The previous episode of this series on transport infrastructure history in South Africa was devoted to "setting the scene" during the period from "early times" up to the start of the 20th century approximately. By the end of this period, which pre-dated the advent of the steam engine, a rudimentary network of roads and tracks serving ox wagon travel and transport riders had been developed in parts of the country. The new development of the steam locomotive and rail travel halted the development of roads for a couple of decades until, once again, a new development – the internal combustion engine – resuscitated and gave impetus to the need for good roads. However, this particular episode in the series highlights the development of rail and harbours in the early days. The next episode will deal with the development of roads from the turn of the 20th century until its mid-way point.

**RAILWAYS**

The "railway revolution" in the countries of the northern hemisphere had its effect on South Africa as well. In Durban the first iron railway was constructed by the Natal Railway Company, a limited liability company with £10 000 capital "for discharging and loading vessels" at the Durban harbour wharf, which was being constructed, "and the delivery and receipt of goods at the doors of the principal warehouses in town". This company ran its first train from the Point to the centre of Durban, a distance of 2 miles, on 26 June 1860. This development was followed eighteen months later, in 1862, when the Cape Town Railway and Dock Company opened its first line from Cape Town to Wellington, a distance of 60 miles.

Initially, railways were provided only to cope with the traffic generated in and around the coastal towns. The bait that lured them...
inland was the discovery of gold and diamonds. The development of these mines was significantly advanced by this new method of transport. At the same time the Suez Canal was opened. This reduced the distance to Europe and the East by over 9,000 km, bringing to a virtual end the role to which Cape Town owed its existence. Added to the rush to the gold and diamond mines, coal was found within a stone’s throw from gold, and more abundantly further east – a great bonanza. Obviously, more efficient modes of transport than mule and horse-drawn stagecoaches and ox wagons were needed; this occurred in the form of rail transport.

As early as 1872 the Cape Government decided to extend the Wellington railway towards Kimberley, which it reached in 1885, and on to Bloemfontein in 1890, and Johannesburg in 1892. This line was joined in 1892 at de Aar by another line coming up from Port Elizabeth. Railways into the interior were also built from East London and Durban, the latter mainly for the purpose of establishing an outlet for the coal from the collieries in the Glencoe/Dundee area, and in 1897 a line from Kimberley to Bulawayo was opened.

The Transvaal government had been trying for a long time to break out of its land-locked position and its dependence on the British-ruled south. As early as 1871 President Paul Kruger tried to raise capital for the construction of a rail-link to Pretoria from Delagoa Bay in Mozambique. But there had been no takers, even upon promises of government guarantees similar to those which had made possible the early Cape and Natal railways.

This line was eventually completed in 1894. President Kruger had tried his utmost to hold up the arrival at the Witwatersrand of the “foreign” railhead from the Cape until after the completion of the NZASM line from what is today known as Maputo, but as delays mounted with the latter he could no longer resist economic pressures. In the end he was beaten to it by two years. During this two-year period a monopoly over the lucrative Transvaal traffic was enjoyed by the Cape Government Railways, who were operating on a concessionary basis within the territory of the Orange Free State.

Of the railheads converging upon the Witwatersrand from all directions, construction was the most difficult on the line from Durban, because it ran at right angles to the principal drainage pattern of the terrain. Fast progress was, however, achieved on the lines coming up from the ports of the Cape Province. Once the escarpment had been climbed, the generally flat and hard ground of the Karoo and the adjoining plains of the Orange Free State presented ideal conditions for the rapid construction of railways. The only problem, which had become more and more serious, was that of logistics, carrying forward huge quantities of material and maintaining large labour forces in a countryside where no provisions were to be had and even water often had to be brought in from far away.

By 1896 a system had come into existence which to this day is the backbone of the South African railway network, a kind of five-finger system, with the palm of the hand at the Witwatersrand, the fingers to Maputo, Durban and the three Cape ports.

