoI document states that the new line will reduce transport costs and improve the competitiveness of the three countries involved. It will contribute to reduction of poverty, offer easy and affordable access to Dar es Salaam, accelerate the economic development and exploitation of untapped natural resources and provide a sustainable competitive advantage for the movement of goods in the region.

The EoI document makes it clear that the commissioning countries are flexible about the nature of the winning bidder as long as construction of the new line proceeds with alacrity. The client countries are looking for a company or consortium with the "capacity to finance, design, construct, operate and maintain the line under a PPP arrangement". The successful bidder could be part of a public-private partnership that would see to all (or some) of the aspects of building the new railway.

"Time is running out," Ms Shamte says. "As long as the preferred bidder can meet the conditions required in the RFP, we would be comfortable with either one company or a consortium of companies undertaking the project."

Asked whether the three governments involved have laid down deadlines for the construction of the new line, Ms Shamte explains that they want it running "yesterday". If construction hasn't started by the end of 2016, she says, "at least financial closure should have been completed."

During the construction of the new line, which will be built parallel to the existing metre-gauge railway, rail traffic will not be interrupted. However, the existing line will also play a key role in the construction of the new DIKKM line, Ms Shamte says. "Once the new line is operational, the old Dar es Salaam to Isaka line will die a natural death," she explains, adding that the materials from this section could be used to keep other branch lines operating. Regarding the other branch lines in Tanzania, Ms Shamte expects that the Tanga to Arusha and Isaka to Mwanza lines will continue to be operated without being converted to standard gauge for some time to come.

However, the line from Tabora to Kigoma and the branch to Mpanda will be converted to a standard gauge. "Mpanda is an important railhead for the movement of grain from the south," she points out.

In South Africa, the government is actively encouraging the movement of rail-friendly freight from road to rail. A similar initiative by the DIKKM line stakeholders is a possibility, Ms Shamte says. "Competition in the logistics market should be fair." Ensuring that the new line attracts viable tonnages is seen as an absolute priority. "We are currently getting letters of intent to use the DIKKM line from some of the larger potential railway clients," she concludes.

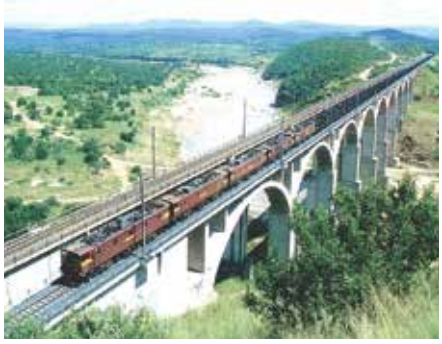
Green Paper on National Rail Policy

Speaking at the Transport Forum Month of Transport celebration held on 1 October 2015, Department of Transport (DoT) director of rail policy and strategy development Hlengiwe Sayd provided an overview of the recent Green Paper on National Rail Policy.

The theme of the event, hosted by the University of Johannesburg, was "Trends in policy development for transport", and this recent paper has been a hot topic within the rail sector.

In her opening, Sayd briefly outlined the necessity for a national rail policy. Railways in South Africa, she said, have lagged increasingly far behind other rail systems, to the point where they no longer compete effectively against other transport modes in capturing their rightful share of national freight and passenger transport; and inadequately support South Africa's exports into global markets. This is due to several challenges and historic events. Lack of policy direction and appropriate institutional frameworks as well as the absence of a strategic approach to major new rail investment decisions have exacerbated the situation. In order to steer the various role players towards consistent strategic reform therefore, and to ensure future sustainable development of the rail industry - over a realistic time period and in an affordable manner - a national policy is required.

Sayd referred to South Africa's National Development Plan which identifies outdated, malfunction-prone railway technology as straining the road network and calls for focus on total transport system efficiency to maximise the strengths of the different modes, cut inefficiencies and reduce disparities. The policy positions put forward in the Green Paper are directly aligned to this vision.



Heavy-haul: Umfolozi bridge. Photo: TFR.

Rail Challenges in South Africa

Discussing current rail challenges in South Africa she noted the following:

Infrastructure Limitations

- Difficult terrain, tight curves and steep gradients;
- Limitations imposed by the narrow gauge, e.g. the effect on speed.

Over-age Equipment

- Metrorail & Shosholoza Meyl designs date from the 1950s & 1960s;
- Tendency to refurbish assets to existing standards instead of new;
- Outdated signalling and train braking technologies, compromising safety.

Capitalised Maintenance

- Significant capital spent on maintenance.

The Unsustainable Status Quo

- Narrow gauge precludes the implementation of full-strength heavy-haul and the double stacking of containers.

General freight. Photo: Jacque Wepener.

Low performance is another challenge faced by railways. With a relatively high infrastructure fixed cost component, rail is more cost-effective over lengthy distances but less so when traffic volume is low.

In Sayd's view, a reduction of the overall South African network length by two-thirds, without material loss of traffic, would go a long way to increasing Transnet Freight Rail line density to approximate that of its BRIC fellows; and usefully reduce the infrastructure fixed cost component.

Poorly performing branch lines, she added, disorganised institutional arrangements, uncoordinated rail transport planning, economic self-regulation, inadequate skills development and job creation, insufficient rail safety and security management and the lack of funds all contribute to the challenges faced in this sector.

The Railway Renaissance

As a mode of transport, rail possesses a number of inherent advantages and opportunities. Its competiveness should be exploited in terms of increasing axle loads, speed and train length. These technologies naturally support four freight-rail markets, namely: general freight, heavy-haul, heavy fast-moving consumer goods and heavy intermodal.

Government recognises the urgent need for rail revitalisation through centralised rail planning, investment strategy and decision-making, which should all be driven by the Department of Transport, Sayd said.

With this in mind, recommended policy positions should be outlined according to the following:

- Investment
- Funding and private sector participation
- Centralised rail transport planning
- Rail economic regulation
- Institutional arrangements
- Skills development and job creation
- Safety and security

Investment

Infrastructure & Track Gauge

Investment should be geared for a move towards standard gauge infrastructure on a high-performance core network, stimulating railway renaissance in heavy-haul, high-speed intercity, double stacking, and contemporary urban rail.

- Urban rail & narrow gauge – where appropriate, for urban rail, the existing network should

continue to be used, suitably maintained and extended where justified. The rest of the narrow gauge network can either be exploited where required or be disposed of.
- Timing – The timing of gauge change would be informed by demand and capacity requirements, and should be determined on a case-by-case basis. The appropriate gauge should be determined in each case by feasibility studies.

