

CULTURAL HISTORICAL ASSESSMENT OF THE HEX PASSRAILWAY, WORCESTER TO DE DOORNS

Prepared for

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1. INTRODUCTION

The Archaeology Contracts Office of the University of Cape Town was commissioned by Ninham Shand Consulting Engineers to participate in a cultural-historical assessment of the Hex River Railway Pass, Western Cape Province, South Africa. The affected section of line which stretches from De Doorns to Kleinstraat station has been out of use since it was bypassed by the completion of an extensive tunnel complex. The client, Transnet wishes to remove the rails sleepers and ballast (hereafter referred to as “permanent way material”) for use elsewhere. As the pass is known to have been one of the earliest built in South Africa, the National Monuments Council requested that a preliminary assessment be made of the historical importance of the railway before a decision was made to remove any of the permanent way material. The pages that follow present the results of a site inspection, and a documentary investigation of the pass and its context in southern African Railway history.

2. HISTORICAL BACKGROUND

2.1 Early Cape Railway History

The great railway boom of Britain during the 19th century provided a direct impetus to discussions concerning the possibility of establishing a railway in the Cape. As early as 1838 the South African Commercial Advertiser published an article discussing the advantages and disadvantages of railway transportation¹. In 1845 the idea was carried further when several Cape businessmen met in London to convene the first meeting of the provisional committee of the Cape of Good Hope Western Railway. The meeting, chaired by the eminent banker, Harry Watson, concluded that *“this railway is calculated to be of immense benefit to the flourishing colony, and as it is confined to the more populous districts in the neighbourhood of Cape Town, the enterprise is certain to return ample remunerative profits to the shareholders”*².

The idea was not well received in Cape Town and met with strong resistance from both religious conservatives and those who simply believed that the scheme was not viable. The project hung in limbo for several years until 1853 when the Cape Town Harbour and Dock Company was formed. The purpose of the company was to *“introduce into the Cape Colony a progressive system of railways, and to supply its capital safe and convenient access and facilities for the reception and repair of shipping, the want of which has so long and severely experienced as a serious prejudice to the commercial and agricultural trade of the colony...”*³

Two years later, the Cape Town Harbour and Dock Company appointed its first railway construction engineer, William George Brounger. Brounger was a Londoner who completed his engineering apprenticeship under Sir Charles Fox. Before coming to South Africa, he worked on the London-Birmingham line as well as the Zeeland Railway in Denmark. By the time he joined the Cape Town Harbour and Dock Company, Brounger had proved himself

¹ SAL The South African Commercial Advertiser 10 October 1838

² The Pictorial Times 25 October 1845

³ South African Railways, History, Scope and Organisation. Johannesburg: SAR Public Relations Dept

to be a skilled and innovative engineer. By 1858 the necessary funding had been raised and legal problems resolved, and the Cape Government agreed to the construction of a railway from Cape Town to Wellington via Stellenbosch. Brounger, who was the engineer in charge of construction, was faced with severe problems in the beginning due to lack of both skilled and manual labour. There was no-one in the Cape familiar with rail travel and its engineering ramifications so initially he had to train his own staff. The problem was solved when a number of professional railway workers (Navvies) were brought out from Europe. The Cape Town to Wellington line was eventually opened in 1864. At about the same time the independent Wynberg Railway Company had established a link from Cape Town to Wynberg (which was later to be extended to Muizenberg and eventually Simonstown under Cape Government Railways).

Both the Wynberg and Wellington lines together with their branch lines were built on the standard British gauge of 4'8½". The first locomotives which were imported from Britain (built by Robert Stevenson and Co), were designed to operate on this gauge at a maximum speed of about 35 mph.⁴

By the beginning of the 1870's, the independent railway companies were running into financial troubles and the prevailing opinion was that they should be taken over by the Cape Government. Furthermore, it was in the interest of the government to acquire a railway system that could provide a potential starting point into the interior so that it could exercise its control over the lucrative Kimberly diamond fields. In 1872 a Parliamentary Select Committee authorised the take over of the independent railway companies, their staff and assets. From this moment onwards Brounger became a civil servant and was appointed "Railway engineer of the Colony". In the following years until his retirement in 1883 he oversaw the construction of the main railway networks of the colony which linked Cape Town, Port Elizabeth and East London with the Kimberly diamond fields via De Aar junction.

