

# Heritage Assessment

# Mangaweka Bridge, Mangaweka May 2015

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# 1 Introduction

# 1.1 Commission

Jim Mestyanek, Senior Project Engineer for the Manawatu District Council, commissioned this assessment in response to an offer of service by the author of 15 January 2015.

# 1.2 Approach and methodology

This heritage assessment follows the methodology for assessing significance of built heritage structures as described in J.S. Kerr's *The Conservation Plan; A Guide to the Preparation of Conservation Plans for Places of European Cultural Significance* (National Trust of Australia, 1990), but adapted to meet New Zealand requirements. The Kerr guide recommends establishing the significance of the place through research into the physical and social history of the place before assessing significance based on accepted criteria.

Criteria for assessment are taken from the following three relevant documents:

- Evaluation Criteria Heritage Bridges Identification and Assessment Guide, Ontario 1945-1965 (2005) MOT,
- Heritage New Zealand Pouhere Taonga (HNZPT) Information Sheet 2, Assessment Criteria to Assist in the Identification of Historic Heritage Values, 2007
- ICOMOS Riga Charter on Authenticity and Historical Reconstruction in Relationship to Cultural Heritage, 2000.

## 1.3 Location, ownership and status

The structure spans the Rangitikei River and is on Ruahine Road, Mangaweka on the boundary between the Manawatu and Rangitikei District Councils. It has the following references:

- Manawatu District Council (MDC) ID: Bridge No. S250B
- Rangitikei District Council (RDC) ID: Bridge No. 69

The bridge is not listed as a heritage structure with HNZPT nor on the district plans of either the MDC or RDC. The Rangitikei River from the Narrows to downstream of Mangaweka is listed on the RDC District Plan as an outstanding landscape and natural feature but there are no HNZPT, RDC or MDC listed structures close to the settlement. However, the Mangaweka Power Station several kilometres west on Ruahine Road is included in the IPENZ engineering heritage register. The Mangaweka to Utiku Rail Deviation and the North Island Main Trunk railway including the South Rangitikei Viaduct are also considered as significant engineering heritage.

## 1.4 Scope and limitations

This report is not a structural, condition or archaeological assessment. Nor is it a conservation plan. As the bridge has elements that were constructed prior to 1900, should any earthworks be proposed, an archaeological authority will be required from Heritage New Zealand.



## 1.5 Acknowledgements

I would like to acknowledge the assistance of Jim Mestyanek in the preparation of this heritage assessment.

## 1.6 Photographic sources

The author took contemporary photographs. The sources of other photographs are identified under each photo.

## 1.7 Copyright

This document is the copyright of Ian Bowman architect and conservator.

# 2 Historical context

## 2.1 Introduction

The single-lane Ruahine Road Bridge, also known from its earliest years as the Mangaweka Bridge, crosses the Rangitikei River about 1.5kms from Mangaweka. It is a 'boundary bridge' between Manawatu District Council and the Rangitikei District Council, and while both share responsibility for its upkeep on major matters, the Manawatu District Council takes care of the more minor issues. Complicating matters further, Manawatu District Council regards this structure as Bridge No. S250B, while Rangitikei District refers to it as Bridge No. 69.

The bridge is the second on the site, although the first one – a rather basic low level bridge – was always of a temporary nature. It was specifically designed to permit floods to wash over it, however, even so, it often had to be partially or fully replaced after the worst of the floods.

Although great celebration was anticipated with the long-awaited opening of the bridge in the latter part of 1904, the actual 'Official Opening' event did not occur until March 7<sup>th</sup>, 2015 – 110 years after it was built. The bridge was open to horses in mid-August 1904, and to vehicles from the end of August 1904, and the original official event was intended to coincide with the official opening of the section of the North Island Main Trunk railway line between Mangaweka and Taihape. Various dignitaries were to be in the area at that time.

By the time the delayed (due to timetable problems) Taihape event finally occurred on Saturday, 19<sup>th</sup> November 1904, enthusiasm toward an official opening of this bridge had evidently waned. Certainly its contractors, J & A Anderson Ltd., of Christchurch, along with their workforce, would have moved on to other projects, and so Andersons' previous enthusiasm toward sponsoring big celebrations at such times, would probably have gone with them. The firm had successfully tendered for the substantial Mangarangiora (Ormondville) Viaduct in October 1904; their contract being dated 16<sup>th</sup> November 1904. The Ormondville Viaduct's 'ceremonial driving of the last rivet' occurred on Saturday, 20<sup>th</sup> October 1906,<sup>1</sup> however, no reference to a similar action at Mangaweka Bridge has appeared during this study.

Originally the bridge on this site was intended to serve the settlers farming in the Kauwhatau Valley. However, in due course this road became the direct link to Mangaweka from Rangiwahia and Kimbolton – and it also became the 'Main Highway' to Feilding. Another title for it was 'the Awahuri-Mangaweka via Kimbolton highway.'<sup>2</sup> In 1963 it became State Highway 54<sup>3</sup>, with this status remaining until the early 1990s when the title of 'State Highway 54' was transferred from Ruahine Road, to the Vinegar Hill Road, which diverts from the old route at Cheltenham.<sup>4</sup> Ruahine Road then reduced in status to a 'District road'.<sup>5</sup>

<sup>&</sup>lt;sup>4</sup> Letter dated 1 April 2005, Alex Chisholm, GHD, to Claire Jackman, Rangitikei District Council – re the proposed weight restrictions for the bridge. Note that Archives Central has four files entitled: 'Roads



<sup>&</sup>lt;sup>1</sup> Wanganui Chronicle, 1 October 1904, p. 7 (Tenders); Poverty Bay Herald, 20 October 1906, p. 1 (ceremony)

<sup>&</sup>lt;sup>2</sup> Appendices to the Journals of the house of Representatives (AJHR), 1950, D-1, p. 50

<sup>&</sup>lt;sup>3</sup> 'Rangitikei Bridge Book, A/2012/1 : 160 – Bridge No. 69, Archives Central, Feilding



Figure 1 A section of Plan 13472, Otamakopua-Rangitikei Block, dated 1893, showing the proposed bridge site on 'Three Log Road'. (Source: A copy of the plan on display at the official opening of the bridge, 7 March 2015)

## 2.2 History

## 2.2.1 Early beginnings

The *Timaru Herald* took a surprising amount of interest in the earliest years of settlement in the Kauwhatau Valley. On 24 September 1895, the *Herald* (p. 4) wrote under the headline 'Three Log Whare,' that: '*In the Land Department's annual report we find the following notice of the settlement, occupied by families from Timaru, which has been spoken of here as 'Three Log Whare':* 

Kawhatau Settlement, containing 1000 acres, was started on the south side of the Rangitikei, opposite to the Mangaweka Township on the Kawhatau River, the block being allotted to twelve settlers, who are now located on the land. Under co-operative contracts 198 acres were felled, 10 to 20 acres being felled on each allotment to give each settler a start, the bush being felled in a continuous block to ensure a good burn. It is intended to fell a further block of a similar size this winter, after which it is expected the settlers will have made sufficient start to be able to continue their own bushfelling. Access to the farm settlement, as well as to other settlements in the neighbourhood, has been obtained by crossing the Rangitikei River from the Three Log Whare Road, with a cage on a wire rope, the span being 380 ft. A temporary track from Clayton's Crossing, where the river is crossed, has been made into the settlement, this track being

Mangaweka State Highway No 54 Reconstruction' dated between 1980 and 1985, which I have not sighted. (Source: Manawatu District Council)

<sup>&</sup>lt;sup>5</sup> Letter dated 26 February 2001, Alex Chisholm, GHD, to Regional Manager, Transit New Zealand, Wanganui, re Mangaweka Bridge, Ruahine Road. (Source: Manawatu District Council)

necessary owing to the absence of a bridge over the river to connect with the Kawhatau Valley Road.

