

# Exploring the Eastern Cape's BRIDGING LEGACY



**LEFT:** East London-based consulting engineer, Dennis Walters, alongside Joseph Newey's briefcase and hat box. Walters has been fascinated by Newey's engineering achievements in South Africa and is currently writing a book about his life entitled *Bridging the Eastern Cape: the Life and Works of Joseph Newey*.

PHOTOS: MIKE BURGESS

The construction of bridges on the Eastern Frontier during the late 19th century contributed greatly to controlling newly conquered chunks of Xhosaland. **Mike Burgess** visited a number of bridges designed by legendary British engineer and bridge builder **Joseph Newey** and spoke to consulting engineer and author **Dennis Walters** about Newey's legacy.

**FAST FACTS**

- Joseph Newey was one of South Africa's most accomplished engineers and bridge builders.
- Born in London, Joseph Newey adopted the Cape Colony as his home, and died here in 1907 after a remarkably productive career.
- Many of Newey's elegant sandstone and iron lattice girder bridges are still in service today.

It is hard to imagine a greater contrast than between the grimy coal pits and furnaces of 19th century West Midlands, and the wild Eastern Frontier of the Cape Colony. Yet both were critical in the life of Joseph Newey, a remarkable bridge builder who created a legacy that has stood for more than 130 years.

Born in London in 1846, Newey grew up near Dudley in the West Midlands, the industrial

heartland of Victorian Britain. This squalid industrial world of coal mines, factories and iron and steel works – infamously known as the 'Black Country' – equipped him with the engineering skills to contribute to a rapidly industrialising world beyond Britain.

By 1861, at the age of just 14, he was articled to his father's engineering firm, the Crown Works of Fleet & Newey in West Bromwich. For the next 12 years, he

PWD, and in South Africa, and went on to design numerous bridges across the Eastern Frontier – a rugged area defined by numerous frontier wars between the British Empire and the Xhosa people.

Today, many of Newey's single-lane bridges still proudly straddle the Eastern Cape's rivers and bear testimony to the energy, skill and ingenuity of one of South Africa's great Victorian bridge builders.

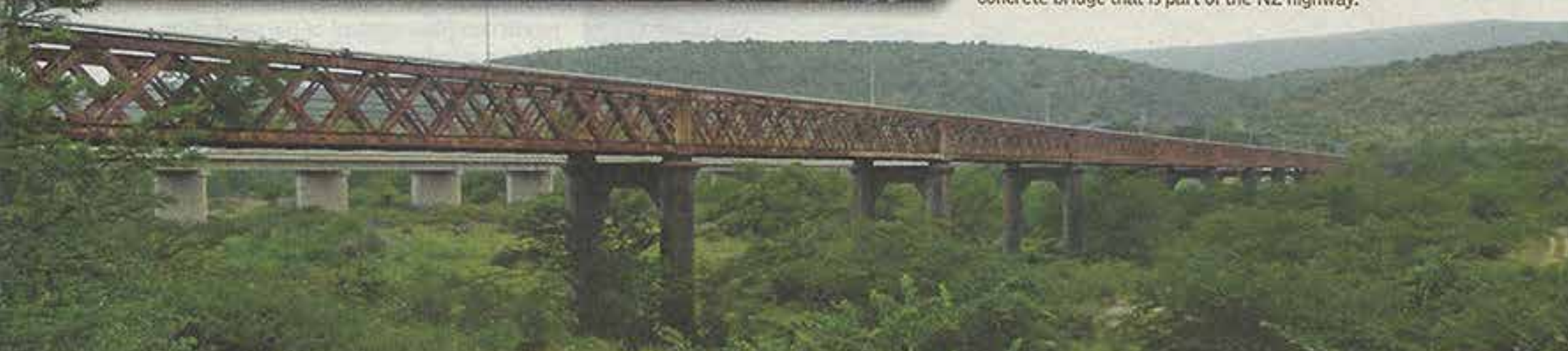
**EARLY WORK – AND WAR**

The first bridge to be designed and built by Newey on the Eastern Frontier was a two-span road bridge across the Buffalo River near King William's Town

worked across the world designing and erecting mostly iron lattice girder bridges, and arrived in the Cape Colony in 1873 as an employee of the Public Works Department (PWD). He remained in the

**LEFT:** The Wildebeest River bridge near Ugie in the Eastern Cape was completed in 1898. Its replacement is in the background.