2.2 Expansion northwards, The Hex River Pass

The biggest obstacle to extending the railway into the interior of the country was the Cape Fold Belt mountains that separated the seat of Colonial Government from those parts of the Cape Colony located on the high Karoo Plateau. Transport to the interior was provided by professional transport riders who conveyed passengers from the railhead at Wellington into the Karoo by wagon. This status quo continued for a number of years with the Colonial Government lacking both the willpower and the resources to extend the line from Wellington⁵.

The discovery of diamonds in 1867 at Hopetown near Kimberly motivated a change in attitude and more than doubled the amount of revenue for the Colonial treasury. Preparations were made for extending the Wellington railway across the mountain range. In 1872 the Cape Chamber of Commerce, appreciating the potential importance of a railway link with the interior, took up the initiative and commissioned Thomas Hall (engineer to the Cape of Good Hope Copper Company) to survey a route to Worcester. Hall reported that the only solution was to build a narrow gauge 2'6" track to cope with the tortuous bends that the route demanded. Furthermore, the Hex River Mountains were not considered an option for as rail route on account of the severe inclines that needed to be negotiated. These

⁴ The first locomotive is preserved on Cape Town Station

⁵ Nock, O. S. 1973. Railways of Southern Africa. London. Adam and Charles Black.

factors created difficulties for the Colonial Government who favoured the 4'8½" gauge which was already in use, and more suitable for running high speed trains. After much debate and consultation the Colonial Government agreed to a compromise gauge of 3' 6" suggested to the gauge committee by Brounger. This single decision was to have a profound effect on the development trajectory of Southern African rail transportation and the associated industries.

Once again the responsibility for all aspects of construction of the extension to Worcester fell on William Brounger. To assist him he had the resident engineer of the Wellington railway, Henry Pauling. In 1872 a shipload of 2000 white men⁶ (navvies), skilled workers and locomotive drivers were brought to the Cape at a cost of £26 000 paid for by the Government. Local labour was not favoured. Construction of the Wellington Worcester extension began in 1873 with the first use of the 3' 6" gauge.

Once the construction work had begun Brounger immediately commissioned surveys to find the best possible route for continuing the railway system into the Karoo. In 1874 Brounger wrote a letter to the surveyor, Wells Hood, to undertake a survey for the "*extension of the railway communication in the direction of Beaufort West*".⁷ Wells Hood reported to Brounger on the 9th of April 1874 proposing that there were three route options that could be used. The first of these was via the Hex River Valley, Constable, Grootfontein, Blood River, Kleinkruidfontein and on towards the Gamka River. The second route was to go via Mitchells Pass, Ceres, Lakenvlei, Karoo Poort to the junction of the Hex River High Road and then on towards Beaufort West. The third route favoured Robertson to Montagu, Ladysmith and then into the Karoo via the Seven Weeks Poort. Maps of the routes are included with the original documentation in the South African Library.⁸

In terms of the first route which ran via the Hex River Valley, Wells Hood reported that "*the Hex River gives every opportunity for the construction of a cheap railway: There is no gradient more than 1:40 and even then only for short distances, the ground is loose shale and therefore not requiring great heavy earthworks, however we do require a single tunnel of about 10 chains in length. He estimated the cost per mile of track to be in the region of £5675 per mile including everything except the purchase of the land*".⁹ The line would leave de Vos's farm in a SE direction, following various valleys and kloofs until it reached the base of "Table mountain" (Matroosberg) and then on to Kleinstraat. After some debate this route was chosen in 1876 on Hood's and Brounger's recommendation. This meant that when the rail head reached Worcester in 1875 construction activities were able to continue virtually unabated in taking the line into the Hex River Mountains.