The article continued, stating that a map of the settlement named the twelve settlers and explained that the only roads were referred to as *"horse roads,"* and that even these were not continuous. The river appeared to be fordable at only one place, and

the wire rope does not promise much as an outlet for heavy export of produce. 'Clayton' appears to have been ahead of the Government, as he selected a considerable area of open ground close to the new settlement, which was wholly timbered. The crookedness of some of the road lines indicates steep hills close to the bank of the sections, and a trig station (nearby) is marked '2064ft'.

The settlement oddly named 'Three Log Whare' (often abbreviated to 'Three Log') was developing fast in the early 1890s, in the course of the gradual construction of the North Island Main Trunk line. The town was renamed 'Mangaweka' in October 1894.<sup>6</sup> The same year, the first settlers arrived in the Kawhatau Valley, having come in through Kimbolton.<sup>7</sup> The *Timaru Herald* of 15 July 1895 (p. 3) published a letter from one of the former Timaru residents, stating that these people had been *"taken away by the State to settle on land in the Hunterville district, about a year ago."* 

By April 1894, settlers living near Ohingaiti were demanding a bridge on Otara Road that crossed the Rangitikei River. However, the Government preferred to install one over the river at Three Log Whare – claiming that the Otara bridge would only benefit two or three large landowners. Therefore the Government would not contribute toward the Otara Road bridge. Meanwhile, the local bodies would not assist the Government with funds toward a bridge upstream from Otara Road.<sup>8</sup> The result was that the Otara Swing Bridge opened in August 1900, albeit that its official opening ceremony was abruptly postponed when its contractor refused to allow it to be used until the Kiwitea County Council paid him for his work.<sup>9</sup>

An accident on Saturday, 4<sup>th</sup> May 1895, appears to relate to the proposed Ruahine Road bridge site. On this date, two men, a "*young man*" named Tom Collis and a Mr Hinds, were in a canoe in the Rangitikei River "*fixing a wire rope at the bridge site at Mangaweka*," when the canoe filled with water. Collis jumped out to swim ashore, but was washed over a rapid and drowned. Hinds managed to get ashore on a rope. Collis' body was not initially been found<sup>10</sup>, however, a death registration for 15-yearold Thomas Collis in 1895 might well be him.<sup>11</sup>

The Feilding Star's Rangiwahia correspondent recorded on 14 November 1895 (p. 2) that a "further sum of  $\pounds 500$ " (had) been granted by the Government towards the erection of a bridge across the Rangitikei at Mangaweka. The land from Mangaweka to Rangiwahia (had) been largely settled on both sides of the main road, and therefore the increased settlement demands the formation of the Mangawahariki road." Meanwhile the Feilding Star's

<sup>&</sup>lt;sup>11</sup> Entry No. 1895/3018, Death Registrations, Births, Deaths & Marriages Online: https://www.bdmonline.dia.govt.nz/



<sup>&</sup>lt;sup>6</sup> Feilding Star, 26 October 1894, p. 2

<sup>&</sup>lt;sup>7</sup> Mangaweka and District's First 100 Years (Mangaweka & District Centennial Committee, 1984), p. 11

<sup>&</sup>lt;sup>8</sup> Feilding Star, 27 April 1894, p. 2 'Pemberton Notes'; 28 April 1894, p. 2 'Otara Bridge Site'; 30 April 1804, p. 2 'Pemberton Notes'; 28 April 1894, p. 2 'Demoinship Notes'; 20 April 1894, p. 2 'Demoins

<sup>1894,</sup> p. 2 'Rangiwahia Notes'

<sup>&</sup>lt;sup>9</sup> Evening Post, 28 August 1900, p. 6

<sup>&</sup>lt;sup>10</sup> Hawera & Normanby Star, 9 May 1895, p. 2

Ohingaiti correspondent griped on the topic:

Happy Mangaweka! Mr Murray is going to push on with your bridge. Otara can wait till a few more victims are drowned! Mr Murray, in his report some months ago, said 'The ford at Otara was so good that it was not so important to complete the bridge there as Mangaweka.' Can Mr Murray guarantee that the ford will never become as bad as when that poor unknown swagman was drowned, the last sacrifice? Don't good fords shift after floods and become very bad? Mangaweka has a very good wire and cage; Otara has nothing for the safety of travellers, hence the need for the bridge."<sup>12</sup>

When the original settlers bought their land, the purchase price had been loaded with an additional five shillings per acre to cover roading and also a bridge across the river to provide access to the planned railway at Mangaweka. In due course, and as a temporary measure, the low-level bridge was eventually erected. It had been designed by Mr G.T. Murray to allow floods to pass over it. Costing  $\pounds$  369 to build, a similar bridge was also built on the Ohau River.<sup>13</sup>

The new 'permanent' bridge was in due course designed as a cylinder bridge<sup>14</sup>, and by January 1897, it was finally under construction. It was in an *"advanced"* state by that time, and it was expected to be complete by the end of summer. Meanwhile coach operator, Mr S. Daw, was preparing to run a coach between Rangiwahia and Mangaweka, once it was complete.<sup>15</sup>

However, a major storm hit on 30 January 1897, and included amongst the resulting damage was "the bridge erected at Mangaweka, (where) the temporary structure, pile driver, and material, were washed away."<sup>16</sup> Three weeks later, the Wanganui Herald reported on the recent flood, confirmed the loss of the low-level bridge. However, "the construction of the permanent bridge is now under way and when finished will be the outlet to a large tract of settlement. By this means from Mangaweka, you can get right out to Feilding, via Rangiwahia, Birmingham (now Kimbolton) and Cheltenham."<sup>17</sup>

Unfortunately the January flood was followed by a far worse storm that struck on the 15<sup>th</sup> and 16<sup>th</sup> of April 1897, the latter date being Easter Friday.<sup>18</sup> The major flood that resulted caused widespread damage and loss of livestock throughout the region, along with the loss of a number of human lives. It also destroyed almost all the bridges on the Rangitikei River. Over four days (15-18 April), ten inches (25.4 cm) of rain fell<sup>19</sup> and at the Mangaweka Bridge site, the river rose to 32 feet above normal (9.75 metres – at 2am on April 17<sup>th</sup>).<sup>20</sup> If already repaired by this time, the low level bridge was certainly lost again – this flood even taking out the district's backstop, the cage above the river at the site. Meanwhile the water was considerably higher than the

<sup>&</sup>lt;sup>12</sup> Feilding Star, 25 November 1896, p. 2 'Ohingaiti Notes'

<sup>&</sup>lt;sup>13</sup> AJHR, 1898, C-1, p. xv. This report stated that this bridge had proved successful, with no damage having been done to it by timber coming down the river.

