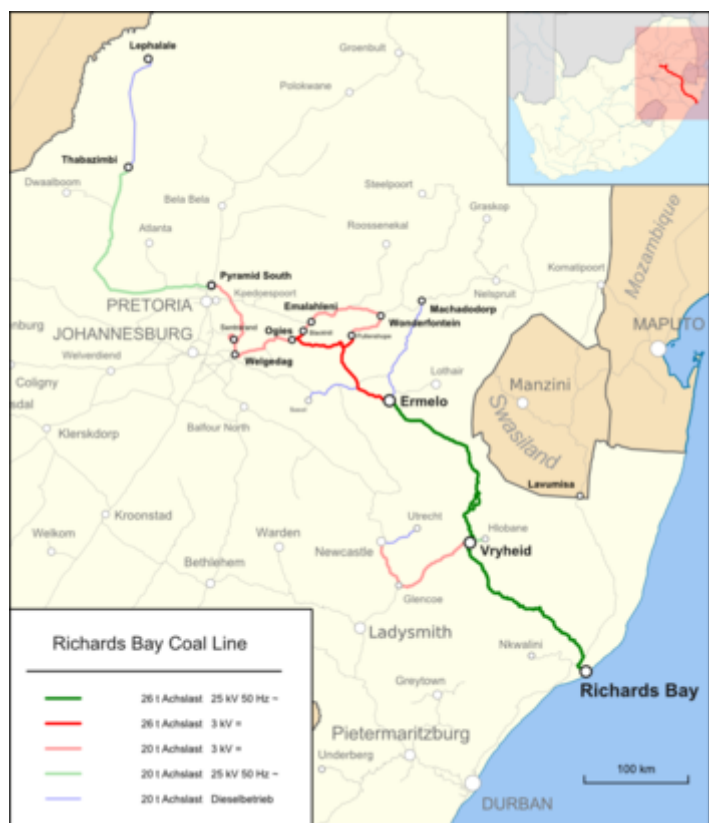


# Richards Bay Coal Line

W [de.wikipedia.org/wiki/Richards\\_Bay\\_Coal\\_Line](https://de.wikipedia.org/wiki/Richards_Bay_Coal_Line)

## Richards Bay Coal line
























Empty 100-car train heading south of Vryheid.































Track length : Ermelo – Richards Bay: 588 km




























Track width: 1067 mm (Cape track)

Power system: north Ermelo: 3 kV =  
south of Ermelo: 25 kV 50 Hz ≈




























Maximum <u>Inclination</u> :	15.2 ‰
Minimal <u>Radius</u> :	550 m
Top speed :	80 km / h
	<u>Lephalale</u> ↓ <u>Diesel operation</u>
	
	249 <u>Thabazimbi</u> ↓ <u>25 kV 50 Hz ~</u> ↑ diesel operation
	
	24 <b>Pyramid South</b> ↑ <u>25 kV 50 Hz ~</u> ↓ <u>3 kV =</u>
	
	<u>Rbf Sentrarand</u>
	61 Welgedag after <u>Johannesburg</u> Beginning 26 t axle load
	69 Sundra
	74 Eloff
	84 <u>Delmas</u>
	Coal mine Leeuwpan
	Delmas coal mine, SamQuarz <u>Silica</u>
	93 Dryden
	103 Argent
	111 Arbor
	119 Kendal
	Phola <u>Coal washing</u>
	129 <b><u>Ogies</u></b>
	
	137 Minaar
	142 Saaiwater
	<u>Landau Rapid Loading Terminal</u>














	<u>Anglo American</u> Greenside coal mine		
	145	Blackhill	End of 26 t axle load
	146	Kromklip	
	154	Bezuidenhouts	
	156	<u>eMalahleni</u>	
	164	Van Dyksdrif	
	151	<b><u>Middelburg</u></b>	
	200	Wonderfontein	
	174	Blinkpan	
	Pullenshope coal mine , <u>Hendrina power plant</u>		
		Pullenshope	Beginning 26 t axle load
	183	Broodsniersplaas	
		Driefontein	
		Gelukplaas	
		Half-weon	
		Forzando North coal mine	
		Webbsrus	
		to Estancia ( <u>Swazi Rail Link</u> )	
	201	Davel	
		after <u>Johannesburg</u>	
		Hamelfontein	

		Rietvleirus
		<u>Majuba Rail Project</u> to <u>Majuba power plant</u>
		
		from <u>Machadodorp</u>
		<b><u>Ermelo</u></b>
		↓ <u>25 kV 50 Hz</u> ~ ↑ <u>3 kV</u> =
	0	<u>Ermelo South</u>
		