Brounger wrote a technical treatise containing details of the construction methods he and the resident engineer, H.J. Pauling, used in bringing the line through the Hex River Mountains towards Beaufort West.¹⁰ The line had to ascend, a steep gradient that, within a distance of 36 miles, had to reach a height of 3588 feet, before descending just under 1000 feet into the Karoo. The emphasis was on economy which forced the engineers to avoid,

⁶ Secondary sources on building of the pass contain anecdotal accounts of the misbehaviour of the gangs of English navvies, who by all accounts "worked hard and played hard". They roamed the countryside in search of brandy, terrorising the locals. However, the professional transport riders soon found ways to service this lucrative new market.

⁷ SAL Parliamentary Papers A5 1874

⁸ SAL Parliamentary Papers A5 3/3 1874

⁹ SAL Parliamentary Papers A5 3/3 1874

¹⁰ Brounger, W.G. 1884. Cape Government Railways - Paper 2094. Institution of Civil Engineers 1884-84. Vol 81 Part 3.

where possible, building tunnels and bridges which sapped their operating budget. Instead they manipulated the line round numerous buttresses, constructed earth embankments instead of viaducts, and made cuttings instead of tunnels. Along the section between what is now Matroosberg Station and De Doorns, only one tunnel and three short viaducts were required.

Construction of the pass went extremely smoothly in general. The route was prepared, cut and filled well in advance of rail being laid, the permanent way material being transported on a construction train. Empty trucks returning to Worcester were used by locals as a convenient means to transport produce from the more remote mountain farms to town. Worcester, being the main town at the bottom of the pass, benefited from the endeavour as it was here that the construction trains were loaded with locally manufactured prefabricated sections of viaducts.

Brounger did encounter a number of logistical problems. Skilled labour was scarce and in some instances the quality of materials available at the Cape was poor. The locally made shell-lime cement was not only soft but extremely bulky to transport. The Cape-made bricks were generally very soft and unsuitable for building load-bearing culverts, hence the use of prefabricated iron components where possible. In construction of bridges and embankments a lot of locally available stone (TMS) was used. In places that did not involve any load bearing, dry stonework was used to reinforce embankments. In other areas, expensive imported (but highly efficient) Portland cement was used together with dressed slabs of TMS to construct bridge piers.

The permanent way material that was used was progressive for its time. Steel as opposed to cast iron rails were used throughout. This was one of the earliest lines to be built using this material. Initially Brounger tried to use locally manufactured wooden sleepers ("from the Colonial Forest"). Not only were these expensive and difficult to obtain but the fastenings worked loose in areas of tight bends and inclines where the rails were subject to high stresses. Better success was achieved through use of imported hardwood sleepers from Madagascar but it was difficult to obtain a consistent supply (camphor wood proved to be the best). Eventually cast and wrought iron sleepers were used on the Hex River section. Provided that they were packed properly into the ballast, they proved to be the most successful.

Despite difficulties of supply of materials, the pass was completed within budget, on time and without loss of life. In 1877 the report of the Railway Engineer submitted to Parliament stated that no fatal accidents took place during the year and that progress on the line was satisfactory. Some 56 miles had been completed including embankments and two tunnels.¹¹ Later that year the railhead reached Touws River (Montague Road) and Beaufort West in 1878. Beaufort West then became the embarkation point where travelers *en route* to Kimberly met the transport riders at the railhead. They were then conveyed by wagon. Slowly the railway encroached into the market of the transport riders physically eroding the length of their route and eventually, ten years later putting them out of business altogether.

The Western System was the primary route from which the Cape Government extended its control over the Cape Colony and later, territories to the north. Although this portion of the line never came under physical attack during the South African War, it was the most important railway line that kept the British government in touch with the theater of

¹¹ SAL Parliamentary Papers G49 1877

operations.¹² Between 1899 and 1901 over a million tons of equipment, wagons and armaments, one and a quarter million passengers and troops and half a million horses went to the war front via the Western Railway System. Each bridge and tunnel was protected by a block house and garrison, the remains of which are still visible.