Funding and Private Sector Participation

Funding

- The fiscus or through instruments secured via government guarantee – e.g. the Passenger Rail Agency of South Africa (Prasa);
- Financial instruments secured by the balance sheet of a state-owned company (SOC) e.g. Transnet Freight Rail;
- Debt and equity financing;
- Private sector participation, where the private sector is willing to fund and bear the risk.

Potential private sector funding models include:
- Private involvement in operations or the provision of assets such as rolling stock;
- Public-private partnerships (e.g. Gautrain);
- Leveraging the commercial value of railway land and the development opportunities around stations.

Private Sector Participation

Government should invite private sector participation to invest in projects where it cannot presently afford to invest, or where value for money can be demonstrated for a private sector risk premium.

Branch Lines

Branch lines should be categorised as strategic or non-strategic. The criteria for strategic branch lines include the following: food, security, developmental infrastructure and the upliftment of rural communities. Additionally strategic branch lines should be vertically separated concessions and the financially non-viable branch lines categorised as strategic should be subsidised by government.

Branch line. Photo: Jacque Wepener.

Non-strategic branch lines should be vertically integrated concessions, and non-strategic economically viable or marginal branch lines that TFR chooses not to operate should be concessioned at government's discretion. Government, through its SOCs and agencies, should retain ultimate ownership of all below-rail infrastructure assets.

Centralised Rail Transport Planning

Planning and communication between all relevant bodies should be coordinated by the Department of Transport (DoT). Planning must

consider interoperability issues with neighbouring countries although revitalisation must not be at the expense of the region. A defined investment strategy is required to revitalise rail, and a new standard gauge core network for general freight and passenger services must be built.

Intercity passenger rail. Photo: Jacque Wepener.

Rail Economic Regulation

Government recognises that economic regulation is required to ensure fairness, competition, and long-term sustainability in the rail sector.

A Rail Economic Regulator (RER) should be established to:

- Promote equity of access to rail infrastructure and services, as well as to investment opportunities where relevant;
- Ensure reasonable access and fair pricing to train operators and concessionaires;
- Regulate market entry and exit and service levels;
- Resolve commercial disputes;
- Determine fair and reasonable tariffs for using rail infrastructure and services, which will inform the approval of tariff requests received from the respective entities.

The RER should be included in the Single Transport Economic Regulator (STER). Until the RER is established there should be an Interim Railway Economic Regulatory Capacity (IRERC), whose purpose would be to gain a better understanding of industry / economic regulatory practices, establish consultation structures, and address capacity constraints.

Institutional Arrangements

Role of National Government

- DoT should remain responsible for policy formulation, coordination of policy implementation, strategic planning, leadership and all decisions relating to rail revitalisation.
- The Department of Public Enterprises should remain responsible for overall governance and oversight, to ensure that Transnet effectively fulfills its mandate as envisioned by revitalisation interventions.

Role of Provincial Governments

- Formulation of provincial transport policy and strategy; and planning and coordination of land transport functions.
- It is critical that provincial governments should align their plans with the objectives and sequencing of the interventions in national rail policy and the associated plans and strategies developed by DoT.

Role of Local Governments

- In accordance with the provisions of the National Land Transport Act (NLTA), land transport functions should be assigned to the most appropriate sphere of government. It should be noted that many local governments do not have the required capacity.
- Prasa should continue operating urban commuter rail.

Role of Operators / Infrastructure Owners

- Freight rail: should continue to be exclusively operated by TFR on a vertically integrated basis – except where the private sector is invited to participate (branch lines and other) through exclusively private operators or a combination of TFR / private operators.
- Passenger rail, commuter rail and long distance passenger rail should continue to be operated by Prasa.

Urban commuter rail (Prasa).

Skills Development and Job Creation

A competitive, revitalised rail industry will set the stage to attract potential job seekers. Government recognises the need for revised and up-to-date training programmes that address the requirements of a revitalised rail industry. Current training techniques, curriculum material and learning aids require review to identify and address current training inadequacies.

Safety and Security

Rail safety & security will form an integral part of rail revitalisation. The RSR should continue performing its function in ensuring railway safety. The South African Police Service Protection and Security Services Division (Railway police) should continue to be responsible for law enforcement within the rail environment. Operator-owned or outsourced security services will be the first line of defence to protect passengers, personnel and assets, and manage safety and security in the rail setting.

In essence, the Green Paper proposes evidence-based interventions designed to revitalise South African's railways. It proposes the revitalisation of rail in South Africa through the implementation of strategically focused, investment-led interventions. These interventions will ensure improved rural access, increased mobility and increased job creation with the rail sector through infrastructure construction and will contribute to economic development.

In closing, Sayd invited all written comments and inputs on the Green Paper – published in the Government Gazette and the Departmental website – to be provided within 60 days after its publication. This will ensure participation from all sectors on rail issues, and facilitate the development of appropriate and concrete policy statements in the final White Paper on National Policy.

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Mishaps

One objective of our regular feature reporting and commenting on rail mishaps is to provide information and object lessons from Africa and abroad, in the hope that – in some cases at least – this might help avoid recurrences.

MODDER RIVER DERAILMENT

South Africa's Rail Safety Regulator (RSR) issued a preliminary report on the 18 August derailment at Modder River, south of Kimberley. Apparently engineering work by Transnet Freight Rail was in progress in connection with restoring the section to double track. A new crossover had been installed, with a speed restriction of 30km/h. A warning board was provided 1.5km in advance of the diversion but its presence was not notified by Transnet Freight Rail to Prasa (the Passenger Rail Agency of South Africa). Shosholoza Meyl passenger train 71010 from Johannesburg to Cape Town ran through the crossover at approximately 81km/h, a half hour before midnight. The driver evidently did not see the warning board, which he did not expect. The locomotive, newly imported from Spain, overturned, together with four coaches. A further seven coaches derailed but remained upright. The last four vehicles did not derail.

People on the train were taken to hospital in Kimberley, where four were detained with injuries. Fifty-eight were treated for shock. Damage was recorded to 300 metres of track, four overhead traction supply poles, the Afro4000 locomotive and eleven coaches.

Data downloaded from the locomotive, and used in the investigation, was in Spanish, the RSR said.

Anton van Schalkwyk took the photo (at right) more than a month after the derailment. Though still lying in the dust, the battered Afro4000 loco is no longer on its side.

