

IPENZ Engineering Heritage Record Report

Shotover River Bridge, Lower Shotover

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Bridge over the Shotover River in the Lower Shotover area, 1926. Godber, Albert Percy, 1875–1949: Collection of albums, prints and negatives. Ref: APG-1683-1/2-G. Alexander Turnbull Library, Wellington, New Zealand.
<http://natlib.govt.nz/records/22806436>

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A. General information

Name: Shotover River Bridge.

Alternative names: Lower Shotover Bridge; Shotover Bridge; Historic Lower Shotover Bridge; Old Shotover Bridge.

Location:

Spence Road

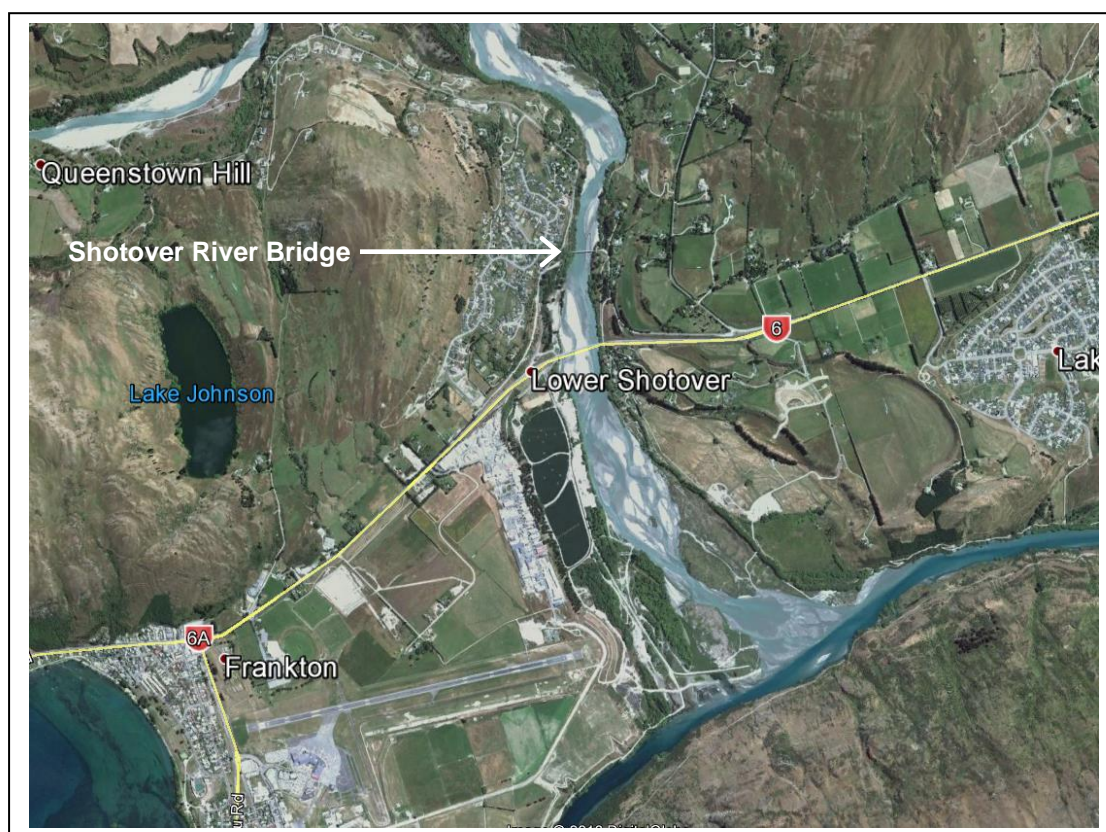
Shotover River

Lower Shotover

Central Otago.

Geo-reference: Latitude 44.9964 longitude 168.7595.

Legal description: Joins Crown Land Block II Shotover Survey District and legal road (Spence Road).



Map courtesy of GoogleEarth.

Access information:

Pedestrians and cyclists can access this structure from Spence Road, Lower Shotover. The [Queenstown Trail](#) website has further access details for cyclists accessing the bridge as part of the Twin Rivers Ride.