	8	Anthra
		<u>Camden power plant</u>
	10	Camden
	19th	Witpuntspruit
		<u>Vaal</u>
	24	Over-Vaal
		<u>Overvaal tunnel</u> 3970 m
	29	Mooispruit
	37	Maviristad
	47	Sheepmoor
	56	Ngwempisi
	64	Panbult
		
	74	Iswepe
		
	93	Wild edge
	103	Kemp
	113	<u>Piet Retief</u>
		Assegai
	123	Mkondo

















			
	126	Breitenstein	
	137	Moolman	
	145	Spiesdal	
			
	151	Confidence	
	162	Common	
			
		Phongolo, border <u>Mpumalanga-KwaZulu-Natal</u>	
			
			
			
	173	Hlungwana	
	179	Knightgale	
			
	186	<u>Paulpietersburg</u>	
			
			
		Tunnel 780 m	
			
	192	Dumbe	
			
	196	Mahulumbe	
			
		Bivane 245 m	
	206	Bivane	
	213	Mqwabe	

	Tunnel 2148 m
	220 Tongue
	229 Heine
	Tunnel 560 m / 640 m
	232 Bernica
	Tunnel 600 m
	236 Tendeka after <u>Hlobane</u>
	Sikame
	<u>Vryheid</u> after <u>Glencoe</u> , 3 kV =
	<u>Vryheid East</u>
	Tintas Drift
	Dassieshoogte
	Ishoba Bridge 100 m
	Lenjanedrif
	Ngogweni
	Komvoorhoogte
	Ndlovane River Bridge 195 m
	Bloubank

	Tunnel 1337 m
	Nhlazatshe
	Tunnel 310 m
	Bridge 140 m
	Tunnel 180 m
	Brücke 160 m
	Tunnel 490 m
	Brücke 240 m
	Izolof
	Umfolozi
	250 m
	125m
	
	146 m / 130 m
	155 m
	72 m
	
	Eqwasha
	
	282 m / 610 m
	196 m / 185 m
	1750 m / 2875 m
	
	Uloliwe
	<u>Ulundi</u>
	
	907 m

	2890 m
	530 m
	
	Ilangakazi
	670 m
	500 m
	287m
	314 m
	Intshamanzi
	203 m
	280 m
	257 m
	250 m
	Zululand Anthracite Colliery
	
	Engolothi
	<u>White Umfolozi River</u> 487 m
	300 m
	1500 m
	Umunywana
	
	890 m / 2440 m
	Isangoyana
	
	Emakwezini
	Idondotha
	Cwaka



	Kruisplek
	Elubana
	von Lavumisa in <u>Eswatini</u>
	<b>Richards Bay Nsese</b>
	Mandlazini
	nach <u>Durban</u>
	Industrie Richards Bay-Alton
	Bhizolo
	<u>BHP Billiton</u> Hillside <u>Aluminiumhütte</u> ,
	FOSKOR <u>Phosphatprodukte</u> , Shincell <u>Holzschnitzel</u>
	<u>BHP Billiton</u> Bayside <u>Aluminiumhütte</u>
	<b><u>Bayview Terminal</u></b>
	<u>Sandy Point Harbour</u>
	
	<b><u>Richards Bay Coal Terminal (RBCT)</u></b>
	

With **Richards Bay Coal Line**<sup>[1]</sup>, German about *Richards Bay coal railway*, earlier too **Witbank-Richards Bay Coal line**<sup>[2]</sup>, becomes one South African Railway line designated by Transnet is operated and primarily the transport of Power station coal from the mining regions inland to Richards Bay Coal Terminal (RBCT) im Richards Bay Harbor serves. In addition, too Steel products, Ferrochrome, Granite, Cereals and Wood transported.

As **COALlink** the area dealing with the business area of coal transport is within Transnet Freight Rail referred to, in addition to operating the Richards Bay Coal Line, also with the export of coal through the ports of Durban and Maputo deals as well Coke out Zimbabwe imported.<sup>[3]</sup>

The centerpiece of the Richards Bay Coal Line is that Cape-lane Heavy duty railway line from the region Ermelo in the province Mpumalanga to the port of Richards Bay. It leads from the. Coal mines in the Highveld, where more than 80% of South African coal is mined<sup>[4]</sup> through rural areas of KwaZulu-Natal to the port of Richards Bay.