**BELOW:** Newey's impressive 13-span Great Kei bridge, which was completed in 1879, is still used by farmers, the police and pedestrians. In the distance can be seen the modern concrete bridge that is part of the N2 highway.







## Joseph Newey: a man of immense energy and talent

After serving his apprenticeship at his father's engineering works in the West Midlands, Joseph Newey spent much time during the 1860s and 1870s building railway bridges in Europe, Mauritius, Costa Rica, Brazil and elsewhere.

After completing bridges over the Dora and Comba Scura Rivers

in Italy, he set sail for the Cape Colony in 1873 with his wife Elizabeth Ball, whom he had married in 1869. He stayed on in South Africa and over the next 30 years became involved in hundreds of engineering projects.

Many of his single-lane bridges still stand, but their function has been taken over by

double-lane bridges.

Regrettably, one of his most elegant designs, a suspension bridge across the Keiskamma River, was demolished in the 1930s.

Newey also oversaw the building of numerous trunk road routes and passes in the Eastern Cape, including the cuttings through the Kei and Umzimvubu River valleys, the Mlengana Pass between Umtata and Port St John's, and the Barkly Pass between Elliott and Barkly East. He was also responsible for

the construction of many sandstone public buildings across the Eastern Cape, projects he visited as often as he could in his beloved spider cart.

One of his achievements was to manage the monumental task of building a fence around the Cape Colony to contain the Rinderpest outbreak in 1896.

Despite his hectic schedule, Newey found time to paint, and his bridges form some of the subjects of his watercolours.



completed in 1873. The following year, he built a three-span wrought-iron lattice girder bridge across the Great Fish River, and two years later designed the repairs and alterations to the stone arch Victoria bridge near Fort Beaufort. Built in 1843, it had been damaged by floods in 1874.

9th Frontier War (1877-1878) broke out and Gcaleka warriors began filtering across the Kei. Newey retreated to the nearby fortified town of Komga and lived in the Royal Hotel while the war raged around him.

rivets were too large for this purpose.

The end of the war saw the completion of the Great Kei River bridge, which is still used 135 years later by local pedestrians, farmers and the police.

The war also delayed the completion of the St Mark's bridge across the White Kei, a tributary of the Great Kei. Built near the St Mark's Mission, it quickly proved to be a formidable challenge due to the exceptionally hard sandstone harvested from the area. The end result, completed in 1880, was a six-span sandstone arch bridge of superb quality.

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### 'NEWAY RETREATED TO THE ROYAL HOTEL IN KOMGA WHILE THE WAR RAGED AROUND HIM.'

In 1877, Newey turned his attention to building a grand, 13-span iron lattice girder bridge over the Great Kei River – the last significant natural barrier between the British Empire and the Gcaleka Xhosa. Parts for the bridge were manufactured in Britain, shipped to East London and brought by rail and ox wagon to the Great Kei River gorge to be assembled on site.

But no sooner were the iron piers – held together with thousands of rivets – standing upright in the river, than the

South Africa's first Victoria Cross was won by Major Hans Garret Moore just a few kilometres from the town at the battle of Draaibosch, and the prominent hill close to the bridge is still called Moordenaarskop (Murderers' Hill) after the brutal killing of a handful of British soldiers by Xhosa warriors.

One story goes that the Xhosa used the iron rivets from Newey's uncompleted bridge as projectiles in their antiquated guns. Walters, however, believes that the