City/District Council: Queenstown Lakes District Council.

IPENZ category/ies: Civil (Civil); Transport (Transport).

Date registered: N/A.

Other IPENZ recognition: N/A.

Other heritage recognition:

- *Heritage New Zealand, New Zealand Heritage List/Rārangi Kōrero:* N/A.
- *Local Authority District Plan:* Queenstown Lakes District Plan, Appendix of Protected Features (May 2011), Structures and Features (inclusive of bridges). Ref. 222, Old Shotover Bridge.
- *Other:* N/A

B. Description

Summary

The Shotover River Bridge, at Lower Shotover in Central Otago, was constructed between 1909 and 1915 to make transport between Arrowtown and Queenstown more efficient.

It was a replacement for an 1870 timber road bridge, which was uneconomic to maintain. The initial design, by Lake County Engineer Charles Coburn Ware (1875–1946), was rejected by the Public Works Department (PWD) in 1908. This led to a redesign by prominent New Zealand engineer, James Edward Fulton (1854–1928). Let under a design-and-build contract, construction began in 1909 and the project ran over time on multiple occasions. One reason was a legal dispute about contractor, William Thompson Johnson (1868?–1936), not providing proper foundation for a pier. In 1912, the project was hampered further when the incomplete structure was badly damaged by severe floods. The PWD then took over the Shotover River Bridge's construction. The bridge eventually opened on 30 April 1915.

The Shotover River Bridge is a composite, timber and steel, Pratt truss structure with an overall length of 172.5 metres (m). It has a single lane width, the deck being 16.2 m above the normal water level, and concrete and timber trestle piers. In 1929–1930 the Shotover River Bridge was integrated into the Arrow irrigation scheme when a pipeline was installed along the lower chords of its trusses. The bridge was superseded by a concrete bridge further downstream in 1975. The Shotover River Bridge then fell into disrepair, but was restored in 2004–2005 by the Rotary Lower Shotover Bridge Restoration Trust.

The bridge is one of a few remaining bridges designed by Fulton. This multi-span truss bridge is also an example of the gradual move away from suspension bridges, which were the favoured bridge type in Central Otago in the late 19th Century. The Shotover River Bridge has social value for locals and tourists alike as an asset which was historically part of the highway and irrigation networks and more recently integrated into the Queenstown cycle trail.

Historical narrative

The Shotover River drains into the Kawarau River four kilometres (km) from the Lake Wakatipu outlet. A characteristic of the Shotover River is the large quantity of sediment it transports from its mountain catchment.¹ The river was named by William Rees (1827–1898) and his partner Nicholas von Tunzelmann (1828–1900), who were the first Europeans to explore the Central Otago Lakes District in 1860. They established sheep runs on either side of Lake Wakatipu, but it was the discovery of gold – first at Gabriel’s Gully in 1861 and then by two of Rees’ shearers in the Shotover River at Arthurs Point in 1862 – that drove the initial settlement and economic growth of the area.²

The influx of fortune seekers quickly led to the development of Queenstown.³ Arrowtown sprung up soon after when gold was discovered in the Arrow River.⁴ The Shotover River obstructed easy travel between these two settlements – the most direct route being dangerous to ford. A ferry was operational as early as 1863, but this could not cater for heavy traffic, such as coaches and farming and industrial equipment. Despite a timber truss bridge being built further upstream at Arthurs Point in 1863, the need for a bridge in the Lower Shotover area was considered “urgent” in the local press.⁵ Therefore, a timber and steel truss structure was constructed 1869–1870.⁶ This original bridge was a rare survivor of the severe 1878 flood, but was badly damaged. Once repaired, it was lengthened.⁷

By the beginning of the 20th century the Otago gold rush was long over. The region’s economy primarily relied on mining, farming and tourism, which depended on the bridge at Lower Shotover. The maintenance costs for the ageing bridge and its approaches were relatively high and increasing. Parts of the bridge were rotten and

¹ Minister of Conservation, ‘Application for a National Water Conservation Order: Kawarau River and the Shotover and Nevis Tributaries’, 1990, p. 2. URL: <https://www.mfe.govt.nz/sites/default/files/media/Kawarau%20River%20application.pdf> (accessed 20 Oct 2015).