The route has no actual northern end point. It begins as a network of 44 coal mines with a focus on the region north and northwest of Ermelo.<sup>[3]</sup> The route is from Welgedag,<sup>[5]</sup> Blackhill<sup>[6]</sup> and Pullenshope<sup>[6]</sup> expanded to Richards Bay for 26 t axle load, being between Welgedag, Blackhill and Ermelo next to the existing one Double track a third track for 26 t axle load was built for 20 t axle load.<sup>[5]</sup> Feeding routes with an axle load of 20 t serve general freight traffic and come from the metropolitan areas of the province Gauteng, among others from Sentrarand marshalling yard,<sup>[6]</sup> from where also about the Waterberg route brought coal trains Lephalale be taken over. 100-car trains loaded at the coal mines reach the marshalling yards Ogies and Welgedag. In Ermelo will be further coal trains from 46 sidings<sup>[7]</sup> merged and the 100-car trains for the trip to Richards Bay combined into 200-car trains.<sup>[8th]</sup>

In the northern part of the route, the decisive maximum gradient is 10 %.<sup>[6]</sup>

From Ermelo, the trains use the 588 km heavy-duty route to Richards Bay, which was built in 1974 and the trains overcome a height difference of 1700 meters.<sup>[4]</sup> The loaded trains traveling down the valley use a track with a decisive gradient of 6.25 %, the empty trains going up uphill one with a gradient of 15.2 %. The double track Route is for Track changing operation signaled and electrified.

The trains run about 25 kilometers after Ermelo for the 4 kilometers Overvaal tunnel (West portal : 🌐 , East portal : 🌐 ), which can only be driven through on a single track and thereby limits the capacity of the route. In order to eliminate this bottleneck, the aim is to build a second tunnel that would be about 20 meters south of the previous tunnel.<sup>[9]</sup><sup>[4][6]</sup> Für die langfristige Planung untersucht Transnet auch die Möglichkeit einer neuen Streckenführung, die auf den Tunnel ganz verzichten würde.<sup>[6]</sup>

The existing route was expanded until shortly before Kemp, followed by a new route built in 1974. Shortly before the border between Mpumalanga and KwaZulu-Natal, the railway body of the double-lane route divides for the first time into a route for the trains traveling down the valley and a route for the trains traveling uphill. The two tracks cross the Phongolo border river on separate bridges and only meet Mahulumbe south of after 30 km Paulpietersburg on top of each other. At Mqwabe, the routes separate again into one for uphill and one for valley-facing trains, with the routes on the approximately 30 km long section Vryheid cross three times.

After Vryheid, the route follows White Umfolozi River on its northern valley slope until it changes to Engolothi on the southern side of the valley before reaching Richards Bay. There are many engineering structures in this section of the route.

The route is with Lichtsignalanlagen für den Gleiswechselbetrieb ausgestattet und wird durch die drei Fernsteuerzentren in Ermelo, Vryheid und Richards Bay verwaltet.<sup>[10]</sup>



The part north of Ermelo is 3 kV DC operated. Trains run every 15 minutes, so that around 62 trains can be run daily. In addition to 100-car trains, empty 200-car trains also run.<sup>[11]</sup>

On the with 25 kV AC operated Ermelo – Richards Bay route can theoretically run 48 trains per day, half of the capacity being reserved for the coal trains and the other half being used by the other freight trains. Due to the limited power supply, the coal trains can only follow the route at intervals of one hour. The Overvaal tunnel limits the route capacity to 16 trains per day in each direction. In fact, around 16 coal trains and 13 other freight trains run every day.<sup>[11]</sup>

The trains run at a speed of 80 km / h.<sup>[12]</sup>

## Lokomotiven

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Weil das Bahnstromnetz im Nordteil sich von demjenigen im Südteil unterscheidet, ist ein Lokomotivenwechsel im Rangierbahnhof Ermelo erforderlich,<sup>[7]</sup> der einzig für die mit den Zwei-System-Lokomotiven der TFR-Klassen 19E oder 21E bespannten Züge entfällt.

Auf dem Gleichstromabschnitt werden Lokomotiven der SAR-Klasse 10E, auf dem Wechselstromabschnitt solche der SAR-Klasse 7E und 11E eingesetzt.

Zur Optimierung des Betriebes kaufte Transnet 110 Mehrsystemlokomotiven der TFR-Klasse 19E<sup>[6]</sup>, sowie 100 Lokomotiven der TFR-Klasse 21E. Zukünftig werden nur noch diese Lokomotiven eingesetzt, die im Depot von Richards Bay gewartet werden sollen. Das Depot Ermelo wird sich dann nur noch um die Wartung der auf nicht elektrifizierten Strecken eingesetzten Diesellokomotiven der TFR-Klasse 43D befassen.