<sup>&</sup>lt;sup>14</sup> Wanganui Herald, 28 April 1902, p. 3

<sup>&</sup>lt;sup>15</sup> Feilding Star, 4 January 1897, p. 2

<sup>&</sup>lt;sup>16</sup> Feilding Star, 2 February 1897, p. 2

<sup>&</sup>lt;sup>17</sup> Wanganui Herald, 23 February 1897, p. 2

<sup>&</sup>lt;sup>18</sup> Feilding Star, 17 April 1897, p. 2

<sup>&</sup>lt;sup>19</sup> Mangaweka and District's First 100 Years (Mangaweka & District Centennial Committee, 1984), p. 21

<sup>&</sup>lt;sup>20</sup> Feilding Star, 22 April 1897, p. 2; S.G. Laurenson, 'Rangitikei: the day of striding out' (Palmerston North, 1979), p. 74

tops of the concrete piers that had just been completed to carry the new bridge.<sup>21</sup>

S.G. Laurenson, in 'Rangitikei: the day of striding out' (p. 74), quotes from a report on this flood: "The force of the flood can be judged from the fact that a 'monkey' weighing a ton was lost at the Mangaweka Bridge site on 31 January 1897 by a sudden flood, and was found after the Easter flood at a point fully 30 chains down the river. It was found perfectly bare but some of the men thought it was attached to a spar by a piece of chain."<sup>22</sup>

## 2.2.2 The Cantilever Bridge

The 'original' permanent bridge was to have consisted of two 121 foot (36.8 metre) spans resting on a cylindrical pier in the centre. However, the magnitude of the great flood of Easter 1897 saw this plan abandoned. A plan referred to as "9/21A" in an old Public Works Department plan register, states that this (unsighted) plan showed alternative designs for the future Mangaweka Bridge – these being as Suspension, Cantilever or Howe truss bridges.<sup>23</sup> The engineers subsequently recommended that a cantilever bridge be built there.<sup>24</sup> Doubtless the records held at Archives NZ in Wellington will add further to this information.

The *Feilding Star* of 25 September 1897 (p. 2) printed an article by a group travelling between Rangiwahia and Pukeokahu. After swimming their horses through a low flood where once there was a low-level bridge, they had camped on the opposite bank. The following morning they met the workmen preparing to rebuild the bridge.<sup>25</sup> It is noteworthy that the travellers were already aware that "*a good cantilever bridge*" was going to be erected at the site "*at the earliest possible date…*"

## 2.2.3 Endless Delays

Following the loss of the cylinder bridge, the low level bridge was left to serve the district for another eight years. In May 1898, a flood submerged the bridge under four feet of water, permitting heavy logs to float over it.<sup>26</sup> In September that year, the *Wanganui Chronicle's* Mangaweka correspondent recorded that a petition signed by the *"business people, farmers and settlers of Mangaweka, Kawhatau Valley and the surrounding district"* was to be sent to the Minister of Lands seeking a permanent bridge at the site. They noted that the bridge had been promised to the settlers three or four years ago and that  $\pounds$ 1,000 had been budgeted for it. *"The concrete piers are nearly completed on each bank of the river, and if the work were pushed on without delay there* 

<sup>&</sup>lt;sup>26</sup> Wanganui Ĉhronicle, 26 May 1898, p. 2



<sup>&</sup>lt;sup>21</sup> Feilding Star, 22 April 1897, p. 2

<sup>&</sup>lt;sup>22</sup> 'Extracts from Floods in New Zealand, published by Soil Conservation in River Control Council, Wellington', reprinted in S.G. Laurenson, '*Rangitikei: the day of striding out*' (Palmerston North, 1979), p. 74

<sup>&</sup>lt;sup>74</sup> <sup>23</sup> This information appears in one of two huge old and discarded (after computerisation) Public Works Department Plan Registers, now in private ownership (and currently held by myself – V.A.B.). These cover a substantial number of old plans from the Wanganui-Manawatu region. The whereabouts of the plans themselves has not been researched, however, they are probably with Archives NZ. Refer to the Appendix for further information on the two volumes.

<sup>&</sup>lt;sup>24</sup> Mangaweka and District's First 100 Years (Mangaweka & District Centennial Committee, 1984), p. 21; Wanganui Herald, 28 April 1902, p. 2

<sup>&</sup>lt;sup>25</sup> The article described 'pointed' iron rails having been brought to the site that were to be used under the bridge as piles.

is no reason why the bridge should not be erected within about a year." The petition reminded that the settlers in the Kawhatau Valley had been greatly disadvantaged – "not to mention several lives having been lost owing to the danger of the river at this point," due to the absence of a bridge. The lack of the bridge was "most disheartening to those who took up the land, with the understanding that the bridge would have been constructed before this time, as it prohibits any satisfactory return for their labours." Furthermore, "a large amount of totara and other valuable timber, now lying waste and shut out of the market, (would be) converted into a source of profitable revenue as soon as the bridge is built. This in itself would, in many ways, materially assist in the prosperity and advancement of Mangaweka generally."<sup>27</sup>

The Mangaweka correspondent added that the present low level temporary bridge did not meet the requirements of the settlers. It had been built to carry only a limited weight, and even in a moderate fresh (which was often during most of the year), it was submerged and unusable. The writer continued: "No doubt the low-level bridge has answered its purposes splendidly, and reflects great credit on the originator of the idea, Mr Murray, but it is by no means adequate for permanent use."28 About six weeks later, the centre spans of the low level bridge were washed away in yet another flood,<sup>29</sup> followed a week later by the drowning of Jack Campbell (20), who was attempting to ford the river on horseback at the bridge-site. He had been holding his legs out of the water as he rode, only to fall off when the horse stumbled. He swum a short distance and then sank, his body being recovered the following day.<sup>30</sup> Another week passed and the Mangaweka correspondent again complained of the situation: "I should like to call the attention of the proper authorities to the dilapidated condition of the cage across the Rangitikei River, where the Mangaweka Bridge is washed away. The ironwork of the cage is broken; the constant working of the rings (which hold the rope up) on the wire rope, have worn them through, and I would suggest that those responsible should substitute in their place small iron or steel pulleys, which would run easier. Also a new rope is required before an accident takes place, as it is used very largely now from both sides of the river."<sup>31</sup>

Another month passed and the Mangaweka correspondent again protested: "The remains of the late bridge are still in the same place, and no signs of the urgent repairs required being carried out. The loss of this bridge to Mangaweka has been fully illustrated this Xmas time. Faces we were in the habit of seeing frequently, are now no more. All go the other way for their wares – and all for the want of a bridge. What the Government are doing in not voting the money to repair this necessary structure is a mystery to us. If the Minister of Public Works would like a run through this district we can promise him a warm reception. This year we expect to see a number of the Ministers here vote-seeking. We are looking for a lively time. Just fancy settlers living ten miles from here with a good road (bridge excepted) being compelled to send to the nearest township, thirty miles away, just because the Government will not give the instructions to proceed with the repairs."<sup>32</sup>

Another fortnight passed, by which time the timber was said to have been cut for the

<sup>&</sup>lt;sup>27</sup> Wanganui Chronicle, 29 September 1898, p. 3

<sup>&</sup>lt;sup>28</sup> Wanganui Chronicle, 29 September 1898, p. 3

<sup>&</sup>lt;sup>29</sup> Wanganui Chronicle, 14 November 1898, p. 2

<sup>&</sup>lt;sup>30</sup> Feilding Star, 22 November 1898, p. 2; Wanganui Chronicle, 23 November 1898, p. 2

<sup>&</sup>lt;sup>31</sup> Wanganui Chronicle, 30 November 1898, p. 3

<sup>&</sup>lt;sup>32</sup> Wanganui Chronicle, 29 December 1898, p. 3

new bridge, but progress seemed as remote as ever. The Vinegar Hill bridge had been washed away twice, but could now carry a traction engine. Bailey's sawmilling company planned to erect two sawmills across the river, and was going to have to ford it with the machinery. However, there was a rumour that the iron for the permanent bridge had been ordered – and a deputation was waiting to interview the district's MPs Lethbridge and Pirani on the matter.<sup>33</sup>

A meeting at Mangaweka on 12 January 1899 severely criticising the Government for not repairing the low level bridge, and unanimously passed a resolution that the Minister of Lands be wired to request that the bridge be repaired. "A strong committee was appointed to keep this matter before the Government."<sup>34</sup>