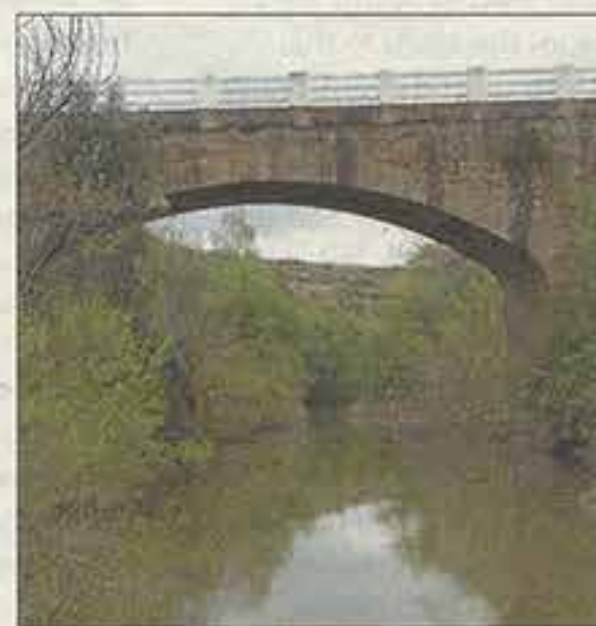
**FAR LEFT:** By the time Joseph Newey arrived in the Cape Colony in 1873, he was already an experienced engineer. COURTESY OF DENNIS WALTERS

**LEFT:** Newey painted this fine watercolour of the Great Kei bridge soon after completion of the project in 1879. He was a keen artist who depicted numerous scenes of the Eastern Frontier. COURTESY OF DENNIS WALTERS

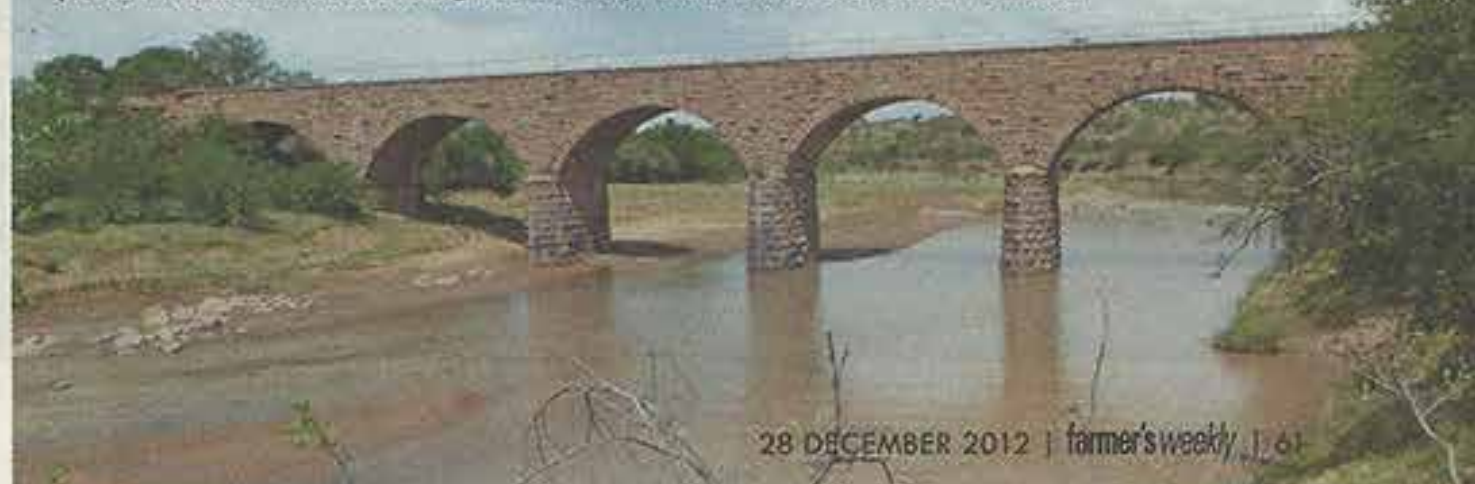
**RIGHT FROM TOP:**

- The Victoria bridge across the Kat River near Fort Beaufort was opened in 1843, but was subsequently damaged by floods. It was repaired by Newey in 1876.