² Gerald Cunningham, *Illustrated History of Central Otago and the Queenstown Lakes District*, (Auckland: Reed Publishing, 2005), pp. 29, 31, 194.

³ *Ibid*, pp. 31–32.

⁴ Malcolm McKinnon, ‘Otago places – Queenstown and Arrowtown.’ *Te Ara – the Encyclopedia of New Zealand*. URL: <http://www.TeAra.govt.nz/en/otago-places/page-18> (updated 22 September 2015).

⁵ ‘The Lake District,’ *Otago Witness*, issue 630, 26 December 1863, p. 3. Quote from ‘The Lakes,’ *Otago Daily Times*, issue 2057, 8 September 1868, p. 2.

⁶ ‘City and General Improvements,’ *Otago Daily Times*, issue 2220, 18 March 1869, p. 7; *Otago Daily Times*, issue 2594, 31 May 1870, p. 2.

⁷ Tressider and E. R Ussher, ‘Lower Shotover Bridge – Report of District Engineers Favourable to Erection of New Bridge,’ *Lake Wakatipu Mail*, issue 2649, 16 October 1906, p. 4.

the natural shift of the river required embankments to be built on the Queenstown side, which were at risk during floods.⁸ By 1903 the Lake County Council acknowledged the need to “sooner or later ... face the expense of a new structure.”⁹

In 1904 a new site was chosen and funding applied for.¹⁰ The government granted £3,000 towards the project in 1906, to be matched by the Council.¹¹ The next year plans were prepared for a steel structure by the County Engineer, Charles Coburn Ware (1875–1946).¹² These plans spent most of 1908 going through an approval process, only to be rejected by the Public Works Department (PWD) in November.¹³ Ware was understandably upset by this and defended his design before the Council. The structure had previously been approved by John Henry Tressider, the District Road Department Engineer. The plans were also sent to Professor William Charles Kernot (1845–1909), an eminent Australian engineer, who responded with a favourable critique of Ware’s design.¹⁴ Ware resigned from his position in August 1909 after securing a job at the Victoria PWD in Australia.¹⁵ There was not another Lake County Engineer until 1945.¹⁶

The difficulty experienced gaining PWD approval for the Shotover River Bridge’s design caused concern among other county councils. To avoid similar lengthy and disruptive delays a number of councils requested that the PWD prepare standard bridge plans for a range of spans lengths for county bridges and the PWD duly did so.¹⁷

In the meantime, Lake County Council called for tenderers to submit their own designs. William Thompson Johnson (1868?–1936), a Wellington-based engineer and building contractor, was recommended to the council by the local Member of Parliament, William Fraser (1840–1923). He was eventually granted the contract in

⁸ Ibid.

⁹ ‘Lake County Council,’ *Lake Wakatip Times*, issue 2449, 23 January 1903, p. 5; ‘Lake County Council,’ *Lake Wakatip Times*, issue 2483, 18 September 1903, p. 5.

¹⁰ ‘Lake County Council: Engineer’s Report,’ *Lake Wakatip Mail*, issue 2522, 17 June 1904, p. 5; ‘Lake County Council,’ *Lake Wakatip Mail*, issue 2545, 25 November 1904, p. 5.

¹¹ ‘Lake County,’ *Otago Witness*, issue 2746, 31 October 1906, p. 35.

¹² ‘Lake County Council,’ *Lake Wakatip Mail*, issue 2594, 12 February 1907, p. 4.

¹³ ‘The Lower Shotover Bridge,’ *Lake Wakatip Mail*, issue 2688, 1 December 1908, p. 3.

¹⁴ ‘Lake County,’ *Otago Witness*, issue 2894, 25 August 1909, p. 39.

¹⁵ Lake County Council,’ *Lake Wakatip Mail*, issue 2729, 24 August 1909, p. 5.

¹⁶ Neil G. Hansen and J. Noel Hall. *The County Engineers of New Zealand 1876-1989*. Association of Local Government Engineers of New Zealand, 1993, p. 90.