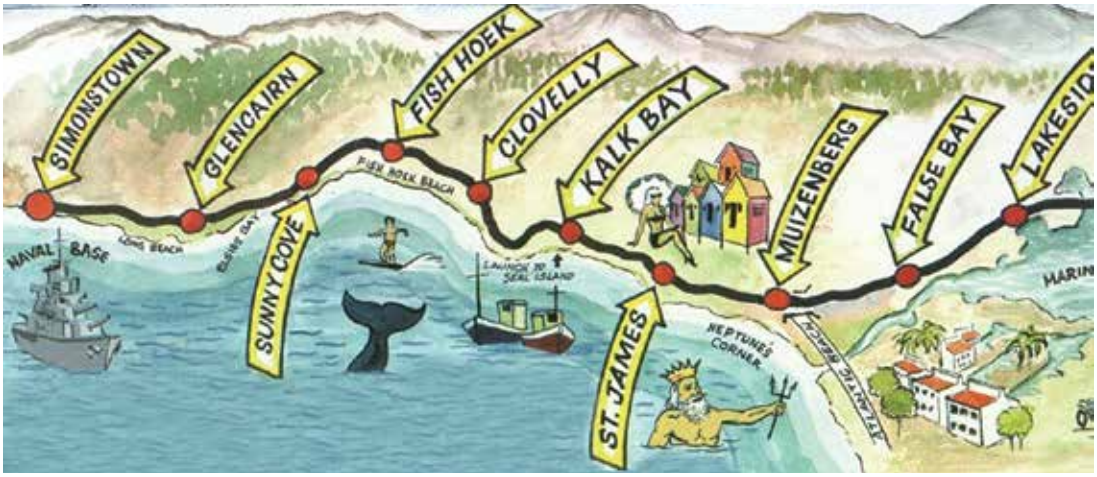
LONG ISLAND DERAILMENT

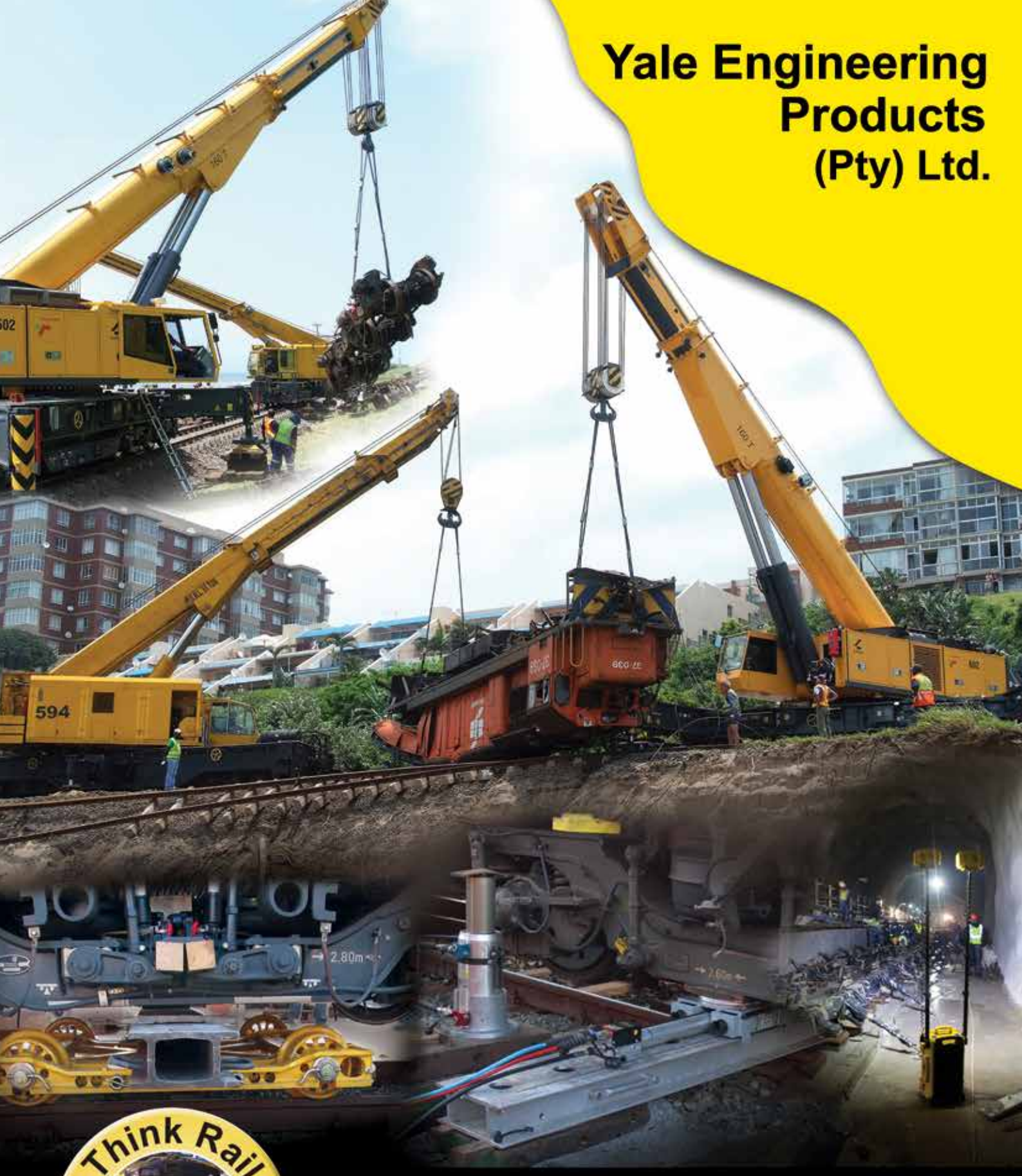
Two out of 16 wagons in a New York and Atlantic freight train carrying construction materials derailed west of Hicksville, Long Island, on 15 September. No injuries were reported. A 30 metre section of track was damaged, leaving only one running line open. Passenger service was resumed but did not return to normal until the affected track was repaired. The journeys of about 35,000 commuters were delayed.

PANDEMONIUM AT MUIZENBERG

Commuters on their way home to the southern peninsula had a nasty shock on 8 October when their train burst into flames at Muizenberg. Three teenagers allegedly put off for having the wrong tickets evidently signified their displeasure by throwing something highly inflammable into the train. The passengers quickly made their way out (no injuries were reported) and the driver managed to uncouple the front coaches and draw them away. However, three vehicles were totally burned out before the crew from the nearby fire station – who had to wait for the power to be turned off – could do their best with the blaze. A cloud of dense black smoke obscured the station.

Two questions – what caused such a huge fire so quickly, and what was there in the coaches that burned so fiercely?





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SHOULD NOT BE PAYING PASSENGERS

The Railway Safety Regulator is quoted saying that, although the testing and commissioning phases are inclusive of testing stock under actual operational conditions, such trains should not have paying passengers on board.