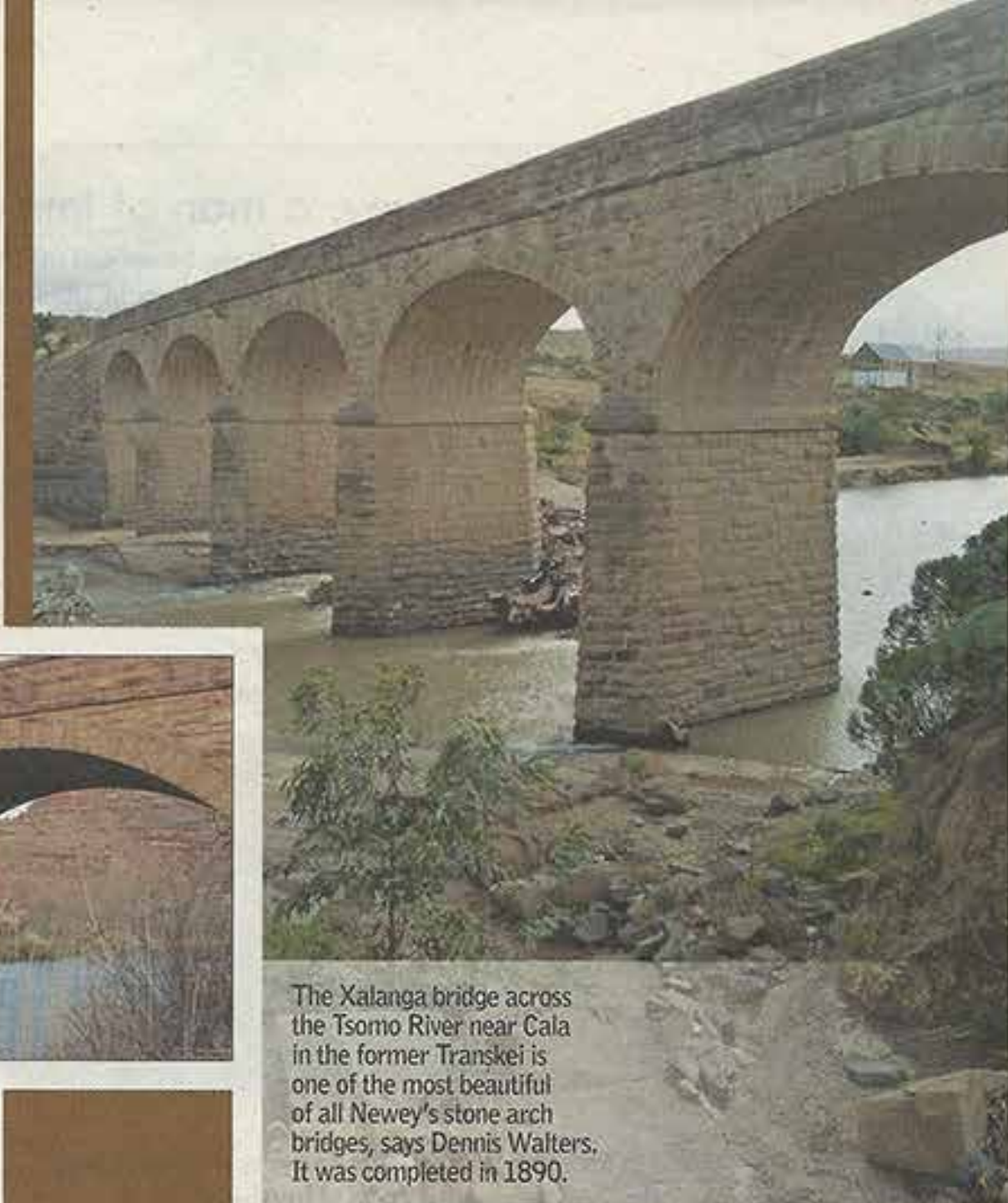
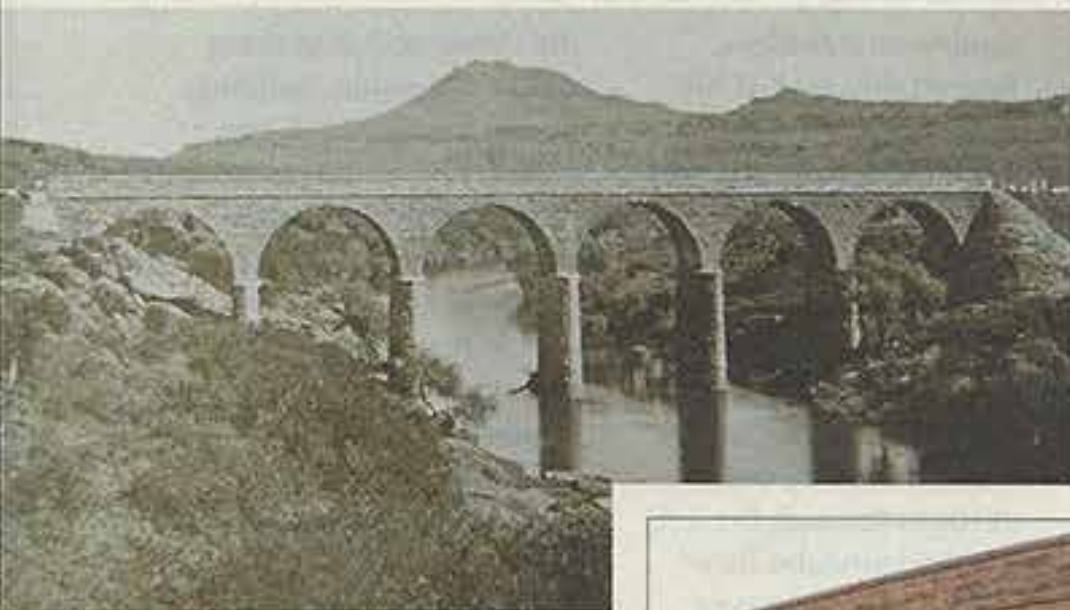
- Nesbitt's Horse, a Colonial cavalry unit, exiting Fort Beaufort via the Victoria bridge during the Anglo-Boer War. The bridge was on a military road linking Grahamstown to Post Retief. COURTESY OF DENNIS WALTERS