In September 1914 a serious railway accident occurred on the pass. A troop train returning from Namibia via De Aar junction lost control going down the pass after the rear locomotive was detached at the summit. The single locomotive heading the train was unable to brake adequately on the descent and derailed on a bend. The coaches telescoped into each other resulting in the deaths of 9 non-commissioned officers and men. The survivors, including 103 injured men spent the night on the mountain until they were transported to Worcester the following day. The injured were the first patients in Worcester's new hospital.¹³ A memorial marks the location of the derailment.

In 1921 a new tunnel was built immediately next door to the original pass tunnel at km 34 (the original tunnel was too small for the more powerful steam locomotives of the time). In 1931 a new section of railway line was built between Kleinstraat and Matroosberg stations giving the pass a double track for a part of the way. In the 1950's the pass was electrified and a particular class of electric unit (class 4E) was designed to haul trains on this stretch. In 1989 the pass was closed to rail traffic after a new 13 km tunnel was opened, providing a double line and gentler gradient into the Karoo.

Although it was built as cheaply and as quickly as possible, the Hex River route with its stations and bridges served for over 100 years. During its time it transported everyone from royalty to migrant labourers.

2.3 The regional development of southern African railways

The major railway lines of South Africa are all part of an historic infrastructure that was mostly in place and operational by the turn of the century. The Hex River Pass line which is the subject of this study, was a small portion of this system. In determining its historical significance, it is necessary to establish the role it played in the context of the broader development of railway transportation in southern Africa.

The development of railways in South Africa did not begin initially as a vision to "open up the country" but rather as several undertakings by a number of small companies to service local needs. The first working railway line was built in Natal. At first it was operated by animal power until the Natal Railway Company purchased a 4' 8½" gauge steam locomotive (the Natal) in 1860 which ran between Durban and The Point. The Cape Town Railway and Dock Company which had obtained its locomotive a year earlier, had not yet completed its railway line. Eventually Cape Town supported three small railway companies operating lines from Cape Town to Wellington, Wynberg and Sea Point.¹⁴

After the advent of the Kimberly diamond boom and the establishment of the Cape Governments Railways (CGR), railway construction flourished under the leadership of W.G.

¹² Girouard, EPC. 1903. History of the Railways during the South African War in South Africa, 1899-1902. London: Harrisons & Sons

¹³ Coleman, F. 1988. "Nunc animis" The Kaffrarian Rifles 1876-1986. East London: The Kaffrarian Rifles association.

¹⁴ Paxton, L and Bourne, D. 1985 Locomotives of the South African Railways. Cape Town: Struik.

Brounger. Brounger was not only responsible for the Cape Town to De Aar line (the Western System) but worked widely throughout the Cape establishing routes from the colony's main ports to the interior (the Midland and Eastern Systems).¹⁵ By 1875 railway lines had been completed between Port Elizabeth and Addo. By 1879 further links had been established to Graaf Reinet and Grahamstown. According to Nock¹⁶ the Cape Town and Port Elizabeth lines were virtually racing each other to get to the diamond diggings at Kimberly. The two lines eventually converged at a desolate Karoo farm named De Aar in 1884. De Aar grew to become a key railway junction linking the Western, Midland and Eastern railway systems. From De Aar the line crossed the Orange River and, for political reasons, skirted the border of the Orange Free State before reaching Kimberly a year later.¹⁷

The discovery of gold in the Transvaal spurred a further flurry of railway development with both the Cape and Natal Governments endeavouring to establish links with the Boer Republics. The Cape Government extended a line across the Orange Free State to the Transvaal border. The Natal Government who, like the Cape Government, had taken over the independent Natal railway companies also followed a vigorous development programme and extended a link to the Transvaal border. Paul Kruger, President of the Transvaal Boer Republic, was also quick to appreciate the advantages of train travel but wished to remain independent of British influence. With the help of a Dutch firm of contractors he established the *Zuid-Afrikaansche Spoorwegmaatschappij* in 1887.¹⁸ Construction of a line from Pretoria to Delagoa Bay commenced, involving a precipitous route into the lowveld with gradients in the region of 1:20. This required special locomotives and tracks equipped with a rack and pinion system. The route to Delagoa Bay is notorious for the difficulties and loss of life that occurred during its construction.