"If there are passengers, they should be non-paying passengers such as technical staff members, who are part of the testing and commissioning," regulator spokesman Babalwa Mpendu explains.

Two Turkish tourists on board the train that derailed at Modder River said they were not aware of any testing or commissioning when they purchased their tickets. "We did not know the train was not in full operational condition."

DOUBLE SUICIDE AT EALING BROADWAY

The coroner at an inquest in London returned a verdict of double suicide in the case of two women who died at Ealing Broadway station in June. According to evidence, the 36-year-old mother and her 17-year-old daughter dined at a fastfood outlet, then took a bus to the station. On the platform they linked arms and jumped in front of a train, to the horror of waiting commuters. Loudspeaker announcements appealed to passengers to stop taking pictures of the bodies.

STRANDED IN THE KAROO

On 30 September, a Shosholoza Meyl intercity train travelling from Johannesburg to Cape Town was stranded near Nelspoort in the Karoo, between De Aar and Beaufort West, following the theft of overhead electric cables. Passenger Rail Agency of South Africa (Prasa) spokesperson Lesedi Mapheto told News24: "We made a number of contingency plans, including having extra food, water and firstaid for people who required it." After power was restored, passengers were given the option of continuing their journey by bus.

This report brought reaction from a News24 reader who said the situation was somewhat understated.

Leaving Johannesburg on Sunday at 12:30, the train reached Cape Town on Tuesday at 07:30 – 16 hours late. It was stranded in the Karoo, nowhere near a station, "with no access to food or water, for 14 hours." She said the kitchen was closed after breakfast. During the day, passengers appealed to the staff for something to drink but stocks in the dining car had run low. "Eventually the staff relented and everyone got one cup of tea at around 17:00, with food finally arriving at 19:45.

"In the heat, on a train track littered with human faeces from the toilet facilities that washes straight onto the railway line, Prasa offered no help whatsoever. Their staff were as helplessly stranded as the passengers, and completely under-equipped to deal with the situation."

EAST LONDON-JBG – A 22 HR ORDEAL

The Shosholoza Meyl intercity passenger train that left East London on Sunday 4 October expected to be in Johannesburg on Monday morning. Passengers were hopeful that it would be a little late, because the scheduled arrival time is 05:00. Their wishes were granted on 5 October – they reached Johannesburg on Tuesday 6 October at something after 15:00, more than 22 hours late.

The express – well, perhaps that isn't quite the right word – ran into trouble approaching Queenstown. Evidently there was something wrong with the locomotive, because after a wait of about five hours, it was replaced with another. That one didn't get very far before it, too, broke down.

Passengers were hazy about what happened – or didn't happen – next. In the course of something like 17 hours, during which the dining car ran out of everything, everyone transferred to a bus.

The Passenger Rail Agency of South Africa (Prasa) confirmed the incident to News24, which was following it up. Spokesperson Lesedi Mapheto confirmed the train's locomotive had to be replaced twice, and apologised for what happened. "We expect our staff to be professional," he said,"...

In this situation, they [passengers] might keep yelling at you, but the customer has the right to complain.

"We want the train to be the backbone of the public transport system."

SLEEPERS ON TRACK DERAIL 9 WAGONS

Norfolk Southern 44-car Intermodal train 204-29 derailed nine wagons on the single main-line track at Marshall, Virginia (approximately 80km west of Washington, DC) on 30 September, when it collided with a pile of sleepers on the track. Some wagons overturned. All trains which operate between Manassas and Lynchburg were delayed. A number of trains were rerouted.

The train's two-man crew suffered no injury.

LONG ISLAND DERAILMENT BLOCKS PENN STATION

On 23 September, an empty train derailed as it was pulling out of the West Side Yard on its way to New York's Penn Station in Manhattan, shortly before 17:00. Due to its partially obstructing train access into the station, the Long Island Railroad (LIRR) was forced to cancel 13 trains during the evening rush hour. The entrance to Penn Station was not blocked completely, but LIRR was unable to get enough trains in to meet the timetable. Repair crews worked through the night and the following morning's schedule was back to normal.

AUSTRALIAN CANE TRAIN DERAILS

On 25 September, a power pole was brought down by a cane train that derailed near Ingham, Australia. It took an hour before live wires at the accident scene were disconnected. The driver is believed to be unhurt.

DERAILMENT IN RANDOLPH COUNTY

Nine out of 16 empty coal wagons that derailed in Randolph County, Indiana, on 2 September were on their sides but the other seven remained upright. The train was headed west, parallel to Highway Indiana 32. No injuries were reported but roads in the area were disrupted for some time while cranes were brought in to deal with the derailed rolling stock.

Derailment in Randolph County

DERAILMENT IN OKLAHOMA CITY

Eight Union Pacific wagons and two locomotives came off the track on 20 September in Oklahoma City, leaving two crew members injured. No hazardous material was involved as the train was carrying scrap paper and metal. The line was cleared but some wagons remained derailed at the site. An investigation into the cause of the accident continues.

KINGS CROSS BUFFER COLLISION

Shortly after noon on 17 September 2015, the 10:55 from Cambridge, a four-car class 317 electric multiple unit, driven by a trainee driver under supervision, collided with the platform 11 buffer stops at King's Cross station, London, at about 8km/h. The train came in at normal speed, but the brakes were not applied so as to bring the train to a stand before the collision. The train stopped sharply, with the buffer stop moving back a short distance. Fourteen passengers reported injuries, two were taken to hospital but released later the same day. There was minor damage to the buffer stops and the outside of the train, but a number of interior fittings were dislodged during the impact and one passenger was struck by a detached lighting diffuser. The Rail Accident Investigations Branch (RAIB) is looking into the incident and will issue a report in due course. The investigation will include examination of the regime for training and supervising trainee drivers, as well as the design and performance of the buffer stops, and the consequences of the collision within the train, including the performance of the fixtures and fittings.

MULTIPLE DERAILMENTS AT MUMBAI

A succession of derailments caused widespread delays to Mumbai commuter trains in mid-September. Services on the Central Railway were disrupted when five coaches of a local train entering Chhatrapati Shivaji Terminus (CST) – said to be the busiest station in the world - derailed; no one was injured but rolling stock and track were severely damaged. Meanwhile eight coaches of the Mysore-Ajmer express derailed near Pune in the evening, injuring five passengers. On 14 September, two coaches of a train from Bandra derailed on the harbour line between Masjid Bunder and the CST terminus. Four commuters sustained injuries and were admitted to hospital.