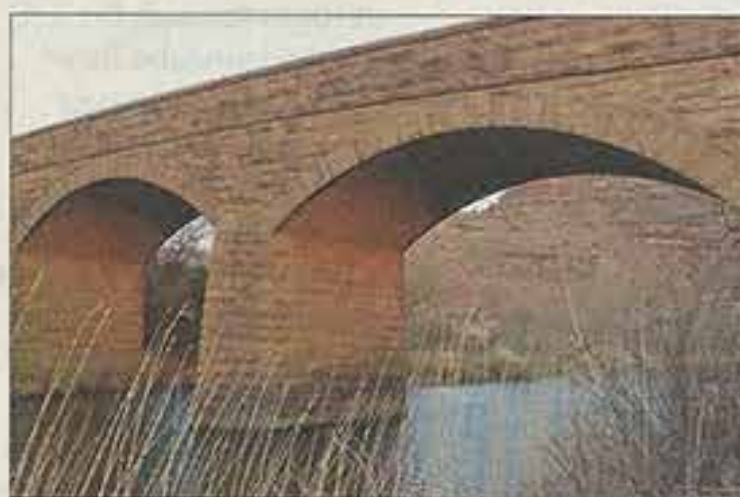
St Mark's bridge over the White Kei near present day Cofimvaba. It is still used by pedestrians and vehicles heading into the deep rural areas of the former Transkei.







← “The sandstone in this bridge is incredibly hard and the bridge is still in very good condition. The workmanship is unbelievable,” says Walters. In all, Newey constructed eight sandstone bridges on the Eastern Frontier.



### ECONOMIC BOOM OF THE 1880S

The discovery of diamonds and gold in South Africa from the 1860s to the 1880s placed ever-greater demands on transport and logistics, and links between the Cape Colony and the interior swiftly became a priority. It is perhaps unsurprising, therefore, that Newey was transferred to Aliwal North as resident engineer in 1880 to oversee the construction of two bridges complete with toll houses – the 13-span iron lattice girder Frere bridge over the Orange River and a six-span sandstone arch bridge over the Kraai River.

Building a bridge across the Orange proved to be a

nerve-racking assignment; a flood swept through Newey’s building site in February 1880. He watched nervously as a couple of iron piers partly filled with concrete strained under the rising deluge.

His response was characteristically prompt and practical. Taking aim with his 14-bore Martini-Henry rifle, he shot holes into the piers at water height to ensure they would flood, thereby equalising the pressure. The piers

**BELOW:** This bridge over the Langkloof River near Barkly East was completed in October 1898. Although this bridge was never officially named, it has become known simply as the Long Kloof River bridge.