By the end of the 19th century Cecil John Rhodes had not only achieved considerable wealth, but had become prime minister of the Cape Colony. He understood the economic advantages of rail travel, but also realised that it was a powerful colonising tool that allowed him to further his ambitions and acquire and control new territories for the British Empire. He facilitated this through the British South Africa Company which propagated his interests in Bechuanaland and Southern Rhodesia. Within 12 years of the railhead reaching Kimberly, the line was extended to Vryburg, then from Vryburg to Mafeking, by the Bechuanaland Railway Company Ltd. In 1897 the first train steamed from the Cape Colony through Bechuannaland into Bulawayo Station. In May 1904 the railway reached Victoria Falls. The engineering contractors were George and Henry Pauling, nephew and son of Henry Pauling who, together with W.G. Brounger, built the Hex River pass¹⁹. It was Rhodes' ambition that the rail system would cross Africa from "Cape to Cairo". This never came to pass but the 3'6" gauge penetrated well into central Africa.

2.4 Historical summary

For a long time the Cape Fold Belt mountains were considered to be an obstacle to building a railway line into the interior, however the improved financial position of the Cape

¹⁵ Dawson, G.H. 1915 Railways, a brief history of those in South Africa. SAR & H Magazine. Jan 1915.

¹⁶ Nock, O. S. 1973. Railways of Southern Africa. London. Adam and Charles Black.

¹⁷ Bolze, L.W. 1968. The railway comes to Southern Rhodesia. Rhodesiana, The Rhodesiana Society No 18.

¹⁸ Paxton, L and Bourne, D. 1985. Locomotives of the South African Railways. Cape Town: Struik.

¹⁹ Nock, O. S. 1973. Railways of Southern Africa. London. Adam and Charles Black.

Government after the discovery of diamonds, and the adoption of the 3'6" gauge made this economically possible.

The adoption of the 3'6" gauge (which came to be known as the *Cape Gauge*) in 1873 set the standard for Southern Africa. The old 4'8½" gauge was still used within a dual system on the Wellington and Wynberg lines until the 1880s, after which the tracks were replaced.²⁰ From this point onwards all rolling stock and locomotives used in southern Africa had to be manufactured to operate on what became known as the Cape gauge. The result of this was the growth of a significant local industry producing equipment, trucks coaches, and eventually locomotives for use in southern Africa. Although the Cape Fold Belt mountains were the motivational force that led to the adoption of the Cape gauge, the Hex River Pass line cannot claim sole credit for motivating this decision. Examination of the available sources has shown that the Cape Government Railways adopted the Cape gauge to overcome the initial problems of the extending the line from Wellington to Worcester through the Du Toits Kloof mountains. It was only after the construction work had begun on the Cape gauge line from Wellington to Worcester that W.G. Brounger appointed Wells Hood to survey a route through towards Beaufort West. By the time that the decision was made to adopt the Cape gauge, the route from Worcester into the Karoo had not yet been decided on.

An examination of the history of railways in South Africa has shown that most of the main lines in the country were already operational by the time of the South African War in which they played a key role. The development of the system had a profound effect on both the economic development and the process of colonisation of nations to the north. Before the Western Rail System reached Bulawayo, it took up to two and a half months to complete the journey by wagon. By 1897 it was possible for a passenger to embark on a train at Cape Town and be in Bulawayo six days later. Not only could the rail system deliver heavy loads of goods great distances at relatively high speeds, but its contribution to efficient government control and expansion from the capital was enormous.²¹

The Hex River Pass is therefore a small portion of what is, in reality, a historically significant national railway network that has played a central role in the 19th and 20th century history of South Africa. From this perspective it may be argued that the Hex River Pass is not unique in this function as both the Midland and the Eastern systems (which were built very soon after) also played an important role. It does, however, justify special consideration in terms of the fact that it was the oldest railway pass in South Africa, and while Cape Town was the capital of the Cape Colony, it was the government's life-line into the interior.

3. THE CURRENT STATUS OF THE HEX RIVER PASS

3.1 Closure to rail traffic

In 1989, a complex of tunnels through the Hex River Mountains had been completed allowing rail traffic to bypass the severe inclines and bends of what was mostly a single

²⁰ Leendertz, M. Memoires of the Cape Government Railways at Cape Town. The Railway Society of Southern Africa.