The Wanganui Chronicle's Mangaweka correspondent kept up the pressure, with a lengthy moan on the topic on 14 January 1899. The river was the otherwise progressive town's "trouble". To make good on its promise to the settlers, the Government had installed the wire and cage crossing the river – to be used until the bridge was erected. Then "last year a low-level bridge, built of railway rails and white pine, was run across the river, preparatory to the permanent structure being erected. This, of course, answered the purpose while fine weather lasted, and also withstood a couple of ordinary floods, and just let the hard-working settlers experience the wonderful advantage they deserved by being able to drive and ride across the river. However, a couple of months ago this white pine structure went down the river. The old cage days have come again, with the result that the settlers are quite unable to dispose of their produce, owing to inability to get it to market. So far, although representation has been made to the Government, no steps have yet been taken to re-erect the bridge. It is painful to see women and children compelled to cross in the cage, and also the settlers bringing their wool, etc., across on the same wire and being compelled to pack it up in sacks for handling purposes. One settler here has been put to over  $f_{2,50}$  expense in getting his wool out alone..."35

Two weeks later it was reported that instructions had been received to immediately re-erect the temporary bridge across the river. The Mangaweka correspondent also recorded that: *"I am given to understand that the permanent structure is to be delayed no longer."*<sup>36</sup> By mid-February work was finally underway on the low level bridge.<sup>37</sup>

The local MP, Frank Yates Lethbridge, braved a visit to Mangaweka in May 1899. He advised that he had repeatedly told the Minister of Lands that the low level bridge was liable to be carried away any week, but: *"It was a great trouble to convince the Minister of the necessity for a permanent bridge."* He had tried to explain its value to proposed sawmilling across the river, and assurances that the permanent bridge would be complete before the railway reached the town, had not been carried out. He had also approached the Minister again after Jack Campbell drowned – resulting in the repair to the low level bridge, and hope that *"the cantilever bridge would be complete at no distant date (Applause). A suggestion had been made that the bridge should be placed higher in the river, and no doubt this would be a very suitable site, as no floods would reach it* 

<sup>&</sup>lt;sup>37</sup> Wanganui Chronicle, 17 February 1899 p. 3



<sup>&</sup>lt;sup>33</sup> Wanganui Chronicle, 13 January 1899, p. 2

<sup>&</sup>lt;sup>34</sup> Wanganui Chronicle, 17 January 1899, p. 2

<sup>&</sup>lt;sup>35</sup> Wanganui Chronicle, 14 January 1899, p. 2

<sup>&</sup>lt;sup>36</sup> Wanganui Chronicle, 27 January 1899, p. 2

### (Applause)."<sup>38</sup>

On 11 July 1899, Lethbridge asked the Minister for Public Works in the House, when work on the bridge would begin? Hall-Jones replied that the low-level bridge *"appeared to be acting very well at the present time,"* and that they recognised the necessity for a *"more permanent structure"* at a higher level, *"but that he could not say that provision would be made for it this year until the estimates were considered."*<sup>39</sup>

The *Wanganui Chronicle* of 5 September 1899 (p. 2) reported that the low level bridge had been under water for several days that the communication between the two districts had practically stopped as a result.

Things were, however, beginning to happen to finally resolve the problem. Plan No. 1 of P.W.D. 18543 - the bridge's plans - is dated November 1899. The plans were produced by the Engineer's Department of the Public Works Department, of which William Henry Hales (1830-1909) was then Engineer-in-Chief.<sup>40</sup> Hales had earlier been assistant-engineer for the Wanganui and Rangitikei Districts, and while stationed in Wanganui at a later time, he was in charge of the construction of the Wanganui Bridge - completed 1871.<sup>41</sup>

## 2.2.4 The Mangaweka Bridge Contracts

In April 1900, the tender notice seeking a contractor to build the bridge was finally published. Tenders were to close on 26<sup>th</sup> April 1900.<sup>42</sup> The *Wanganui Chronicle* of 18 April 1900 (p. 1) explained the bridge in detail:

The Mangaweka Road Bridge, tenders for which are now being called by the Lands and Survey Department, has been designed by the Public Works Department on a system new to New Zealand. The bridge will cross the Rangitikei River on the Mangaweka-Rangiwahia Road. It will be built of iron in six spans, comprising one span of 242 feet, two of 72 feet, and three of 25 feet, aggregating about 460 feet. The main portion of the superstructure will consist of cantilever girders, on concrete piers. The piers will be clear of the low water level of the river, and the decking of the bridge will be about 50 feet above that level and 20 feet above flood level. The bridge is to be completed in fourteen months. It is provided in the specifications that all the steel and iron work for the bridge shall be manufactured in the colony. The contractor will have the option of importing the materials, but they are to be imported without work of any kind. Cast iron is to be imported in the form of pig iron, and steel and malleable iron in market lengths, and otherwise exactly in the state in which it left the rolling mills. This restriction will apply to bolts and rivets, which are also to be made in the colony. All the steel and malleable iron supplied under the contract must be of English manufacture.

The following month it was announced that only two tenders had been received for the bridge, and that pressure of work in New Zealand foundries at the time was

<sup>&</sup>lt;sup>38</sup> Wanganui Chronicle, 3 May 1899, p. 2

<sup>&</sup>lt;sup>39</sup> New Zealand Parliamentary Debates (NZPD), 1899, Vol. 106, p. 422

<sup>&</sup>lt;sup>40</sup> Plan of Mangaweka Bridge, Ref: A/2012 / 2 Roll 318 Archives Central, Feilding

<sup>&</sup>lt;sup>41</sup> Star, 13 July 1909, p. 3; Evening Post, 1 June 1871, p. 2 (Last rivet driven)

<sup>&</sup>lt;sup>42</sup> Evening Post, 12 April 1900, p. 8(8)

believed to be one of the chief causes of the lack of interest.<sup>43</sup>

The *Manawatu Standard* of 31 May 1900 (p. 2) described the bridge problem as being 'Like a Piecrust:'

The Mangaweka folk are finding out that promises made by a Government in power at election times are often chimerical and purely political castles in the air. Over three years ago the bridge over the Rangitikei River near Mangaweka was washed away, and its re-erection has been definitely promised by the Government time and again, only (illegible) postpone...

This is particularly hard not only because the majority of the residents there are genuine Seddonites, but even the Press there is unanimous in its support of the Ministry. That the bridge is necessary everyone admits, but the exigencies of party warfare – Mangaweka is represented in Parliament by a member of the Opposition – demand that the constituency should, well, wait. The Mangaweka Mail, however, seems to have tired of this game, and takes off the gloves about its beloved Ministry in this fashion: 'The fact that the Government having called tenders for the erection of the bridge over the Rangitikei at Mangaweka, has turned out as expected a complete fiasco. Anybody with an atom of brains who could read between the lines of the advertisement, would see that it was a deliberate attempt on the part of the Government to throw dust in the eyes of the public. However, they have not altogether succeeded so far as we are concerned.

"The non-erection of the bridge is not only a scandal, but it is a disgrace to the present Government. Settlers, who years ago bought land from the State on the other side of the river, on the distinct understanding that the bridge under discussion was to be constructed in the near future, have been gulled. The life of many a settler who took up land under this promise has been sacrificed owing to the broken promises of the Government. We have no hesitation in saying that the lives already lost and the lives (illegible) lost in the (illegible) at the door of the Government.