¹⁷ *Lake Wakatip Mail*, issue 2992, 17 September 1912, p. 4.

May 1909 to build a composite truss structure for £7,530.¹⁸ Johnson seems to have been in business from around 1904 and eventually formed W. T. Johnson and Company.¹⁹ Important New Zealand engineer, James Edward Fulton (1854–1928), was Johnson’s consulting engineer on the Shotover River Bridge project, which involved designing the structure.²⁰ Fulton and Johnson had an established working relationship, as Johnson was contracted to supply steel for Fulton’s Victoria Bridge, Hamilton, in late 1908.²¹

Construction commenced in June 1909 and within a few months there was tension over payments between the contractor and the County’s bridge inspector, DB Pope.²² The contract expired in July 1910, at which time the contractor’s overseer resigned and a two-month extension to the contract was granted.²³ There were delays in obtaining materials and council members began voicing serious concerns about the foundation of one of the piers.²⁴ Then Pope left suddenly in November 1910.²⁵

In early 1911 Johnson served a writ against the Lake County Council, “claiming substantial damages in connection with stoppage of work on the bridge”.²⁶ The ensuing legal dispute delayed construction for most of the year. The case was heard for a single day by a judge, with the parties reaching a settlement after Johnson admitted the pier had not been taken down to bedrock. Under the settlement’s terms Johnson would re-build the pier and complete the bridge by the end of April 1912, as well as pay damages.²⁷

But after this deadline also passed without completion the Lake County Council approached the PWD. It was decided Johnson would complete the bridge but under

¹⁸ ‘Lake County,’ *Otago Witness*, issue 2872, 24 March 1909, p. 39; *Lake Wakatip Mail*, issue 2712, 18 May 1909, p. 4.

¹⁹ *Stones’ Wellington, Hawke’s Bay and Taranaki commercial, municipal, and general directory and New Zealand annual* (Dunedin: Stone, Son and Co., 1904), p. 671. Johnson is not listed as an engineer or building contractor in Stones’ directories prior to 1904. He is listed as such, or as being associated with W. T. Johnson and Company, until the early 1930s.

²⁰ ‘Lake County Council,’ *Lake County Press*, Issue 2275, 3 June 1909, p. 4.

²¹ ‘Waipa County Council,’ *Waikato Argus*, 9 December 1908, p. 2. Johnson’s initials are incorrectly given in this article. They are referenced correctly in articles such as: ‘Hamilton Traffic Bridge,’ *Waikato Argus*, 27 July 1909, p. 2.

²² *Lake Wakatip Mail*, issue 2725, 27 July 1909, p. 4; ‘Lake County Council,’ *Lake Wakatip Mail*, issue 2743, 30 November 1909, p. 5; ‘Lake County Council,’ *Lake Wakatip Mail*, issue 2754, 15 February 1910, p. 5; ‘Lake County Council,’ *Lake Wakatip Mail*, issue 2726, 3 August 1909, p. 3; *Lake Wakatip Mail*, issue 2723, 13 July 1909, p. 4.

²³ *Lake Wakatip Mail*, issue 2777, 26 July 1910, p. 4; ‘Lake County Council,’ *Lake Wakatip Mail*, Issue 2782, 30 August 1910, p. 5.

²⁴ ‘Lake County Council,’ *Lake Wakatip Mail*, issue 2782, 30 August 1910 p. 5; ‘Lake County Council,’ *Lake Wakatip Mail*, issue 2787, 4 October 1910, p.4; *Lake Wakatip Mail*, issue 2791, 1 November 1910, p.4.

²⁵ *Lake Wakatip Mail*, issue 2792, 8 November 1910, p. 4.

²⁶ *Lake Wakatip Mail*, issue 2912, 28 March 1911, p. 4.

²⁷ ‘The Shotover Bridge,’ *Evening Star*, issue 14748, 14 December 1911, p. 6.

the PWD. Work resumed in mid-October 1912, but was forestalled by a flood washing away the notorious pier, part of the deck, the associated falsework and a traction engine.²⁸ In early December the PWD agreed to Johnson's request to complete the bridge themselves, but at his expense.²⁹ Johnson went on to complete other bridge contracts, such as the Mokoia Railway Bridge in Taranaki (1913).³⁰



Lower Shotover Bridge. showing pier that collapsed during construction in 1911 [?]. Lakes District Museum collection, EL0025.