## Wagen

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Für den Transport der Kohle werden über 8000 Kohlenwagen eingesetzt.<sup>[13]</sup> Die Wagen tragen die Bezeichnungen CCL oder CCR gefolgt von einer Nummer, wobei CCR auf ein verbessertes Bremssystem hinweist. Die in den 1970er und 1980er Jahren gebauten CCL-1- und CCL-3-Wagen sind für 20 t Achslast ausgelegt und werden als *kleine Wagen* bezeichnet. Sie werden nur noch bei Kohlengruben eingesetzt, wo die Achslast des Anschlussgleises begrenzt ist, oder für Transporte zu Destinationen im Landesinnern.<sup>[14]</sup> Die Wagen dieser Baureihen können bei einem durchschnittlichen Leergewicht von 21 t maximal 58 t Kohle transportieren.<sup>[15]</sup>

Loaded 100-car train on the descent with two locomotives of the SAR class 11E .



Loaded 200-car train on the way to Richards Bay.



Jumbo-Wagen CCEW-13 mit ep-Bremse von Wabtec, was durch das W in der Bezeichnung ausgedrückt wird.

Die später gebauten Baureihen CCL/CCR-5 und jünger haben eine auf 26 t erhöhte Achslast und werden als *Jumbo-Wagen* bezeichnet.<sup>[14]</sup> Die Wagen dieser Baureihen können bei einem durchschnittlichen Leergewicht von 20 t maximal 84 t Kohle transportieren.<sup>[15]</sup>



Kleiner Kohlenwagen CFR-13 mit Hochleistungsbremse

Die Wagen sind paarweise – bei neueren Wagen auch zu Gruppen von drei oder fünf Wagen mit festen Kupplungen miteinander verbunden. Die Wagenenden, wo die drehbare Kupplung für das Entladen mit dem Kreiselkipper angebracht ist, ist mit einem weißen Pfeil gekennzeichnet.<sup>[15]</sup>

## Züge

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North of Ermelo are 100-car trains that are covered by four 10E or 19E locomotives. In Ermelo, the trains are coupled to 200-car trains and pulled by four 11E series locomotives or six 7E or 19E series locomotives. For all the trains mentioned, the locomotives are classified at the Zugspitze.<sup>[11]</sup> Ein Kohlenzug braucht für die Fahrt an den Hafen 17 Stunden.<sup>[12]</sup> Die Streckenlokomotiven sind in Umläufen von 58 Stunden Länge eingeteilt, die Wagen in solche von 63 Stunden.<sup>[16]</sup> Die Umläufe der Streckenlokomotiven sind kürzer als diejenige der Wagen, da die Beladung der Wagen durch Rangierlokomotiven erfolgt und somit die Streckenlokomotiven nach Ankunft mit einem leeren Zug gleich an einen vollen Zug gekuppelt werden können.



Bergwärts fahrender 200-Wagen-Zug mit sechs SAR-Klasse E19 Lokomotiven.

The 200-car trains south of Ermelo are 2500 meters long and weigh 20,800 tons.<sup>[17]</sup> If the train is assembled from Jumbo coal wagons of the CCL / R series, 16,800 tons can be transported by train.<sup>[18]</sup>

## Shongololo trains

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In addition, since 2013<sup>[16]</sup> *Shongololo trains* driven by eight locomotives of the 19E and 200 series, with four locomotives at the top and another four locomotives after 100 cars. These trains are with electropneumatic brake provided, their control line for the Remote control the locomotives classified in the middle of the train are also used.<sup>[11]</sup>

The Shongololo trains allowed the route locomotives to run for 41 hours and the wagons to be reduced to 48 hours<sup>[12]</sup> because the shunting movements in Ermelo are eliminated.

The name *Shongololo*, sometimes too *Songololo* written, designated in South African English a Bottler of a thousand.<sup>[19][20]</sup>

## Railway stations

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The largest shunting stations of COALink are in Ogies, Ermelo and Vryheid.<sup>[21]</sup>

## Welgedag

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In Welgedag the coal trains become the power plants Tutuka and Majuba collected. In contrast to the trains with export coal, the trains for the two mentioned power plants from the Ogies and Blackhill area travel northwards and leave the coal railway in Welgedag to the south Springs, Heidelberg and Balfour to get to the power plants.<sup>[7]</sup>

## Ogies

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In the Ogies marshalling yard, coal trains and freight trains with other freight from the region are fed to the main route. 200-car trains from Blackhill and Minaar as well as the trains from the Landau Rapid Loading Terminal do not use the marshalling yard.<sup>[22]</sup>