The South African War (1899–1902) was a railway war if ever there was one, both at the initial stage of conventional warfare, and the subsequent, long drawn-out stage of Kommando-type warfare. All components of the “five-finger” system, as well as all rolling stock, were eventually brought under the rigid control of the “Imperial Military Railways”, whose operational performance during those years must rank among the great transportation feats of all times for moving men and supplies.
During the years of reconstruction after the South African War, the various railway systems operated under the respective styles of the Cape Government Railways, Natal Government Railways, and Central South African Railways, the latter covering what was then known as the Orange River Colony and the Transvaal Colony. With the advent of Union in 1910, however, the administration of the railways became the central government's responsibility under a special portfolio, the Ministry of Railways and Harbours. In 1915 the three constituent railway systems were fused and the “South African Railways” came into being. The rapid and complete amalgamation into a truly integrated organisation was achieved under the inspired leadership of W W Hoy, General Manager of the South African Railways and Harbours (SAR&H) from its inception until 1927.

The unifying effect of the railways extended well beyond the borders of the newly founded Union of South Africa. By now a whole network of railway lines was covering the region, all built to the same gauge, the so-called “Cape Gauge” of 3 feet 6 inches. It reaches all the way from the Cape to the Congo and up to the great African Rift Valley. It has played a vitally important role in the development of the entire region and continues to be a major economic and political factor in the region.

**HARBOURS**

South Africa is one of the most unfortunate countries in the world regarding natural, protected harbours and navigable rivers. In a relatively unbroken coastline, 3 400 km long, there are only two natural harbours where large ocean-going vessels could enter and shelter without extensive protective works and/or dredging. These two harbours are Saldanha and Walvis Bay. However, in the early years both were of little value owing to the lack of local fresh water supplies.

At present no cargo is transported on any South African or inland waterway, although many years ago coasters entered the Breede River and navigated up as far as Malaga – about 20 miles – to serve the Swellendam area. The rivers at Port St Johns and Port Shepstone are navigable for short distances, and in the past some attempt was made to use water transport.

All South African harbours were originally “lighterage harbours” where passengers and goods had to be transferred from and to ocean-going ships by flat-bottomed rowing boats – lighters, which could be loaded or unloaded in shallow waters. This procedure persisted in some South African ports until after the Second World War. The only sheltered harbours were those situated in river estuaries, like Durban, East London and Port Alfred (which in the early days was hoped would play an important role.) Unfortunately their entrances were blocked by sand bars, which were dangerous and often impossible to cross. It is only with the advent of effective open sea dredgers that these sand bars were attacked and harbour development facilitated.

During the early years, when land transport was difficult, small craft traded not only between the main ports, but also between the smaller ports such as Port Beaufort (Breede River), Knysna, Port Alfred, Port St Johns and Port Shepstone. Except for Knysna, where navigation conditions approaching the entrance are difficult, most of the ports east of Algoa Bay have sand bar troubles, and, with the increasing size of vessels and the lack of development in the immediate hinterland, these ports have all been abandoned and sea communications replaced by road and rail connections. It is interesting to note that up to 1898 nearly R1 800 000 had been spent in the Port Alfred Harbour Works.

The primary early harbours in South Africa were Cape Town (Table Bay), Durban and Port Elizabeth. Originally the Cape harbours were controlled by Boards of Commissioners, but in 1896 Harbour Boards for each port were established. Durban had its own Harbour Board in 1881. In 1910, under the Act of Union, all harbours became part of the South African Railways and Harbours Administration.

**Table Bay Harbour**

This was the first port to be established on the South African coast and for many years the only facilities consisted of a series of small jetties running out from the shore. All vessels lay at anchor in the bay. These craft were exposed to northwest gales, resulting in many casualties during these years. In about 1743 the Dutch started a rubble breakwater from Mouille Point, but the structure was unable to stand up to heavy winter gales. Between 1823 and 1859 no fewer than 12 schemes for a harbour were considered. All these schemes consisted of enclosing arms running out from different points between the line of the existing Fort Wynyard and Fort Knokke (Woodstock), the main purpose being to provide a sheltered area for vessels to lie at anchor or alongside a pier. The arms were narrow and it must be assumed that it was anticipated that cargoes would either be manhandled along the piers or brought ashore to small jetties.