**TOP LEFT:** The Kraai River bridge (later Sauer bridge) after completion in late 1881. COURTESY OF DENNIS WALTERS

**ABOVE:** The two-span segmental sandstone arch De Wet bridge across the Karmelkspruit near Lady Grey. This was the last Newey-inspired stone arch bridge to be built before the outbreak of the Anglo-Boer War in October 1899.

The Xalanga bridge across the Tsomo River near Cala in the former Transkei is one of the most beautiful of all Newey’s stone arch bridges, says Dennis Walters. It was completed in 1890.

survived, and the bridge was completed later that year.

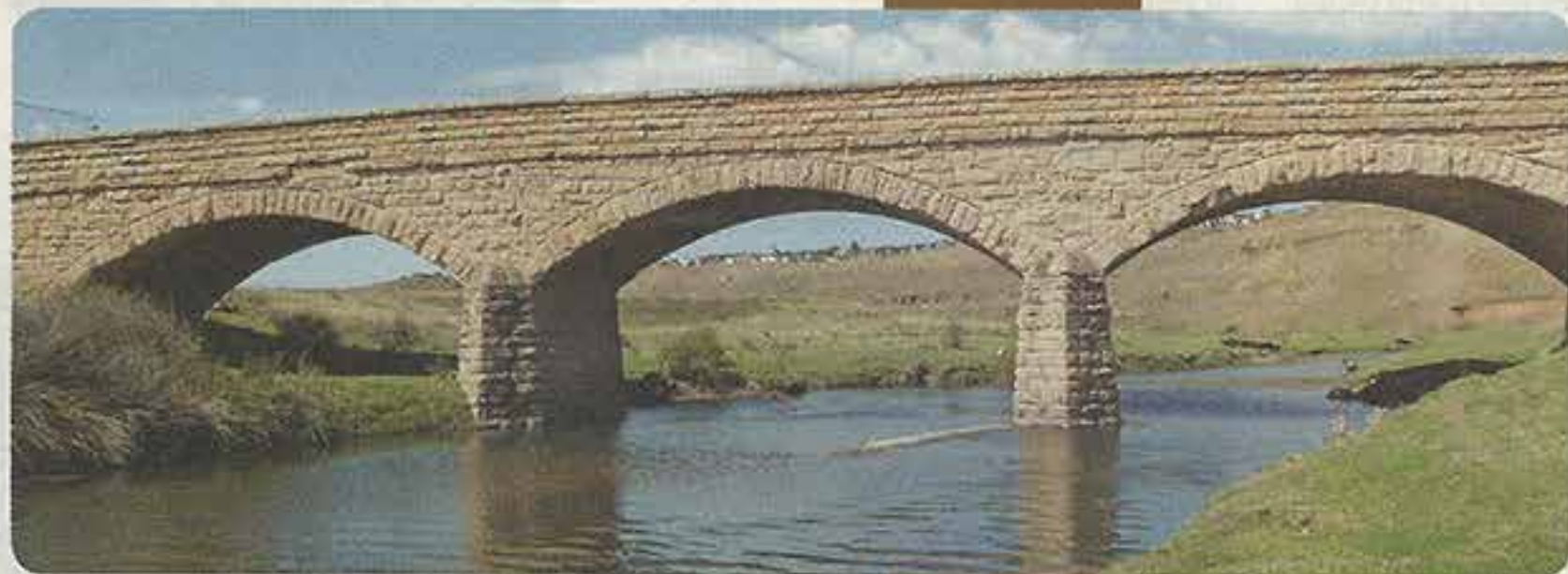
During the Anglo-Boer War (1899-1902), Newey’s Frere bridge – which was demolished in the 1930s, unfortunately – would carry the first Boer commandos over the Orange River into the north-eastern Cape, where they would later rout the British at the Battle of Stormberg near Molteno in December 1899. Later, when the war had swung in favour of Britain, the same bridge would carry the first British and Colonial troops into the then Orange

Free State from the south. While building this bridge, Newey was also overseeing the progress of the Kraai River bridge (later renamed the Sauer bridge) not far from Aliwal North.

This stately six-span sandstone arch bridge, which opened in September 1881, linked isolated communities in the Kraai River Basin with Aliwal North, and is today a national monument. Although it stands hidden in the shadow of a modern concrete bridge, it is still a fine sight and serves as an impressive entrance to a roadside B&B.