Despite another damaging flood in late March 1913, work progressed on the Shotover River Bridge under the PWD, albeit slowly.³¹ They experienced the same difficulties as Johnson obtaining materials and reaching bedrock for pier foundations.³² The bridge was only completed in mid-March 1915. Impatience over the long construction period was shown by the first traffic to cross the Shotover River Bridge being a man who flouted the barrier line to walk his horse across.³³ The bridge

²⁸ 'The Recent Heavy Rains and Floods,' *Lake Wakatip Mail*, Issue 2997, 22 October 1912, p. 4.

²⁹ 'Lake County Council,' *Lake Wakatip Mail*, issue 3003.

³⁰ 'The Mokoia Fatality,' *Hawera and Normanby Star*, 14 June 1913, p. 4.

³¹ *Lake Wakatip Mail*, issue 3020, 1 April 1913, p. 4; 'The Floods in Otago,' 1 April 1913, p. 5; 'Lake County Council,' *Lake Wakatip Mail*, issue 3048, 14 October 1913, p. 5.

³² 'Lake County Council,' *Lake Wakatip Mail*, issue 3055, 2 December 1913, p. 5; *Lake Wakatip Mail*, issue 3056, 9 December 1913, p. 2; *Lake Wakatip Mail*, issue 3058, 23 December 1913, p. 2.

³³ *Lake Wakatip Mail*, issue 3118, 16 March 1915, p. 4.

was tested in mid-April 1915 and formally opened on 30 April 1915.³⁴ The original bridge was dismantled as soon as the Shotover River Bridge was operational.³⁵

By the late 20th Century the bridge, which was part of State Highway 6, was reported to have:

...almost reached the end of its useful life, in both structural condition and serviceability, as its single lane width was insufficient for the traffic volume, the highway alignment was unnecessarily devious and the live load capacity was quite inadequate.³⁶

In 1964 investigations began into replacing the highway bridge at a site closer to the Shotover and Kawarau River junction. However, it took over a decade for the project to come to fruition. The highway was realigned and the new bridge opened on 27 February 1975. This pre-stressed concrete structure is over double the Shotover River Bridge's length.³⁷ The Shotover River Bridge faced an uncertain future but in the end it was not demolished because of unresolved debate over who would pay for its removal.³⁸ Another consideration was that the orphaned road bridge was also still an important connection in the Arrow River irrigation scheme.

After losing its primary function the Shotover River Bridge was not actively maintained and had deteriorated by the turn of the 21st Century. However, it was restored between 2004 and 2005 by the Queenstown Rotary Club, as part of its centenary project. It was described by the Rotary Lower Shotover Bridge Restoration Trust as "the single biggest heritage restoration project undertaken not only in the history of the club but in the history of the Queenstown Lakes District."³⁹ The restored bridge was officially opened on 3 June 2005 and is part of the Queenstown Trail, a portion of Nga Haerenga – The New Zealand Cycle Trail.

³⁴ *Lake Wakatip Mail*, issue 3123, 20 April 1915, p. 4.

³⁵ 'Lake County Council', *Lake Wakatip Mail*, issue 312, 30 March 1915, p. 3; *Lake Wakatip Mail*, issue 3134, 6 July 1915, p. 4.

³⁶ Ministry of Works and Development, 'Lower Shotover River Bridge S.H. 6: NZPCI Award Entry,' 1975.

³⁷ Ibid. For the road realignment compare: New Zealand Department of Lands and Survey, Wakatipu, 1972, <http://ndhadeliver.natlib.govt.nz/content-aggregator/get!Es?system=ilsdb&id=1619487> and Wakatipu, 1973, <http://ndhadeliver.natlib.govt.nz/content-aggregator/get!Es?system=ilsdb&id=1497431>.

³⁸ 'Rotary Lower Shotover Bridge Restoration Trust,' URL: www.communityconnect.co.nz/en/Groups/Search-For-Other-Volunteers/Otago/Rotary-Lower-Shotover-Bridge-Restoration-Trust.aspx (accessed 4 November 2015)

³⁹ Ibid.