TEN ETHANOL TANKCARS DERAIL

On 19 September, 10 tankcars carrying ethanol in a Burlington Northern Santa Fe Railway (BNSF) 98-wagon train derailed between the towns of Scotland and Lesterville in south-east South Dakota. Two caught fire, but this was contained by local agencies and no adjoining properties were affected. One rural road was shut down temporarily to aid firefighters working to extinguish the blaze at a bridge south-east of Scotland.

RAJDHANI EXPRESS DERAILS

The two leading wheels of the locomotive hauling the Bhubaneswar-New Delhi Rajdhani Express derailed shortly before reaching Tatanagar station on 18 September. The 18 coaches, carrying some 900 passengers, were quickly moved from platform 2 to the adjoining platform 3 and a new engine was procured. After a delay of about an hour and a half, the express resumed its journey. Nobody was injured in the incident.

BIKE ON THE TRACK

A bicycle apparently discarded on the track was hit by a train on 14 September. The train was put out of action and services were disrupted at four Harlem Line (New York) stations - Williams Bridge, Botanical Garden, Tremont and Melrose.

TRAIN STRIKES EMPTY VEHICLE ON LINE

A northbound passenger train with more than 200 people on board struck an empty vehicle on the track near Palo Alto, south of San Francisco, on 12 September. No one was hurt in the accident but services were delayed due to single line working round the point of collision.

TWO BRITS DEAD IN INDIAN DERAILMENT

On 12 September, two British women tourists died when three vehicles in a four-coach train derailed on the narrow gauge Kalka-Shimla line in India. A third person is believed to have died in hospital and three were badly injured. A further seven were also admitted to hospital. Altogether there were 37 British tourists on the chartered train.

Kalka-Shimla derailment.

SUBWAY TRAIN DERAILS IN BROOKLYN

Three people were reported hurt after a subway train carrying about 100 passengers derailed on 11 September in Brooklyn, New York, but the incident disrupted trains running in both directions on the G Line and necessitated a number of service adjustments. These were likely to continue throughout the weekend, officials said.

FIRE ON BRITISH COMMUTER TRAIN

On 8 September, a morning peak-hour commuter train caught fire at Warwick Parkway station. There were 150 passengers on board the 07:46 Leamington to Worcester train which was evacuated when flames erupted in the running gear of a coach at the rear. Other trains were held up while the local fire department dealt with the blaze and a replacement bus service was arranged.

SCHOOLGIRL ROBBED ON CAPE TOWN TRAIN

A 15-year-old schoolgirl was robbed of her cellphone and slapped across her face on a train between Cape Town and Pinelands. Metrorail regional manager Richard Walker was quoted saying: “We are working with other law-enforcement agencies in a continuous effort to combat crime on stations and trains.” Resources on trains and stations are deployed strategically, he explains. but police and security cannot be everywhere at once. There have been 172 reported incidents of crime on trains and stations this year. Metrorail uses 872 protection service employees, 1,200 private security guards and 400 ordinary police members. Mobile teams travel on trains. These include undercover and an armed intervention tactical response team of 80.

DERAILMENT AT DALBRIDGE

The Durban-Johannesburg overnight Shosholoza Meyl express, barely into its journey, was involved in a derailment at Dalbridge on the night of 30 August. Further detail is not available, but it is believed a wheel fault was responsible.

FIVE COACHES DERAIL IN TAMIL NADU

The Chennai Egmore-Mangalore Express derailed five coaches at Puvanur in Vriddhachalam. At least 38 passengers were injured near Cuddalore, about 200km from Chennai. Services were badly disrupted, with some trains rerouted.

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SITAKUNDA, BANGLADESH, ACCIDENT

The locomotive and four coaches of the inter-city Bijoy Express from Mymensingh derailed when they collided with a trailer truck stranded on the tracks at Barhbkunda. There was one fatality. The accident cut links between Chittagong and the rest of Bangladesh. Four trains were stranded at Chittagong and five others coming in were stopped at stations along the line.

KATHUA DERAILMENT

Three wagons of a Delhi-Jammu goods train derailed at Kathie on 24 August, disrupting traffic between Jammu and Pathankote. Nobody was reported hurt in the accident, which occurred near Kathua station. A number of other trains were delayed by the incident.

Derailment at Kathua.

SA ACCIDENT STATISTICS

In the financial year to 31 March, 456 fatalities occurred on South African railways due to operational problems and just under 1,500 people suffered injuries. Collisions accounted for most of the incidents, followed by derailments and platform-change accidents. Commuter accidents accounted for 13 % and fires 12%. These figures were quoted in reply to a question tabled in parliament by the Freedom Front Plus. It was stated that South Africa has the 14th largest rail network in the world. The Railway Safety Regulator was quoted saying the number of accidents occurring in the country – which cost just over R400 million - "are in line with international norms."

CAPE COMMUTER TRAINS AT RISK

In the past year, 394 incidents of crime on trains were reported in the Western Cape, according to Metrorail. The Congress of South African Trade Unions (Cosatu) insists that Prasa is responsible for providing adequate security for commuters. Their argument hinges on a 2004 Constitutional Court landmark case, in which Metrorail argued that the South African Police Service (SAPS) bears the primary responsibility for ensuring the safety of commuters. The court found that Metrorail, at that time a business within Transnet and now a branch of the Passenger Rail Agency (Prasa), was in fact obliged to "ensure that reasonable measures are taken to provide for the security of rail commuters whilst they are making use of rail transport services". Crime on trains is still rife, with an average of 33 crimes reported every month over the past year, according to Metrorail.

SRI LANKA DERAILMENT

The derailing of a train between the Maradana and Fort stations blocked several lines, causing delay to a number of services in Sri Lanka. Many commuters were stranded at the Maradana station as only one line remained in operation.

OVERLOADED MINIBUS HIT BY TRAIN

Fifteen people were killed on 17 August when the driver of a minibus-taxi apparently lost control, left the road and plummeted onto the KZN North Coast railway where it was hit by a Metrorail passenger train. According to the authorities, the vehicle, which was licensed to carry 16 people, was conveying 20. Nobody on the train was hurt.

DERAILMENT AT SPRING, TEXAS

On 10 August, the second locomotive and six wagons in a freight train derailed in Spring, Texas. Union Pacific suspects that excessive heat may have caused track buckling. A hazmat crew was called in to deal with diesel fuel leaking from the locomotive. The driver was not hurt.