²¹ Bolze, L.W. 1968. The railway comes to Southern Rhodesia. Rhodesiana, the Rhodesiana Society No 18.

track pass. Since that time the pass has not been used by main line rail traffic. The permanent way material is in place and in good enough condition to allow an inspection trolley to travel the route between Kleinstraat and De Doorns. This has afforded the opportunity to examine the route and its associated features.

3.2 Permanent way material

Permanent way material from the 1877 stretch of track from Kleinstraat to Matroosberg has been removed, Although culverts, cuttings and embankments are still in place. Steel tracks, sleepers and ballast are intact on both the 1931 stretch (Kleinstraat to Matroosberg) and on the 1877 stretch from Matroosberg to De Doorns. The tracks are in good condition apart from areas on tight bends and inclines that have been subject to wear. The sleepers, most of which are wooden, are serviceable. None of the cast iron and steel bowl sleepers laid down by Brounger are in service. During its period of operation the permanent way material has been subject to a virtually continuous process of maintenance and replacement to ensure that it is up to standard for use by main line trains. Since 1989 the signal system and overhead wires have been removed.

3.3 Embankments and cuttings

Although the older portion of the route was built before dynamite was in common use, most of the rock is Bokkeveld Shale and can be quite easily broken with black powder, picks and hammers making it more economical to “cut and fill” than build tunnels and viaducts. Embankments and cuttings are fairly frequent along the Kleinstraat-De Doorns railway due to the uneven topography. Several of these are particularly spectacular with some cuttings being 12-15m deep. Large embankments instead of viaducts, have been used to span valleys between buttresses. At least two embankments have subsided resulting in unevenness and movement of the permanent way.

3.4 Culverts, bridges and tunnels

Although some of the smaller culverts between De Doorns and the tunnel were built of dressed masonry and cement, W. Brounger favoured prefabricated iron bridges. There are three examples of these between Matroosberg and De Doorns. They are well preserved and are the oldest known railway bridges in southern Africa. Although they have not been subject to any form of detailed archaeological examination, they are important structures and probably present the oldest use of cast iron and Portland cement anywhere in the country. Southern Africa's oldest railway tunnel is situated at km 34 between Matroosberg and De Doorns. It was built by Brounger and Pauling in 1876 to penetrate a butress that was too tight and steep to bring the line around. The tunnel portals are of dressed stone masonry but the tunnel itself is unlined - testimony to the economical use of masonry and cement. In 1921 the track was diverted for a short distance and a second concrete lined tunnel built to accommodate larger locomotives. This tunnel served the line thereafter until its closure in 1989.

3.5 Standing structures

A detailed archaeological survey of the route has not, as yet, been undertaken besides an initial site inspection organised by Spoornet. The observations presented below are therefore preliminary.

There are three abandoned stations with standing structures. These are Kleinstraat, Matroosberg and Osplaas. Matroosberg station was subject to a preliminary inspection. It consists of some 22 structures, several of which are well preserved Victorian buildings that are probably contemporary with the construction of the railway. The station and railway staff houses are of high group value and are conservation-worthy. Although minor alterations have been made to the station buildings, the interiors still contain significant amounts of 19th century fabric. These buildings are protected by the 50 year clause of the National Monuments Act of 1969 (as amended). Kleinplaas and Osplaas have not been subject to inspection, although some of the structures associated with these appear to be over 50 years old.

Each bridge and the tunnel was guarded by a block house during the South African War. The remains of some of these are still visible in places. There is likely to be archaeological material associated with these sites, making them an important cultural resource. Other archaeological sites associated with the railway are likely to include the locations of *Navvies* camps, borrow pits and abandoned machinery. All archaeological sites are protected by the National Monuments Act of 1969 (as amended).

3.6 Memorials

There are at least two cemeteries of unknown persons lying within view of the line. A close examination of the route will probably produce others. These graves are protected by the National Monuments Act of 1969 (as amended) and the Exhumations Ordinance of 1982.