On 9<sup>th</sup> June 1900 an *"influential"* meeting was held at Mangaweka regarding the bridge. A deputation consisting of Messrs. Johnston (Mangaweka), Clayton (Kawhatau) and Bailey (Feilding) was to *"wait upon Ministers"* and a huge petition was being prepared.<sup>44</sup> On 27 June 1900, Mr Lethbridge introduced the deputation to the Minister of Public Works. The men emphasised how the low level bridge was frequently under water and that several accidents had occurred. *"Many horses have been washed off and drowned and it was probably that serious loss of human life would occur if the present state of things continued much longer."* The Minister promised to have tenders called for the permanent bridge as soon as possible.<sup>45</sup>

On Sunday, 1<sup>st</sup> June 1900, a Mr A. Leineweber almost drowned while crossing the river on the low bridge. *"His horse lost its footing and both horse and rider fell into the river, both eventually reaching the shore after considerable difficulty."*<sup>46</sup> Two weeks later another tender notice for the replacement bridge appeared in the newspapers.<sup>47</sup>

<sup>&</sup>lt;sup>47</sup> Auckland Star, 14 July 1900, p. 2



<sup>&</sup>lt;sup>43</sup> Feilding Star, 14 May 1900, p. 2; NZ Herald, 17 May 1900, p. 6

<sup>&</sup>lt;sup>44</sup> Evening Post, 11 June 1900, p. 5

<sup>&</sup>lt;sup>45</sup> Feilding Star, 28 June 1900, p. 2

<sup>&</sup>lt;sup>46</sup> Feilding Star, 6 July 1900, p. 2. This is probably August Leineweber (1879-1930).

On 18 July 1900, Mr Lethbridge again questioned the Minister for Public Works in the House. He asked whether, as New Zealand's ironworkers were so busy at present, and as the bridge was needed without delay, would the Minister call for tenders for the bridge in England, or allow contractors to import it ready to erect? He accepted the other work in New Zealand at the time that also required the services of ironworkers. He added that *"he was afraid, every day, to hear of someone being drowned on the low-level bridge (which) half the time...was covered with water. There had been three accidents already, fortunately without loss of human life. Three horses were drowned, but the riders escaped by the 'skin of their teeth.'"* The Minister of Lands, Mr Duncan, then replied that tenders for the bridge were again being invited (being due to close on August 22<sup>nd</sup>), as the previous tenders had been considered too high. If these tenders proved too expensive, tenders might be called for the work in England.<sup>48</sup>

On 21 September 1900, Mr Lethbridge asked the Minister of Lands if – as no tenders had been received in response to the aforementioned tender notice – he would arrange to have the bridge made in England. Lethbridge understood that a cable had been sent to both America and England with a view to obtaining the bridge. Duncan confirmed that no tenders had been received for this *"unfortunate"* bridge, and that an estimate was now being sought in England.<sup>49</sup>

At long last the Evening Post of 27 December 1900 (p. 4) announced that "the tender of Messrs. Scott Bros., of Christchurch, has been accepted for the construction of a bridge across the Rangitikei River, at Mangaweka." The bridge was to be started "forthwith" and the price was understood to be about  $\pounds$ 12,000.<sup>50</sup> On April 2nd, 1901, the Manawatu Times (p. 2) announced that the Government had "made a start with raising the height of the concrete piers for the Mangaweka bridge, the iron for which is being made by Messrs Scott Bros., of Christchurch."

It is not clear, based on the information sighted for this study, what happened with respect to the tender from Scott Bros.' engineering and foundry works, however, it appears to have been abandoned. Doubtless the files at Archives NZ will shed more light on this.

On 2 October 1901, Lethbridge repeated his question to the Minister of Lands. Were tenders going to be called soon? He gave the House a brief history of the bridge and added that he believed the Minister was doing his best to get it built. Mr Duncan replied that *"this bridge had been a very unfortunate undertaking."* The low-level bridge was only a problem during floods.

...they had made several attempts to have a bridge. But when they put the abutments up, that seemed high towering abutments, it was found when the next flood came down that the water went 10ft higher than what was supposed to be the proper height of the bridge. Then they thought to put up a suspension bridge, and plans were prepared and tenders were called for. The department sent Home twice to the Old Country to see what a suspension bridge could be got for, but the price seemed so very high that it was held over. However, he hoped to be in a position in a very short time to call for tenders

<sup>&</sup>lt;sup>48</sup> NZPD, Vol. 111, 1900, pp. 649-650.

<sup>&</sup>lt;sup>49</sup> NZPD, Vol. 114, 1900, p. 106

<sup>&</sup>lt;sup>50</sup> Wairarapa Daily Times, 12 January 1901, p. 3

again and go on with the bridge as soon as possible."<sup>51</sup>

The West Coast Times of 31 December 1901 (p. 3) published a small article entitled 'American Steel Bridges'. This announced that the Government had decided in future to send "to America for steel bridges required for roadworks in provincial districts. It is estimated that these structures can be obtained in the United States and erected at a saving of from 30 to 50 per cent on the local manufactured article. The first order that will be sent away will probably be one for a bridge to span the Rangitikei River at Mangaweka."

However, still the matter dragged on. On Saturday, 26<sup>th</sup> April 1902, a "Monster Indignation Meeting" was held at the Assembly Rooms, Mangaweka, "to protest against the breach of faith of the Government in not proceeding with the erection of the Mangaweka Bridge in fulfilment of the many district promises and pledges given to the settlers for the last ten years."<sup>52</sup> The "largely attended and enthusiastic indignation meeting" duly passed two strongly-worded resolutions aimed at conveying their sentiments to the Government. Mr Lethbridge, M.P. also stated that "the Minister of Public Works had promised, when the Makohino viaduct was ready, they (the settlers) would be able to convey goods between Mangaonoho and Mangaweka. The viaduct was expected to be ready in three weeks."<sup>53</sup> Petitions were also to be circulated on the matter.<sup>54</sup>

Heavy rain on 14<sup>th</sup> June 1902 washed away the low-level bridge yet again, in the course of another major flood throughout the region.<sup>55</sup> On 17<sup>th</sup> June 1902, the Minister of Public Works, the Hon. W. Hall-Jones, officially opened the Makohine Viaduct and then, with other MPs, he travelled aboard the first passenger train to Mangaweka. "On arrival at Mangaweka station the party was met by a band, and driven to the town. They then visited the place where the low-level bridge used to be. They received several deputations, and left again about 3 o'clock for Palmerston."<sup>56</sup> At the time, "not a vestige" of any kind remained of the former bridge. Hall-Jones, in response to a deputation, said that the low-level bridge would be reinstated at once, and that the permanent bridge would be finished in fifteen months.<sup>57</sup> In fact, he even confidently stated "that he would drive over it in fifteen months – a statement that was received with applause."<sup>58</sup>

On 5 August 1902, Mr Lethbridge asked the Minister for Public Works in the House, if the rails for the replacement low-level bridge were being carted eleven miles from Mangaonoho on a near-impassable road at great expense, with trucks regularly running along the railway line alongside the road? Mr Duncan, Minister of Lands, again responded instead. On June 19<sup>th</sup>, the Public Works Dept. had been asked to haul a truck-load of plant from Mangaonoho to Mangaweka, but the next day the Resident Engineer announced that he could not then discharge wagons at Mangaweka without a lot of inconvenience. Although the Engineer could undertake this work a week later, the Road Surveyor working on the bridge could not wait.<sup>59</sup>