SIGNAL COLLAPSES ACROSS UK TRACK

The UK Rail Accident Investigation Branch (RAIB) has issued its report on a 17 November 2014 incident when a train travelling at 177 km/h struck the top of a signal which had collapsed and fallen across the line near Newbury. The signal post completely obstructed one track and partially obstructed that on which the train was travelling. There were no injuries and the train did not derail, but it did sustain some exterior damage. The outcome could have been much more serious if the first train to encounter the signal had been travelling at speed on the line that the signal had completely obstructed. The signal collapsed because the base of the post, which was of hollow tubular steel construction, had corroded through, causing an almost complete loss of wall thickness at and just above ground level. Corrosion had occurred to both internal and external surfaces; internally because water had entered the post and there was no drainage for it to escape, while the external corrosion was affected by the base being buried in ballast, which held water around the base and damaged the protective coating on the signal post. Signal posts are subject to annual visual examinations, but the examinations of this signal did not detect the problem because the main area of corrosion was hidden by ballast, and the examinations regime was vulnerable to missing such defects. A separate examination in 2012 for a resignalling project in the area also did not detect the defect for similar reasons. Because the defect was not detected, it was not subsequently reported and remedied through maintenance. The investigation identified possible underlying factors associated with the management of ballast levels around post bases, competence management of structures examiners and corporate knowledge about the original design specifications for signal structures.

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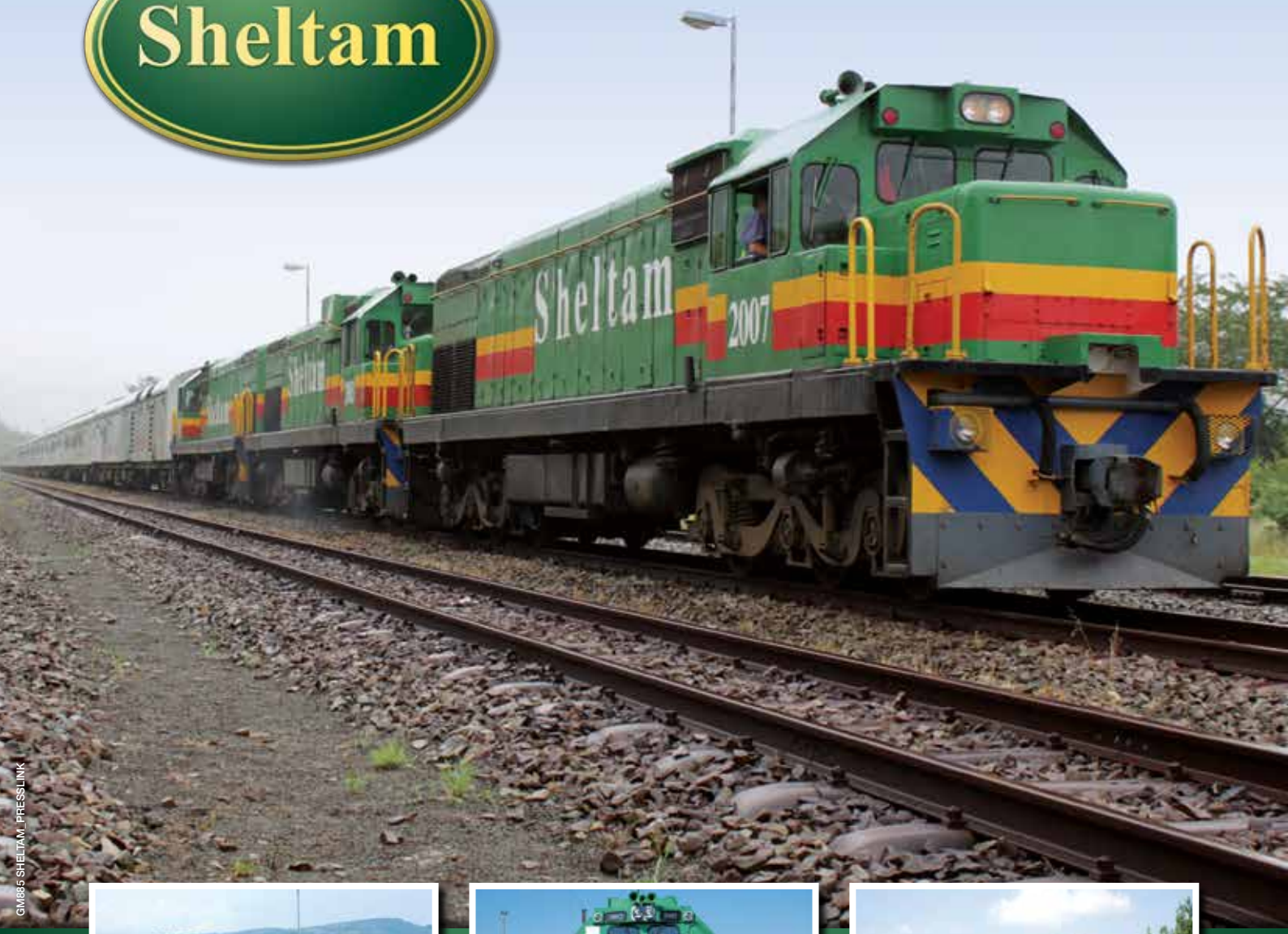

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TERRORIST DISARMED ON HIGH-SPEED TRAIN

Late on the afternoon of 22 August, a French passenger rose to use the toilet in a high-speed Thalys train en route from Amsterdam to Paris. At the same time a man emerged from the toilet wielding an Ak47 and a box cutter. The passenger attempted to tackle him. A series of gunshots were fired and the passenger was hit.

The gunman moved to the next coach, where he was confronted and subdued after a struggle during which he inflicted wounds on three American friends and a British student, who tied him up. He was identified through fingerprints by French counter-terrorism police as Ayoub El-Khazzani, a Moroccan national who was on their database.

RUNAWAY RAIL TROLLEY

At about 21:45 on 1 November 2014, a pair of rail carrying trolleys, known as "Ironmen", carrying a 16 metre length of rail, ran out of control for approximately 8.7km along the Garnant branch line in Carmarthenshire. Two track workers rode on the Ironmen as far as Raven level crossing in order to shout a warning to colleagues who were working there; the warning provided just enough time for their colleagues to get clear of the line. The two track workers received minor injuries when they jumped off the Ironmen just before the crossing. The track workers were unable to control the speed of the Ironmen on the descending gradient towards Raven level crossing.
The incident occurred due to a combination of the planning of the work, the control of the work, the speed at which the Ironmen were travelling and the performance of the Ironmen's brakes.