Social narrative

The original bridge, completed in 1870, allowed horses and heavier traffic to travel directly between the Queenstown and Arrow without facing a treacherous river ford, ferry crossing, or diversion to Arthurs Point. The Shotover River Bridge improved access further. Its site allowed for level road approaches and it was at less risk from flood damage and sediment build-up.⁴⁰ Therefore, the structure benefited local farmers and tourists – the mainstays of the economy. The bridge also had a direct economic and social benefit because when the construction project began it supposedly absorbed all unemployed labourers in the district.⁴¹

The protracted construction of the bridge was a major local talking point. William Reid (1858?–1941) was re-elected as the Lake County Council's Chairman multiple years running, often with reference to his understanding and calm handling of the construction contract.⁴² Various rumours abounded within the community, including whether rotten timber had been used. By 1912 the project was notorious and the *Lake Wakatipu Mail* referred to it as “that County jumble, the Lower Shotover Bridge.”⁴³ Community dissatisfaction abounded over the protracted construction period by the time the PWD took over the project in 1913.

The Shotover River Bridge's construction saga meant it was a well-known structure locally and its completion was greatly anticipated. At the opening ceremony, Reid addressed the crown of around 150 people, making a point of illustrating the bridge's convoluted history. At the same event, Fraser, in his capacity as Minister of Public Works, “said that he did not know of two better words, namely, ‘At Last,’” adding the bridge “...had had a very chequered career.”⁴⁴ The *Lake Wakatipu Mail* reported the event was one “that has been eagerly looked forward to by settlers and the travelling public for many years.”⁴⁵

⁴⁰ Tressider and E. R Ussher, ‘Lower Shotover Bridge – Report of District Engineers Favorable to Erection of New Bridge,’ *Lake Wakatipu Mail*, issue 2649, 16 October 1906, p. 4.

⁴¹ ‘Lake County Notes’, *Southland Times*, Issue 14152, 29 June 1909, p. 7.

⁴² ‘Lake County Council’, *Lake Wakatipu Mail*, issue 3003, 3 December 1912, p. 3.

⁴³ ‘Lake County Council,’ *Lake Wakatipu Mail*, issue 2941, 24 October 1911, p. 5; ‘Mining Jottings,’ *Lake Wakatipu Mail*, issue 2976, 28 May 1912, p. 5.

⁴⁴ ‘The Lower Shotover Bridge,’ *Lake Wakatipu Mail*, issue 3125, 4 May 1915, p. 5.

⁴⁵ Ibid.



Lower Shotover Bridge, #2 - wagons driven by J Stevenson (front), McLean, F Fitzpatrick. Lakes District Museum collection, EL1884B.

The significance for the community was ongoing. For example, the communication and movement it facilitated was an argument in favour of a single, centrally located, hospital for the district.⁴⁶ The Shotover River Bridge remained a notable transport asset in the district, being part of State Highway 6. The importance of a reliable connection over the lower Shotover River was again in evidence when the demands of modern travel necessitated a new bridge in 1975.

The Shotover River Bridge also helped to stimulate local economic growth as part of the Arrow irrigation scheme. This network of races and pipelines carried water from the Arrow River to farmland within the Wakatipu Basin. Preparatory work on the PWD project began in early 1923 and the scheme opened in 1930.⁴⁷ The bridge was identified as a suitable platform for carrying the irrigation water across the Shotover River and installation seems to have taken place from late 1929. The associated pipeline was installed along the lower chords of its trusses around 1930.⁴⁸

⁴⁶ 'Lakes District Hospitals,' *Lake Wakatipu Mail*, issue 3123, 20 April 1915, p. 5.

⁴⁷ Queenstown Historical Society, 'Salute to the Arrow Irrigation Scheme,' Queenstown.com, updated 16 January 2016, <http://www.queenstown.com/blog/educate/2920-salute-to-the-arrow-irrigation-scheme>. For example, surveying was said to be "well in hand" in 1925. 'Public Works Statement,' *Appendix to the Journals of the House of Representatives*, 1925 Session 1, D-1, p.57. Accessed 9 February 2016, available at www.atojs.natlib.govt.nz.