<sup>&</sup>lt;sup>59</sup> NZPD, Vol. 121, 1902, p. 164



<sup>&</sup>lt;sup>51</sup> NZPD, Vol. 119, 1901, p. 111

<sup>&</sup>lt;sup>52</sup> Wanganui Chronicle, 25 April 1902, p. 3

<sup>&</sup>lt;sup>53</sup> Wanganui Herald, 28 April 1902, p. 1

<sup>&</sup>lt;sup>54</sup> Auckland Star, 28 April 1902, p. 5

<sup>&</sup>lt;sup>55</sup> Bush Advocate, 14 June 1902, p. 2

<sup>&</sup>lt;sup>56</sup> Wanganui Chronicle, 18 June 1902, p. 5

<sup>&</sup>lt;sup>57</sup> Wairarapa Daily Times, 18 June 1902, pp. 2-3

<sup>&</sup>lt;sup>58</sup> Evening Post, 18 June 1902, p. 2

Lethbridge asked more questions in the House of the Minister of Lands on 3<sup>rd</sup> October 1902. The first was to ask when tenders were to be called for the Mangaweka Bridge. Duncan replied that they would be called as soon as the plans and contracts were prepared – probably before the end of the month. Lethbridge's second question was to ask when the low-level bridge would be finished. It was *"about finished now"*.<sup>60</sup>

The *Manawatu Times*' Mangaweka correspondent reported in late May 1903 that after months of good weather, the Rangitikei River was in high flood "and as a result the famous low-level bridge has had several feet of water over it, causing the usual stoppage of traffic."<sup>61</sup> In late June 1903 it was again impassable, with several feet of water flowing over it over a number of days. "During the election we heard a lot about the tenders (for the permanent bridge) having been called and one accepted; still the settlers are in the same predicament."<sup>62</sup>

The *Manawatu Times'* Mangaweka correspondent reported in early July 1903 on a serious mishap that occurred on the low-level bridge:

'Follow the leader' is a great passage for boys, but it is not often one is called upon to chronicle such a disastrous lead as that taken by one sheep on Saturday. A mob of sheep were being driven across the low-level bridge at Mangaweka when one of the leaders suddenly took fright and leapt into the Rangitikei River. Before the drovers had time to realise what had happened the other sheep followed suit. A most pitiful sight ensued, as the river being very rapid at this spot the poor creatures were hastened pell mell down the current. A number of willing hands were soon lending assistance, but owing to steep cliffs lining the river on either side the loss was considerable. Subsequently numerous carcases could be seen either floating down stream or lodge on the river banks."<sup>63</sup>

Heavy rain the following day saw the low-level bridge under about seven or eight feet of water.<sup>64</sup>

The book *Mangaweka and District's First 100 Years* (p. 35) provides another spectacular but undated story of a near disaster on the low-level bridge. William Warren, of Mangaremo, Rangiwahia, and his horse Darky, were heading home from Mangaweka when they met Martin Bielski and his wagon and team of horses attempting to cross the bridge. So William helped by leading the horses across, before starting to cross himself. Suddenly a wall of water appeared, hitting the bridge and washing William and Darky into the torrent. The pair remained together until at last Darky found firm ground and scrambled ashore. By the time the pair got home, William's poor wife had been told that he was missing and was presumed drowned.

#### 2.2.5 The New Bridge begins at last

The book '100 Years, Being an account of the Founding Development & Progress of Andersons: 1850-1950' (p. 39) gives an idea of how work at the new bridge would

<sup>&</sup>lt;sup>60</sup> NZPD, Vol. 122, 1902, pp. 965-6

<sup>&</sup>lt;sup>61</sup> Manawatu Times, 30 May 1903, p. 2

<sup>&</sup>lt;sup>62</sup> Wanganui Chronicle, 30 June 1903, p. 2

<sup>&</sup>lt;sup>63</sup> Manawatu Times, 7 July 1903, p. 3

<sup>&</sup>lt;sup>64</sup> Wanganui Chronicle, 8 July 1903, p. 2

have progressed:

In nearly all contract jobs, the erection of a temporary workshop was a very necessary preliminary. A drill, a cold saw and stones for dressing hand tools, with, in the case of later bridges, the air compressor for riveting, were driven by a portable steam engine. Materials had to be ordered as nearly as possible to the finished size, 'cut to dead length', to avoid unnecessary handling and 'arisings' at the end of the job.

The small team sent from Lyttelton would be augmented by local labour, and in a very short space of time became surprisingly skilful and efficient. Scaffolding on the 'high pitches', though adequate, would be kept to a minimum, as it had to be frequently moved from pitch to pitch, especially on the high piers of trestle bridges where the rigging-up of expensive scaffolding for half a day's riveting was not warranted. Head and eye became quickly trained at work at heights and surprisingly few accidents occurred...

Reinforcement for bridge piers was not then in general use, mass concrete work being the general practice. Steel was first used in the Piripiri Bridge<sup>65</sup>, and all structures were, of course, riveted.

The bridge work, although perhaps not as remunerative as the contract figures might lead one to suppose, was of the greatest value to the firm, as it needed the utmost care and accuracy in its execution. The firm, therefore, trained up men in this exacting school of engineering work and by this means, was able to develop its manufacturing and, later, its hydro-electric connections, both of which required the same high standards."

It is noteworthy that J & A Anderson Ltd. went on to build the Makatote Railway Viaduct, south of National Park, soon after erecting the Mangaweka Road Bridge, and the many photos in their '100 years' publication taken during the viaduct's construction (1906–1908), give an indication of the type of processes the firm will have used at Mangaweka. This process is described in more detail in the 'Makatote Viaduct' section of IPENZ's Engineering Heritage NZ webpage.<sup>66</sup>

The Feilding Star of 3 August 1903 (p. 2) reported that the contract date for the completion of the new bridge was to be 26<sup>th</sup> June 1904, and that the contractor expected to complete the work before that time. In mid-August 1903 the low-level bridge was again beneath several feet of water and traffic "as usual, was stopped for two or three days."<sup>67</sup>

The Manawatu Standard of 12 September 1903 (p. 4) announced that "The steel work required for the bridge which the Government propose erecting across the Rangitikei River at Mangaweka is now completed and it is to be shipped from Lyttelton, where it was manufactured, at an early date. Mr H.J. Hayns, C.E.<sup>68</sup>, who is

<sup>&</sup>lt;sup>68</sup> In the course of his career, Henry James Hayns served as Kiwitea County Council's engineer, before becoming Pohangina County Council's first engineer. After completing his involvement with the Mangaweka Bridge, he moved on to supervise the construction of the nearby Mangarere suspension bridge, which opened in June 1905 – and was replaced in 1966. He was also in charge of works during



 <sup>&</sup>lt;sup>65</sup> Now called the Matamau Viaduct, Southern Hawkes Bay – built 1899-1900: *Hawkes Bay Herald*, 4
 March 1899, p. 3 (Tenders); *Wairarapa Daily Times*, 18 December 1900, p. 2 (strength test)
 <sup>66</sup> 'Makatote Viaduct', IPENZ: Engineering Heritage NZ:

http://www.ipenz.org.nz/heritage/itemdetail.cfm?itemid=2174

<sup>&</sup>lt;sup>67</sup> Wanganui Chronicle, 19 August 1903, p. 5

supervising the construction of the steel work for the bridge, will proceed to Mangaweka on Tuesday in order to take the initial steps for having the erection of the bridge proceeded with."

In mid-February 1904, the low-level bridge again needed 'putting right' for wheeled traffic after yet another flood. The "exceptionally high" flood had carried away one of its spans, and the number of men working on reconstructing it, indicated that communication would be restored by the end of the week.<sup>69</sup> No sooner did it reopen, than another flood in early March piled a huge quantity of logs and rubbish onto it, and also damaged it sufficiently that timber wagons bound for Mangaweka Railway Station could not use it. This again caused the contacting wagoners and mill-owners great loss of time and expense. The correspondent added that: "The low-level bridge is not a structure to be proud of, but still it has been a boon to us poor settlers, and is a long way before either having to ford the river or cross in a cage." The correspondent then stated that "The permanent bridge is being pushed along with, and we will all be very pleased when the time comes to cut the string across it. In a place like Mangaweka crossing, where there is such a deal of traffic, the bridge should have been completed long ago."<sup>70</sup>

The Wanganui Chronicle of 8 March 1904 (p. 2) recorded a near drowning during the latest flood. A Mr Pittman was leading a young horse across the low-level bridge – which at the time had water flowing over it – when the horse took fright, swung around, and went over the side taking Pittman with it. Both went down river several chain, with Pittman being able to grab a rock at mid-stream. Three men working on the new bridge were able with difficulty to rescue him, while the horse was rescued further down the river the next day. "Both are now as merry as larks, with a caution to be careful in crossing the 'low level'".