The Kaffrarian Rifles Association erected a memorial to members of the regiment who died in the rail accident at km 32. This section of the line holds particular meaning for members of the Kaffrarian Rifles association. The memorial is in a weather-beaten condition but has been recently maintained by the Transient Heritage Foundation. It is also protected by the National Monuments Act of 1969 (as amended) and falls within the ambit of the National Monuments Council War Graves Commission.

4. CONCLUSION

4.1 The regional/national historic significance of the Hex River Pass

Within a regional context it must be realised that the main rail infrastructure of the country was virtually in place by the 1899. Each railway line had its own history, its unique engineering problems and in some instances, heavy loss of life. A review of available literature with the respect to the history of the railways has shown that very little of the detailed history of any of the railway systems has been written in an accessible form. We

cannot, in fairness, state that the Western System is more “interesting” than the Eastern or Midland system as we do not know the detailed histories of the others. All three have a common history in that they were built within a few years of each other and W.G. Brounger played a central role in their design and construction. It is known, however, that the Hex River Pass railway was the first major line into the interior and therefore of significance. Furthermore, associated with the route, are a number of conservation-worthy features, structures and sites which are among the earliest of their kind in the country.

The De Doorns Matroosberg line and the now lifted Matroosberg Kleinstraat line represents the first concerted attempt by the Cape Colony to extend the rail system into the interior. On the route are a number of early rail bridges, stations and tunnels, all of which represent the earliest surviving examples of this type of technology in southern Africa. This weighs heavily in terms of their national conservation value. The feats of engineering which the route represents were certainly innovative on a regional basis but not extraordinary in terms of world engineering accomplishments of the time. As far as the 19th century economics and politics of the country, the railway was significant, as was its association with people and events. It powered the colonial war effort during the South African War, allowed Rhodes to exert his control over Bechuanaland and Southern Rhodesia from Cape Town and, together with the Midland and eastern system, facilitated the early economic development of the subcontinent. The existing line between Matroosberg and Kleinstraat was a later and more routine addition to the system to create a double track. Since it does not follow the original route, it cannot claim the same degree of historical significance apart from the fact that it links the older route with the existing main line.

4.2 Impact of proposed lifting of the permanent way

The client has indicated that it is their desire to lift and reuse the valuable permanent way material on the Kleinstraat De Doorns line. This will involve the removal of track, sleepers and possibly ballast. The route will remain in the form of cuttings, embankments, culverts, bridges and a tunnel. Its essential identity as a railway will to a large extent, be destroyed in this process. As a result of removal of the permanent way, related features such as bridges, stations and tunnels and the Kaffrarian Rifles Monument, will lose their context and, eventually their meaning as well. These factors argue in favour of retention of the track as a means to giving cohesion to the various elements of what is an historic landscape. It may be possible to mitigate loss of permanent way material to some extent by establishing a trail with an historical theme along the route, which utilised all the existing facilities.

The building of this railway was a landmark in southern African railway history. Whether a decision is made to lift the permanent way material or not, the history of the railway line and its founding engineer needs to be acknowledged some way.

4.3 Legislative issues

4.3.1 Existing legislation

The application and interpretation of the National Monuments Act of 1969 (as amended) in this instance is problematic. The NMC has the power to proclaim as a National Monument

virtually any moveable or immovable property that that it considers to be of value to the nation irrespective of the findings of this report or sentiments of the owners. Besides its ability to declare places and objects, the act automatically protects archaeological and historical sites, as well as all buildings that are over 50 years of age.

Section 12(2A) of the act states "*No person shall destroy, damage, excavate, alter, remove from its original site or export from the republic-...f) any historical site, archaeological or palaeontological finds, material or object; except under the authority of and in accordance with a permit issued under this section.*" An historical site is defined in the act as any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 50 years.

Interpretation of the legislation is dependent on whether the railway line, and the route (cuttings, bridges, embankments and stations) that it follows are considered to be a single historical site or a series of separate structures.