⁴⁸ The PWD are recorded as requesting permission from Lake County Council to install the irrigation pipeline in mid-November 1929. 'Lake County Council,' *Lake Wakatipu Mail*, 12 November 1929, p.3. The irrigation scheme was completed in 1930.

In 2012 the Shotover River Bridge became an important feature within the Queenstown cycle trail.⁴⁹ The trail is a significant tourist attraction, as well as being used by locals. The historic nature of the bridge and the potential for panoramic photographs is emphasised in publicity material.⁵⁰

The restoration of the structure in 2004–2005 made its inclusion in the cycle trail possible. The project cost \$750,000, with major contributions coming from within the regional community, including the Central Lakes Trust, the Community Trust of Southland and the Queenstown Lakes District Council.⁵¹

⁴⁹ Queenstown Trail, 'Trail History,' URL: www.queenstowntrail.co.nz/about-us/trail-history/ (accessed 4 November 2015).

⁵⁰ Queenstown Trail, 'Countryside Ride,' URL: www.queenstowntrail.co.nz/maps-and-rides/trail-maps/countryside-ride/ (accessed 4 November 2015); 'Old Lower Shotover Bridge,' Destination Queenstown, accessed 27 January 2016, <http://www.mydestination.com/queenstown/things-to-do/189169/old-lower-shotover-bridge>.

⁵¹ Queenstown Lakes District Council, 'Celebration as work starts on Bridge Restoration,' 18 August 2004, URL: www.qldc.govt.nz/news/show/1543/celebration-as-work-starts-on-bridge-restoration/ (accessed 4 November 2015); Queenstown Lakes District Council, 'Public Invited to Bridge Opening,' 19 May 2005, URL: www.qldc.govt.nz/news/show/1439/public-invited-to-bridge-opening/ (accessed 4 November 2015).

Physical narrative

The Shotover River Bridge, at Lower Shotover is 11 km from Queenstown and was formerly part of State Highway 6.

Geoffrey Thornton describes it as being “notable for the use of the compound deck truss, in which timber is used for the top chords and struts and steel for the bottom and diagonal rods.”⁵² An irrigation pipeline is carried along the lower chord. The structure is 172.5 m long, consisting of three 30.5 m Pratt trusses, shorter spans at each end and it has a timber deck. It has three concrete piers, two of which are mid-river, and there are six timber trestles supporting the east end span. The bridge’s 2004–2005 restoration saw the replacement of the deck and handrails, but otherwise there were minimal changes to the structure.⁵³



View through trusses, Shotover River Bridge, 2011. Image courtesy of L. Smith.

Truss bridges were a common in late 19th and early 20th Century New Zealand, with the Warren and Pratt systems being popular. However, the deep gorges and high water volume of Central Otago’s rivers typically made single span suspension bridges a more common local choice in this period. A factor in the design was the history of

⁵² Geoffrey Thornton, *Bridging the Gap: Early New Zealand bridges, 1930–1939* (Auckland: Reed, 2001), pp. 117, 163.

⁵³ IPENZ Heritage, ‘Lower Shotover Bridge,’ URL: www.ipenz.org.nz/heritage/itemdetail.cfm?itemid=130. Accessed 4 November 2015.

floods damaging local bridges. The Shotover River Bridge's height of 16.2 m was described by Fraser at the time of its completion as sufficient to reduce the risk of it being washed away.⁵⁴

The Shotover River mainly flows through gorges, except for the upper and lower reaches, which have wide shingle beaches.⁵⁵ The need for mid-river piers was avoided in the gorge bridges, up-river from the Shotover River Bridge. For example, the Skipper's Canyon Bridge (1899–1901) is a single span suspension bridge, the original bridge at Arthurs Point (1875) was a single span timber truss and its replacement, the Edith Cavell Bridge (1919), is a concrete arch structure.⁵⁶

However, the features of Shotover River Bridge's location – low banks across a wide shingle river bed – made a multiple span truss structure a viable option. Other examples of Central Otago truss bridges from this period include the iron truss Beaumont Bridge (1887) and Cromwell Bridge (1891), a Pratt truss structure now submerged beneath Lake Dunstan, and the steel through truss Luggate bridge which was opened a few months after the Shotover River Bridge in October 1915. All feature mid-river piers, except for the single span Cromwell Bridge.⁵⁷

Therefore, while suspension bridges were an especially popular option locally in the late 19th Century, other bridge types were present. These alternatives to suspension bridges began to gain ascendancy from the early 20th Century and the Shotover River Bridge is an example.