On 13th July 1904, the Wanganui Herald (p. 4) recorded the:

"The central span of the Mangaweka Bridge over the Rangitikei River was put in position on Monday. The bridge is a cantilever. A powerful steel cable was thrown across from end to end on derricks. The huge girder, 9 tons weight, was swung from this by two sets of triple blocks. A winch at one end of the bridge raised the girder off its bearings, while various sets of tackle were utilised to keep it in position. All being in readiness, the winch on the other end of the bridge was manned, and the connecting link moved slowly forward to its place."

The book '100 Years' on the history of J. & A. Anderson Ltd., lists some specific information on the company's involvement with the Mangaweka Road Bridge. It gives the contract date of '1898' for this bridge – which is clearly incorrect. Perhaps the firm had been involved with one of the earlier failed bridge tenders. The contract had excluded the concrete piers. The book described the superstructure as consisting

the construction of the troublesome Ashhurst Bridge – which was officially opened by the Governor, Lord Plunket, in 1909. Hayns commented at the time that it should last a century – but of course it didn't. Hayns died in Palmerston North on 20 June 1922, aged 82. (Sources include: *Manawatu Standard*, 15 May 1905, p. 4, and 4 January 1908, p. 4; *Wairarapa Age*, 10 June 1909, p. 5; *Evening Post*, 23 June 1922, p. 8; Mangarere Bridge partial closure: <u>http://www.rangitikei.govt.nz/index.php/roadclosures/624-mangare-bridge-partial-closure</u>)

<sup>&</sup>lt;sup>69</sup> Manawatu Times, 18 February 1904, p. 3; Wanganui Chronicle, 23 February 1904, p. 7

<sup>&</sup>lt;sup>70</sup> Wanganui Chronicle, 4 March 1904, p. 2

of "2 cantilever through truss spans 144 ft. 1 connecting truss 98 ft. 3 plate girder approach spans 25 ft." The bridge's total length was 461 feet, and it was 47 feet above stream level. The shop work had been done at Lyttelton.<sup>71</sup> The firm also built other major bridges in the region around this time, including five replacement railway bridges on the Hawkes Bay railway line (the Kopua Viaduct contracted in 1896, the Makotuku Viaduct, 1898; the Matamau [Piripiri] Viaduct, 1899; the Mangatera Viaduct, 1900; and the Ormondville Viaduct, 1904), along with the substantial Makatote Viaduct on the Main Trunk Line, which was contracted in 1905 and completed in 1908.<sup>72</sup> All of these viaducts are still in use.

## 2.2.6 The First 'Official Opening'

The Feilding Star of 19 July 1904 (p. 2) reported that "on Friday next a meeting of settlers and business people is to be held at Mangaweka for the purpose of arranging the official opening of the Mangaweka traffic bridge across the Rangitikei." The Wairarapa Daily Times of 1 August 1904 (p. 4) then reported that the bridge was to be opened "with great ceremony." Coinciding with these plans, the new section of railway between Mangaweka and Taihape, was to be opened for the conveyance of goods (but not passengers) on Thursday, 4 August 1904.<sup>73</sup>

As matters progressed, the Manawatu Standard of 26 August 1904 (p. 4) reported that: "The Mangaweka Road bridge was passed by the District Road Engineer on Tuesday. The bridge is 464 feet long, and there is about 140 tons of steel and ironworks in it. About 900 tons of cement have been used in the work and about 840 cubic yards of concrete, and about 51,000 feet of totara. There are about 50,000 rivets in the work. Mr Reaney is the District Engineer, and the bridge was erected under the supervision of Mr H.J. Hayns, of Palmerston North. Mr Maher was representative of the contractors, Messrs Anderson Bros, of Christchurch. Horse traffic has been going over for a week, but it will not be open for vehicular traffic till the approaches on the north side have been metalled. This is expected to be done in about four days."

The Wanganui Herald of 27 August 1904 (p. 5) recorded that the date for officially opening the section of the North Island Main Trunk line to Taihape, was to be Saturday, 10<sup>th</sup> September 1904. "The Hon. Hall-Jones (Minister for Public Works), and a large Parliamentary party will be present of the occasion. On the following Monday, the party will assist in the opening of the new cantilever bridge across the Rangitikei River at Mangaweka."

However, things did not go according to these plans. On September 6<sup>th</sup>, the Wanganui Herald's Parliamentary reporter wrote that: "I have reason to understand that the Hon. Hall-Jones will be glad to consent to the postponement of the official opening of the Taihape railway till after the session as suggested, and he would probably be unable to be present on Saturday."

However, while the official opening was in the process of being postponed, this was

<sup>&</sup>lt;sup>72</sup> Ibid, Appendix 1, p. 146-7. Also 'Makatote Viaduct' in '*IPENZ Engineering Heritage, New Zealand*', <u>http://www.ipenz.org.nz/heritage/itemdetail.cfm?itemid=2174</u> <sup>73</sup> Feilding Star, 3 August 1904, p. 2



<sup>&</sup>lt;sup>71</sup> 100 Years: Being an account of the Founding Development & Progress of Andersons: 1850-1950, Appendix 1, p. 146)

not the case with the actual opening of the section of track for use by passenger trains, which remained scheduled to start on 10<sup>th</sup> September as planned. A special 'first' excursion train was scheduled to leave Marton at 9:35am bound for Taihape, and it was due to arrive at 12:45pm. It was to leave Taihape again at 3:40pm and connect with the 4:15pm train from Mangaweka to Palmerston North. The advertisements in the newspapers clearly stated that this excursion was for the "Opening of Railway to Taihape".<sup>74</sup> The Wanganui Chronicle of 8<sup>th</sup> September 1904 (p. 4) published a small item stating that "The official opening of the railway to Taihape, which was to have taken place on Saturday next, has been postponed till after the session closes." Unfortunately not everyone realised this.

The Feilding Star of 12 September 1904 (p. 2) reported a Press Association article dated September 10th which stated that "The Taihape railway passenger service was inaugurated today. Owing to differences of the townspeople, there was no celebration, nor any display of bunting. A deputation from the backblocks settlers arrived, in the expectation of meeting the Minister of Public Works, who had promised to be present. But they were not advised of the alteration, and were very indignant at their fruitless visit. An excursion train brought 400 passengers. The town had a gloomy appearance, and there were no signs of rejoicing." The Evening Post added that Minister had postponed his visit at the request of Taihape's Demonstration Committee, and also that "Messrs. Bosher Bros., sawmillers, two miles from Taihape, (had) erected over the line a triumphant arch, but there are no other decorations."<sup>75</sup>

Somewhere in the midst of all this, the long-awaited and eagerly planned official opening ceremony for the new bridge at Mangaweka, sadly faded away – and did not reappear for 110 years.