As a consequence of this investigation, Britain's Rail Accident Investigation Branch (RAIB) has made six recommendations. One is to Network Rail, to improve the design and testing of the brakes of manually propelled plant. Three recommendations are made to Network Rail relating to the planning of work using manually propelled plant, arrangements for compliance with the requirements of the Rule Book, and measures to mitigate the risk of runaway of manually propelled plant. One recommendation is made to Permaquip (the manufacturer of the Ironman), relating to the design and maintenance of the Ironman braking system. A further recommendation is made to Torrent Trackside (maintainer of the Ironmen involved in the incident) relating to the maintenance of braking systems fitted to manually propelled plant.

RAILWORKERS IN NEAR MISS

An investigation has found that nine rail workers were just seconds away from being hit by a passenger train with no warning of it approaching at almost 160km/h. The track staff were working on a bend with a restricted view on the West Coast main-line in Lancashire, south of Hest Bank between Carnforth and Lancaster, when the near-miss happened. A Rail Accident Investigation Board (RAIB) report said the group should have received a warning of the approaching train from a lookout with a clear view of the track.

However, there was no warning and after seeing the approaching Edinburgh to Manchester Airport train, the workers had just four seconds to jump out of the way before it hurtled past. Some staff were unable to reach a safe position and had to press themselves against a bridge parapet, the report said. Although no one was injured, the group was left shaken and work was stopped for the remainder of the shift. The report said the incident, which occurred in September last year, was largely by human error: "The incident was caused because a lookout did not give a warning, either because he operated the wrong switch on his radio transmitter by mistake, or because he forgot about the need to send a warning during an intended delay period between seeing the train and operating the warning switches. "This delay was because he was positioned on a long section of straight track and could see approaching trains for significantly longer than the time required for the work group to move into a position of safety.

"A previous RAIB recommendation intended to mitigate this risk had not been implemented due to administrative errors. "It is probable that the lookout's vigilance had degraded as he had been working continuously for almost two hours." The RAIB said the track workers comprised contract staff and a controller of site safety employed by Network Rail.

It has made two recommendations to Network Rail - covering the management of working time for tasks which depend on vigilance and the circumstances in which the lookout-operated warning system should be used.

PLANE CRASHES ON CROSSING

A small, single-engine plane crashed on to a Long Island, New York, rail crossing on 16 August, killing the pilot, injuring a passenger and shutting down service on a branch of North America's busiest commuter line. The plane crashed on a crossing between the Bethpage and Hicksville stations on the Long Island Railroad.

Plane crash LIRR.

WASHINGTON DC DERAILMENT

On 6 August, a Washington Metropolitan Area Transit Authority train derailed at the Smithsonian station in Washington DC. Nobody was injured, as the train derailed before anyone boarded. The incident resulted in lengthy delays for commuters. The derailment was caused by an unspecified track defect. Board members were horrified when they discovered its existence had been known to management for at least a month. The agency's interim general manager was given 10 days to find out why staff did nothing about it.

Railway Preservation

By John Batwell

Working Agreement

As the first step in the realignment of the major heritage steam locomotive operators in South Africa, Reefsteamers, Friends of the Rail and the Sandstone Heritage Trust have formed a working agreement which will strengthen all three organisations through the pooling of technical resources, training of personnel, and the rationalisation of spares inventories. There is to be a joint marketing initiative.

Reefsteamers is the largest operator of main line steam tourist trains in South Africa and runs regular schedules to Magaliesburg and further afield. They have a large stable of locomotives housed at the old Germiston steam locomotive sheds. They cooperate closely with their like-minded associates, Friends of the Rail in Hermanstad, Pretoria.

The Sandstone Heritage Trust stables a number of iconic steam locomotives at Reefsteamers premises in Germiston. This is over and above the 25 operating steam locomotives that Sandstone operates at its Free State site on narrow gauge for local and international enthusiasts alike.

One of the two Falcon 4-4-0 narrow gauge locomotives in Sandstone Heritage Trust's working fleet. Photo: J Batwell collection.

Class 19D shopped for Western Cape preservation

Class 19D no 3321 has been returned to full working condition for service on the recently reopened Ceres branch line in the Western Cape. This 4-8-2, built in 1948 by North British in Scotland, has been stored "dead" at Voorbaai for the past eleven years.

Class 19D 4-8-2 no 3321 has been put back into working order after 11 years "dead" at Voorbaai depot in the Southern Cape. Photo: G F de Bruin.

Reefsteamers Open Day

In late October, an Open Day was held at Germiston to formally announce the liaison between the three preservation operators. The event included a tour of the Reefsteamers workshop, a luncheon and locomotives lit up for the day.

SA steam calendar for 2016

The theme of next year's steam calendar is the Garratt locomotive. In 1921, the first class GA Garratt (2-6-0+0-6-2) entered service in South Africa. It closely matched the class MH 2-6-6-2 Mallet in tractive effort, boiler capacity, grate area and axle loading, but was 46.7 tonnes lighter. In comparative tests, the Garratt took greater loads than the Mallet and its running times were better, while its coal and water consumption were lower. With the Garratt's superiority established, no further Mallet locomotives were ordered by the South African Railways. Whenever an articulated locomotive was required for flexibility, reduced axle loading and high tractive force, the Garratt type was chosen.

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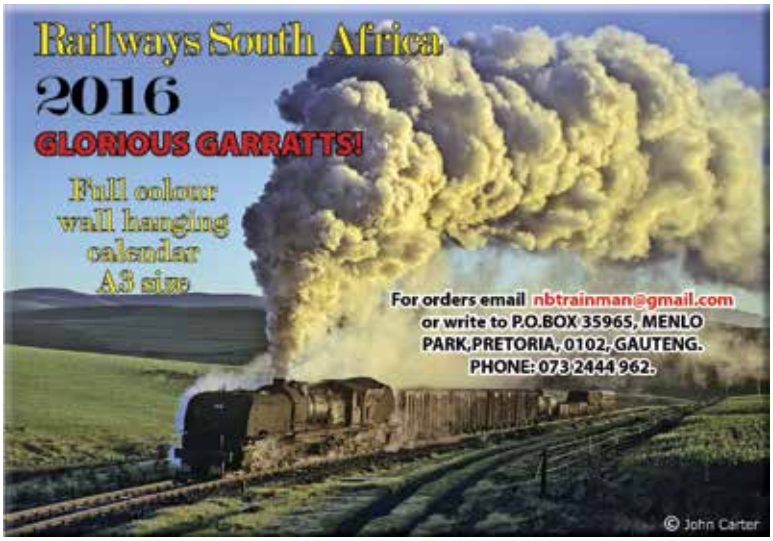

Longest reigning monarch celebrates behind steam

On Wednesday 9 September, Queen Elizabeth II and the Duke of Edinburgh, together with First Minister of Scotland Nicola Sturgeon, travelled behind steam to mark the reopening of the Borders Railway in Scotland. Some £294 million has been spent revamping the line, known as the Waverley Route, which was closed in 1969, during the dreaded Beeching era.