### PROMOTION

In late 1881, Newey was appointed district inspector of the PWD for the Eastern Region and later in the decade began building one of his most aesthetically pleasing bridges – a sandstone arch construction across the Tsomo River near the present-day town of Cala in the former Transkei. In fact, Walters believes that







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the Xalanga (vulture in isiXhosa) bridge, consisting of five elliptical arches each spanning 12m is the finest of all Newey's sandstone bridges. "This is my favourite," he says. "It's a perfect ellipse."

carpenters and 450 labourers to complete, while the meticulous planning and completion of the project by William Birnie, the PWD clerk of works, for only £14 722

**'TAKING AIM WITH HIS MARTINI-HENRY, HE SHOT HOLES INTO THE PIERS TO EQUALISE THE PRESSURE.'**

Walters goes on to say that the completion of the bridge demanded exceptional stonemasons that by 1888 were in short supply. Eventually, after sourcing masons from as far afield as Cape Town and even Britain, Newey completed the bridge in late 1890.

In June 1893, Newey was promoted to chief inspector of the PWD of the Cape Colony. His bridge building, in the meantime, continued apace, and six months later, his impressive 195m Loch bridge, boasting five elliptical sandstone arches, straddled the Kraai River. The bridge and its approaches required 24 stonemasons, three

(roughly R12 million in today's value) was deeply respected by many, says Walters. "Birnie's good management and accurate work was praised, as the project was completed within the estimate, and when the last stone was laid, there were only two left out of the thousands that were cut," he says. The spontaneous celebrations at the opening of the bridge on 6 December 1893 reflected the appreciation of local farmers. A sports day and fair were arranged, a band struck up, and according to the *Barkly East Reporter*, "the whole veld in the neighbourhood of the bridge was covered with outspanned vehicles".

**ANTI-CLOCKWISE FROM TOP LEFT:**

- Boer commandos crossing the Frere bridge to annex Aliwal North in November 1899.

COURTESY OF ALIWAL NORTH MUSEUM

- The tide is reversed. British forces gallop across the bridge into the Orange Free State in March 1900.

COURTESY OF ALIWAL NORTH MUSEUM

- The Loch bridge across the Kraai River was opened in 1893. It is still used to link Barkly East with farmers in the New England and Wartrail areas.

DENNIS WALTERS

- The Loch bridge was named after Cape Colony governor Sir Henry Brougham Loch.

By the mid- to late-1890s, Newey was at the peak of his career and he and his PWD team had developed an uncanny ability to get bridges built efficiently, delegating wherever required. Three Newey-inspired three-span segmental sandstone arch bridges and another two-span segmental sandstone arch bridge were completed in the Eastern Cape highlands in 1898 and 1899 alone.

All four have since been replaced with concrete bridges, but are still in good condition. They are the Long Kloof bridge on the Langkloof River near Barkly East, the Wildebeest River bridge across the Wildebeest River near Ugie, the Sivewrights bridge across the Mooi River near Maclear, and the smaller De Wet bridge across the Karnmelkspruit near Lady Grey.

The latter was the last stone arch bridge built in the Cape Colony before the outbreak of the Anglo-Boer War in October 1899. Plans to build more were shelved

as many stonemasons were absorbed into the war effort to build blockhouses and repair sabotaged bridges and culverts.

**WAR SERVICE**

Newey threw himself into the service of Empire during the war. As chief inspector of the PWD, he was placed in charge of drilling boreholes in support of Britain's war effort, and was mentioned by Lord Kitchener in despatches.

Sadly, he began to suffer heart problems soon after the war and retired to his farm Peninsula in the Komga district in 1905. Here, he died just two years later, having left a legacy of engineering excellence whose usefulness and beauty live on into the 21st century.

- Sources: Biographical Dictionary of Civil Engineers - Vol 2; 1830-1890; Stone Arch Bridges of the North East Cape, by DE Walters; The Barkly East Reporter Centenary Edition 1873-1973; Aliwal North - Discover Aliwal's Yesterdays (Aliwal Museum) and A Guide to the Battlefields, Graves and Monuments of the Anglo-Boer War in the North Eastern Cape, by Abrie Oosthuizen.

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