Captain Vetch, R.E., proposed the first definite scheme for a harbour in 1856, and in that year Sir John Goode was appointed to frame detailed plans and estimates. His scheme covered the present Alfred Basin and the commencement of the breakwater. Actual work started in 1860. The basin was just inshore of the old Chavonne battery. The Alfred Basin was excavated in the “dry” and the excavated stone was dumped from a staging to form the breakwater (length 1 790 feet). The basin, which became the first equipped commercial dock in the country, was opened in 1869. This basin provided 2 100 feet of berthing with a depth of up to 24 feet at low water. An old engraving shows no less than 13 steamers and sailing vessels in this dock. Thereafter various improvements and extensions were carried out to accommodate the increasingly larger, and deeper-draught vessels, right up to the end of the Second World War, the start of the period being reviewed.

**Durban**

Whilst Durban is generally considered a fine, natural harbour, it needs to be pointed out that soundings taken in 1850 indicated a series of sand banks right across the area between the Point and the Bluff, with channels about 200 feet wide and a minimum depth on the bar on the seaward side of from 4 to 9 feet. Inside this area there was useful water areas more or less opposite the present Bluff quay, which was stated in 1867 to be about 85 acres in extent, with narrow inlets shallowing up to the various streams entering the bay. Whilst the limits of the area at high spring tides covered an area of about 4 000 acres, except for the small area quoted above, the balance was of little direct value to shipping.

In 1884 dredging started at Durban (Bucket Dredger Platypus) to provide the necessary water area and approach channels for the various berths. During the years, up until 1960, no fewer than 24 different dredgers were employed at Durban.
The first proposals for works to improve the entrance were put forward in 1851, covering the construction of the north (2 000 feet) and the south piers (800 feet). To direct the full force of the ebb tidal flow straight over the bar opposite the outlet to the harbour, five hundred feet of the north pier were constructed and this had a beneficial effect on the bar. In 1876 the minimum depth in the month of July was two feet; from that date onwards such a low figure was never repeated.

Various, sometimes acrimoniously debated proposals to address the problem of the sand bar were considered and partially implemented during the next 30 years – none were successful.

In 1881 the Natal Harbour Board was established and its engineer, Mr Innes, pushed ahead the 1851 north pier and constructed a short length of breakwater (820 feet) from the Bluff. At that time the average depth of water at the bar was only 8 feet (minimum 6 feet 3 inches). The works did not give all the anticipated benefits and the breakwater was lengthened in 1886 to 1 500 feet, which improved the entrance, and 10 feet of water was available. The overlap beyond the north pier was 1 000 feet.

In that year it was decided to utilise the bucket dredger, the Platypus, which was engaged on the inner harbour works, to cut a channel through the sand bar to a minimum depth of 14 feet. The success of this operation resulted in the first bar suction dredger “Beaver”, with a hopper capacity of 500 tons, being purchased.

Continual work on the piers combined with dredging, and the development of quays, took place during the next 60 to 70 years. It was estimated that during this period in excess of 30 million tons of sand were dredged to maintain the harbour entrance to an acceptable depth. During the Second World War period, the entrance channel was deepened to 42 feet, and the approach to 46 feet, to accommodate the increasingly larger vessels wishing to use the port.

In addition to this, construction of the various wharfs, passages and freight hauling facilities continued up to the start of the Second World War in 1939.

Port Elizabeth
Port Elizabeth was declared a customs port in 1926, and in the early days all cargo was landed by surf boats and later by barges and lighters. As the prevailing winds are off shore, vessels would lie fairly close in, but when the wind suddenly changed to south-east (blowing onshore) vessels at anchor frequently found themselves drifting on to the lee shore with little chance of escape. Frequently many of the vessels ended as wrecks along the shore of Algoa Bay.

The first harbour scheme undertaken was the construction of a breakwater out from the south side of the Baakens River for a distance of 113 feet, with 370 feet return in about 21½ feet of water. The breakwater consisted of closely spaced piles with the centre filled in with rubble. The piles were selected ironwood, and some yellowwood and stinkwood trees from Knysna. Work commenced in 1861.

As with the other two main harbours in South Africa, in the early days continual improvements, both to accommodate the steadily increasing size of ships and also to accommodate steadily increasing passenger and freight demands, were made up to the start of the “modern era”, i.e. after the Second World War ended in 1945.

BIBLIOGRAPHY
References will appear at the end of the last chapter in this series.