Historically, this legislation has been applied to structures that are more definable as "buildings" and has seldom been exercised with respect to industrial structures or machinery or railways. The meaning of the term "historical site" is not well defined in the legislation but has been previously used to protect areas of the landscape that are significant in terms of archaeological potential, historical events and objects. There are few precedents with respect to use of the term "historical site" in terms of protection of industrial sites in South Africa. However, a generally accepted definition of the term means an historical place, object(s) or structure(s) together with its surroundings. In the context of a railway line this would imply protection of the route, the permanent way and all associated structures. The NMC also has the capacity to to declare a "conservation area". This involves the delineation of a portion of land with a high frequency of buildings and objects of historical merit for which a set of conservation regulations are enforced. In the past "conservation areas" have focussed pimilarly on protection of suburbs within an urban context.

On the other hand, if the railway line is considered to be a series of structures, it may be argued that the applicability of the 50 year clause of the National Monuments Act of 1969 (as amended) can be challenged from the point of view that the permanent way material is less than 50 years of age. This report has demonstrated that most of the main rail routes of the nation are virtually all over 50 years old, and in terms of the law, have a legal conservation status no different to the Hex River Pass. For the last 100 years, Spoornet (and its previous equivalent) have been maintaining and regularly replacing the permanent way material to ensure efficiency and safety of operation. Since track has to be replaced on a fairly regular basis, it may be argued that it is unlikely that any of the permanent way material on any of the regularly used routes is older than 50 years. Conversely, more static features, such as the route itself, culverts, bridges and buildings, that have had the opportunity to reach an age of 50 years or more without being replaced are more likely to be protected by the National Monuments Act.

In accordance with modern conservation trends, it is likely that the National Monuments Council will view the permanent way, route and stations as a single historical site as defined by the section of the route that is no longer in use. Since the wording of the existing legislation is so ambiguous, the onus is on the NMC to clearly explain and justify any position it wishes to enforce in terms of automatic protection.

4.3.2 Future legislation

New heritage legislation is due to be presented to Parliament this year. The Heritage Resources Bill is far more cohesive and comprehensive than the existing National Monuments Act of 1969 (as amended), and protects a far wider range of places and objects and structures (including industrial sites) over 60 years of age. It also makes provision for issuing of compulsory work orders to make good any neglected structures of historical value.

5. SUMMARY OF FINDINGS AFFECTING DECISION MAKING PROCESS

In terms of decisions that need to be made concerning the future of the pass, we ask that cognisance be taken of the following findings of the study which are summarised below.

- 1.) It was the earliest (by a small margin) main railway line into the interior of South Africa.
- 2.) It was a small portion of the Cape Town-Kimberly line, or the Western System, Both the Western, Midland and Eastern railways systems played an important part in the recent history of this country, having all been built in the latter portion of the last century.
- 3) It was a component of the primary means by which Cecil John Rhodes (based in Cape Town) was able to exercise his expansionist policies into central southern Africa.
- 4.) Along with the Midland and Eastern Systems, it played a central role as a supply route during the South African War.
- 5) Its bridges, culverts, tunnel, cuttings and embankments are among the earliest surviving railway structures in southern Africa. Similarly, one of the abandoned stations on the route (Matroosberg) is conservation-worthy.
- 6) The engineering associated with the pass was innovative in South Africa for its time, but not unique internationally. The inclines and curvature that had to be negotiated were severe but surpassed by the difficulties experienced by engineers building the Pretoria-Delagoa Bay line in the 1880's.
- 7) The Cape gauge was adopted before the Hex River Pass route was planned. It cannot claim sole credit for the gauge change as the decision was made primarily to advance the railhead from Wellington to Worcester.
- 8) Removal of the permanent way material will destroy the context of other features on the route, unless a suitable mitigatory measure is devised to re-establish the historical context of the remaining components of the route.
- 9) The permanent way material is probably all younger than 50 years of age. Its status in terms of protection by the National Monuments Act of 1969 (as amended) is debatable.

10) The 50 year clause of the National Monuments Act of 1969 (as amended) makes no specific reference to railway lines falling within the legislated definition of "historical site". The relevance of this portion of the act is debateable.

11) The National Monuments Council has the power to declare the railway a National Monument and thereby provide full protection.