Thanks to bad weather at Balmoral, the royal party was 40 minutes late arriving by helicopter at Holyrood Palace. From here they were driven through Edinburgh to Waverley Station, where they boarded the special Pullman coach. A 20-minute stop was made at Newtongrange, where the Queen opened the new station.

The restored line was officially reopened at a function at Tweedbank station, with Queen Elizabeth acknowledging that she was now the longest reigning monarch in British history.

This historic day had an unusual South African connection. The steam locomotive that hauled the Royal Special was class A4 Pacific no 60009 Union of South Africa. It is one of six preserved survivors of the class, designed in 1935 by Nigel Gresley for the London and North-Eastern Railway, with the added advantage of being in full working order.

Gresley-designed A4 Pacific no 60009 Union of South Africa. Photo: The Sun.

Upgrading of two locos

In terms of the new arrangement, two internationally famous locomotives are to be upgraded for main line running. These include class 15F no 3052, originally donated by the general manager of the South African Railways to internationally acclaimed wildlife artist David Shepherd, and now in the custodianship of the Sandstone Heritage Trust, as well as class GMAM Garratt no 4079. Both these locomotives have been in operation in recent years but require substantial technical upgrade and overhaul. In terms of a R1 million contract awarded to Reefsteamers by Sandstone, both locomotives will be brought back into full operational service during the next nine months and will once more grace the rails to the delight of steam enthusiasts.

Class 15F 4-8-2 no 3052 is to be put back into running order with Sandstone's financial support. Photo: Peter Cooper.

Shaun Ackerman, a director of Reefsteamers, says: "It is essential that clubs like ours receive external funding in order to maintain the sophisticated workshop capability that is necessary to keep these massive main line locomotives in operation. We have the highest regard for Sandstone's narrow gauge operations and they in turn maintain one of the finest narrow gauge steam locomotive refurbishment facilities in the world, at the old steam workshops in Bloemfontein.

"We are delighted that they have entrusted us with this work. Reefsteamers will be responsible for operating these locomotives in the future."

During a recent discussion with David Shepherd in the United Kingdom, he said, "I am overjoyed to hear that my locomotive will be back in steam shortly. I have the fondest memories of my many trips to South Africa where I was privileged to see my 15F, no 3052, in steam."

Sandstone's class GMAM Garratt no 4079 working Reefsteamers' Magaliesburg run. Photo: Aidan McCarthy.

WINDPOWER RUNS DUTCH TRAINS

Half of the Netherlands' 2,890km rail network runs on wind power currently, and it is intended to have the entire system entirely dependent on wind-generated electrical power by 2018. Energy procurement company Vivens is to cooperate with Dutch energy company Eneco in providing the additional capacity. Wind power will come from within the Netherlands as well as Belgium and Scandinavia. Altogether the system will require 1.4 terawatt hours of energy a year, which is about the same demand as Amsterdam, the Global Construction Review reports.

UK CAMPAIGN FOR FEMALE ENGINEERS

Research in the UK reveals that girls as young as seven have an "unconscious bias" against the engineering profession. Now thousands of schoolgirls are to be encouraged to consider a career on the railways. Network Rail chief engineer Jane Simpson joined the engineering industry as an apprentice aged 16 and is now NR's most senior engineer, managing a 500-strong team of engineers and technicians across Britain.

Jane Simpson: Network Rail chief engineer.

UK & CHINESE COLLABORATE ON HIGH SPEED RAIL LAB

In terms of a research cooperation agreement signed between the University of Birmingham and Beijing Jiaotong University, a joint international high-speed rail research laboratory is to be established. It will be run jointly by the Birmingham Centre for Railway Research and Education (BCRRE) at the University of Birmingham and the State Key Lab of Rail Traffic Control and Safety at Beijing Jiaotong University (BJTU) in China. Expertise from both institutions will be developed as part of a wider UK-China high-speed railway research platform. This aims to deliver leading railway research for the global industry. Earlier this year, the University of Birmingham signed a co-operation agreement on railway research and education with the Chinese rolling stock manufacturer CSR Sifang.

REPLACING LONDON'S CIRCLE LINE

It takes about an hour for tube trains to complete London Underground's 27km Circle Line at present. The line could be replaced with a travelator, says Architecture firm NBBJ. This would be quicker and increase the number of people able to travel. The travelator would reduce overall journey time by several minutes. by not stopping at stations. Instead, passengers would step onto "feeder" walkways moving at 5km/h. These would feed into a slow lane that accelerates to 10km/h and 14.5km/h in illuminated tunnels.

Existing travelators at Bank station on the underground were installed 55 years ago.

SPANISH-ASSEMBLED VOSSLOH LOCOS FOR UK

Vossloh delivered an initial order to Britain for 15 class 68 diesel locos (2.8MW), five being used by Chiltern Railways on passenger services from London Marylebone to Birmingham and Kidderminster. A follow-on order for 10 class 68 locos, placed in 2014, is due for delivery soon. A third order, just placed, for seven more class 68s, will take the fleet to 32. In addition to the class 68s, 10 class 88 UK dual bi-mode locomotives have been ordered. These are to be equipped for operation on the standard British 25kV ac electrification. Both 68 and 88 class locos are being assembled by Vossloh at its Albuixech plant near Valencia in Spain.

VOSSLOH WINS TRAM-TRAIN ORDER

In 2012, Verkehrsverbund Mittelsachen (VMS) placed an initial order for eight tram-trains for the first stage of a network including lines from Chemnitz to Burgstadt, Hainichen and Mittweida. It has now ordered four additional City Link tram-trains from Vossloh, for use in the Chemnitz area. The bi-mode hybrid vehicles will operate on 600V/750V DC overhead on tram lines in the city centre and in diesel mode on heavy-rail lines. The Citylink vehicles have two powerpacks fitted to the roof, comprising a diesel engine and a generator.

LARGEST EVER ORDER FOR TRAINS

Claimed to be the largest order ever placed for the supply of new trains, state-owned China Railway Investment Corporation (CRIC) has invited tenders for 351 high-speed sets. Of these, 228 must be able to reach a maximum 350km/h and 123 must reach 250km/h. Reportedly the tenders could be worth more than $US10.6 billion. Only manufacturers based in China may bid.

CRIC was created earlier this year with the merger of train manufacturers China North (CNR) and China South (CSR).

Photo: Jacque Wepener.

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