## Landau Rapid Loading Terminal

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In this coal loading plant, which went into operation in 1976, up to 8000 t of coal can be extracted from the Anglo American-Coal mines greenside, kleinkopje and navigation are loaded so that the trains can be handled within six hours. The coal is transferred from the pits Conveyor belts fed to the loading system, the conveyor belt from the Kleinkopje mine being the first conveyor belt to be laid in a horizontal arch in South Africa.<sup>[23]</sup>

## Ermelo

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The Ermelo operating station is located south of the village and is mainly used to change the traction from direct to alternating current and to couple the 100-car trains to 200-car trains when driving south and the reverse processes when driving north. The station consists of the four track fields A, B, C and D, which are arranged from south to north. Fields A and B are connected to fields C and D via a turning loop, field B is covered with 25 kV overhead contact line, field D with 3 kV. 100-car trains from the north enter entry group D, are coupled to 200-car trains there, pulled through the turning loop and provided in exit group A. Trains from the south enter group B, are pulled through the loop by means of a shunting locomotive after the locomotive has uncoupled and made available in exit group C. The reversing loop is used with diesel locomotives, but has been covered with contact wire since 2014.<sup>[11]</sup>



Locomotives in the Ermelo marshalling yard - two-system locomotives in the front SAR class 19E

In addition to the tracks for the coal trains, there is also an area for the other freight trains with industrial goods from the regions Rustenburg, Louis Trichardt and Steelpoort.

The Shongololo trains covered with 19E locomotives do not use the Ermelo marshalling yard. The system change is carried out on an open track.<sup>[22]</sup>



Small amounts of coal are still being converted from the mining areas Lephalale delivered by rail.<sup>[6]</sup>

In Vryheid gibt es gleich zwei Rangierbahnhöfe – Vryheid Ost und Sikame. In Sikame erreichten Kohlelieferungen aus Hlobane the main line, but the operation of the coal mine was stopped in 1998 due to water ingress.<sup>[24]</sup> In addition, the line electrified with 3 kV direct current reaches here Newcastle the coal mine. Along this route will be significant Amounts of raw wood loaded for transportation to the port.<sup>[7]</sup> In the long term, there are plans to expand the route from Johannesburg via Newcastle to Vryheid for heavy goods transport, so that an alternative route from Welgedag to the existing coal railway Standerton, Popular trust, Newcastle and Glencoe could be operated.<sup>[25]</sup>

This is at the end of the Richards Bay Coal Line Richards Bay Coal Terminal (RBCT), where the coal with five tandem Centrifugal tippers is unloaded and either on conveyor belts to the coal storage area or to the Bulk carriers which transport the coal to ports in Africa, Asia, America or Europe.

The Richards Bay Nsese marshalling yard is in front of the port. Rail connections also exist from here Empangeni after Durban and about Eswatini after Phalaborwa.<sup>[26][7]</sup>



Two-system locomotives the SAR class 19E in the depot of Richards Bay.

The Richards Bay Coal Line is to be further expanded so that the transport capacity reaches the loading capacity of the coal terminal in Richards Bay. In 2015, the terminal was designed for the annual loading of 91 million tons of coal<sup>[27]</sup> while the train could only bring 76 million tons of coal to the port.<sup>[28]</sup>

The Blackhill, Saaiwater, Ermelo and Vryheid train stations will be expanded in the next few years. Additional substations will also be installed and existing ones expanded to improve the energy supply to the route. The planned second Overvaal tunnel is also to be built.

Additional transport capacity is for the coal from the Waterberg coal field in the province Limpopo and from Botswana needed. In order to be able to transport more coal, the remaining bulk goods have to be brought to the port of Richards Bay in alternative ways. South Africa and Eswatini agreed to build a new and cross-border railway line Swazilink, that is in the project stage.<sup>[29]</sup> It should be available from 2020.

A trilateral agreement between South Africa, Eswatini and Mozambique plans to organize South African coal exports under the direction of Transnet with coordinated logistics between the ports of Richards Bay



and Maputo. An operating center for the Maputo corridor has been set up by Transnet, the rail and port operators in Mozambique and Eswatini Railways is managed together.<sup>[30][31]</sup>

Map of Swazilinks, the proposed new route for general freight trains

This step took place after some South African mining companies already exported their coal in cooperation with the logistics company Grindrod about that Terminal de Carvão da Matola (TCM) of the port of Maputo after the rail transport to RBCT due to lack of capacity on the Richards Bay Coal Line was not possible.<sup>[32]</sup>



**Commons: Richards Bay Coal Line** - Collection of pictures, videos and audio files

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