Fulton, designer of the Shotover River Bridge, was an important New Zealand engineer in the early 20th Century. Among his remaining works are the Wellington Cable Car and Hamilton's Victoria Bridge. Other bridges included: the original Kelburn Viaduct, a wooden trestle bridge built in 1901 and pulled down after the current structure was completed in 1931; the timber arch and truss bridge across the Waikato River at Ongaroto, built in 1901 and also demolished in the 1930s; and the Balance River Bridge (1904), described as "the finest timber truss bridge in New Zealand," which was demolished in 1972.⁵⁸ Therefore, the Shotover River Bridge is

⁵⁴ 'The Lower Shotover Bridge,' *Lake Wakatip Mail*, issue 3125, 4 May 1915, p. 5.

⁵⁵ Ministry of Conservation, 'Application for a National Water Conservation Order: Kawarau River and the Shotover and Nevis Tributaries', 1990, p. 2. URL: www.mfe.govt.nz/sites/default/files/media/Kawarau%20River%20application.pdf (accessed 20 Oct 2015).

⁵⁶ Thornton, *Bridging the Gap*, p. 263.

⁵⁷ *Ibid.*, pp. 132, 138, 164.

⁵⁸ *Ibid.*, p. 107; Quote from Thornton, colour plate p. 2

one of only a few remaining bridges designed by this prominent New Zealand engineer.⁵⁹

Key physical dates

1909	Construction begins
October 1912	Flood damage to incomplete structure
February 1915	Construction complete
1929–1930	Irrigation pipeline installed
2004–2005	Restoration project – deck and handrails replaced.

⁵⁹ Karen Astwood, 'James Edward Fulton (1854–1928),' IPENZ, updated 29 October 2013, <https://www.ipenz.nz/home/news-and-publications/news-article/james-edward-fulton>.

C. Assessment of significance

Built between 1909 and 1915, the Shotover River Bridge has importance as an example of the bridges of eminent New Zealand engineer, James Edward Fulton. It was also part of a transition in Central Otago, notable from the early 20th Century, from the favoured suspension bridge type to other bridge forms.

The Shotover River Bridge has local historical and social significance because it allowed safe and direct transport between Queenstown and Arrowtown and became a main highway bridge. The structure was well known locally because of its lengthy and challenging construction, which prompted the Public Works Department to prepare standardised, pre-approved, plans for county bridges. It was also an integral part of the important Arrow irrigation scheme, which stimulated the local economy. The 2004–2005 restoration of the bridge demonstrated community esteem for the structure and it continues to have social value as a highlight of the Queenstown cycle trail.

The Shotover River Bridge is of sufficient engineering heritage significance to merit inclusion on the IPENZ Engineering Heritage Record.

D. Supporting information

List of supporting information

'Twin Rivers Ride from Kawarau Falls Bridge to Morven Ferry Road via Lake Hayes Estate,' Queenstown Trail, accessed 2 February 2016,
<http://www.queenstowntrail.co.nz/maps-and-rides/trail-maps/twin-rivers-ride-from-kawarau-falls-bridge-to-morvern-ferry-road/>.

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<http://www.mfe.govt.nz/sites/default/files/media/Kawarau%20River%20application.pdf>
(accessed 14 October 2015).

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<http://ndhadeliver.natlib.govt.nz/content-aggregator/getIEs?system=ilsdb&id=1619487> (accessed 2 February 2016).

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<http://ndhadeliver.natlib.govt.nz/content-aggregator/getIEs?system=ilsdb&id=1497431> (accessed 2 February 2016).

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