The Wanganui Herald of 13 September 1904 (p. 5) attempted to explain what had gone wrong: "With respect to the reported differences among the Taihape townsfolk over the celebrations connected with the opening of the railway passenger service, the secretary of the Celebration Committee informs us that residents in the township were practically agreed on the advisability of postponing the function. The Ministerial party had arranged to arrive at Taihape at 4 o'clock, which hour was considered too late to admit of celebrations fitting the occasion, and it was decided to postpone the official opening until after the session, when the weather would also be more settled. Our informant states that so soon as it was decided to postpone the celebrations, notifications were sent to the various post offices in the district. As to the excursion train, which arrived, the secretary says that it was timed to return 40 minutes before the official opening was supposed to take place, and he adds that the Band met the train and the station and business places were decorated with bunting."

The enduring myth of the opening of the railway to Taihape is that this event occurred as originally planned (10 September 1904), and that the dignitaries simply failed to show up at the Mangaweka Bridge due to heavy rain. People who had not known the event was fated not to occur, had shown up at the bridge site after long journeys anyway – only to find themselves "at the deserted site wet cold and

<sup>&</sup>lt;sup>74</sup> Feilding Star, 7 September 1904, p. 3

<sup>&</sup>lt;sup>75</sup> Evening Post, 12 September 1904, p. 5

frustrated."<sup>76</sup> So having conclusively blown away the long-held Taihape myth, the weather is also of note. The famous weather forecaster of the day, Captain Edwin, stated at 12:42pm on Saturday, September 10<sup>th</sup> that there would be "moderate to strong winds from between east and south and southwest. Glass slowly falling. Rain probably." At 12:40pm on September 12<sup>th</sup>, he announced "Strong winds to gale from between north-east and north and west after 19 hours from now. Glass fall with indications for rain."<sup>77</sup> While Captain Edwin's long-range weather forecasting skills had clearly not influenced the decision for the parliamentarians to remain in Wellington in this instance, a fortnight later another flood struck, leaving the now-redundant low-level bridge covered with trees and three dead bullocks!<sup>78</sup>



Figure 2 Strolling across the bridge after the 'official opening' on 7<sup>th</sup> March 2015 – showing the Mangaweka end of the bridge. (Photo: Val Burr)

The official opening of the section of line to Taihape finally occurred on Saturday, 19<sup>th</sup> November 1904, with the Prime Minister, Richard John Seddon, officiating. Although his 'special' train briefly stopped at Mangaweka – to be attached to an excursion train – there is nothing to indicate that he visited the bridge. The Minister for Public Works, the Hon. Hall-Jones, left for Wellington aboard the excursion train soon after the event, with Seddon and party duly returning to Palmerston North later in the evening after a banquet.<sup>79</sup> If Hall-Jones did in fact honour his promise in June 1902 to eventually drive over the new bridge, then the event did not apparently gain

<sup>&</sup>lt;sup>79</sup> Manawatu Times, 21 November 1904, p. 5; Manawatu Standard, 21 November 1904, p. 5



<sup>&</sup>lt;sup>76</sup> Manawatu Standard, 14 March 2015, p. 17, 'At last – historic bridge officially opens.

<sup>&</sup>lt;sup>77</sup> Feilding Star, 10 September 1904, p. 3; 12 September 1904, p. 2

<sup>&</sup>lt;sup>78</sup> Manawatu Times, 28 September 1904, p. 2

regional media attention.

### 2.2.7 The Next 110 Years: 1904-1920

References to the bridge include the following:

Feilding Star, 30 December 1905, p. 2: Extract from 'Picturesque Ruahine' by Jacob Terry: After arriving in Mangaweka, "you jump aboard Hildreth's coach at 1 o'clock sharp and then cross the fine bridge over the Rangitikei river, and for three miles skirt a lengthy wall of high perpendicular cliffs, several hundred feet high..."

*Feilding Star*, 15 February 1910, p. 4: Extract from 'Kiwitea County – A twodays trip through it by motor-car, studying settlers' requirements': After a lengthy and detailed description of the journey, "*Back to the Mangaweka road, and across the bridge which had been obtained with such mighty efforts, and then up the steep rise to the township...*" The terrain in the vicinity was then described.

Dominion, 6 April 1910, p. 10: Extract from 'Up the Rangitikei, notes by the way': "It seems a long time since what is now Mangaweka was called 'Three-log Whare.' There was a nasty crossing over the river, which was responsible for several accidents and lives lost, and it was considered a great step when the first low-level bridge was formed, but the structure did not stand the heavy floods, and the battering it got from the large quantities of timber which were at that time brought down when the river was up. The present cantilever bridge is a fine structure, high above any flood..."

Wanganui Chronicle, 4 March 1913, p. 6: A report from a Rangitikei County Council meeting about 'Repairing Mangaweka Bridge': "Mr Mair also reported on the Mangaweka Bridge as follows: The work of repairing the deck to Mangaweka Bridge over the Rangitikei River is well in hand. The old deck is sound totara only laid six or seven years ago, but has been almost cut in two by the heavy traffic. However, I am laying a longitudinal decking of heart rimu bedded in tar-macadam, and I think when this is completed the deck will last for many years."

## 2.2.8 1921-1940

The Rangitikei County Council records include a letter dated 20 January 1923 from the Kiwitea County Council's County Clerk, advising "of the dangerous condition of the decking on the bridge over the river at Mangaweka" and requested that it be repaired immediately. The matter was to be looked into.<sup>80</sup>

The painting of the bridge was an issue dealt with in the mid-1930s. In December 1934, the Rangitikei District Council's County Engineer, A.R. Mair, contacted the District Engineer at the Railways Office, Ohakune, to ask what type of paint had recently been used to paint the Makohine Viaduct, as he had several steel bridges to paint. Then on 7 January 1935, George Salt of Mangaweka, wrote to Mair, seeking work as he was out of a job. He didn't care what sort, as work was very scarce. Mair replied offering Salt the task of cleaning and painting the Mangaweka Bridge: *"The first job would be to chisel, hammer and clean the steel with a steel brush. The trough of the* 

<sup>&</sup>lt;sup>80</sup> 'Bridge over Rangitikei River at Mangaweka', Ref: RDC 00046 : 1 : 38, Archives Central, Feilding. Note that the third of three documents in this file, dated 13 January 1923, relates to the Kuripapanga Bridge needing to be redecked, and so this might instead be the 'Mangaweka Bridge' referred to.

*lower chords will require special attention.*" The undercoat used was Bergers Liquid Red Lead paint, and the top coat was 'Excelsior' steel grey anti-corrosive paint – the same as that on the Makohine Viaduct. Mair also sought out information on the scaffolding required for painting such bridges under the Scaffolding Act.

The painting file also contains complaints from George Salt, regarding vehicles 'speeding' over the bridge at 20mph and greater, who were also abusing the workmen when they tried to make them slow down. One time Salt was cleaning under the span when a vehicle crossed at about 30mph – leading to Salt stating that it felt like being in an earthquake. In consequence, the local traffic officer spoke to the vehicle owners "and thoroughly warned them. I don't think these vehicles will trouble you further."<sup>81</sup>



Figure 3 Not a TV aerial for an under-bridge-dwelling troll while he awaits some unsuspecting Billy-Goats Gruff, but rather the aerial connected to the river level recorder attached to the bridge, 7 March 2015 (Photo: Val Burr)

## 2.2.91941-1960

In July 1947, the bridge was assessed as being in good condition. The troughs and lower chord needed to be cleaned out and painted, and some running planks needed replacing. The bridge had a 10/6 tons load limit.<sup>82</sup>

Some significant work was done to and around the bridge in the 1950s. This included the installation alongside the bridge (and the other Rangitikei River bridges) of a water level recorder tower. An old Public Works Department Plan Register (discarded after the contents were computerised and currently held by the author)

 <sup>&</sup>lt;sup>81</sup> 'Painting Bridges Mangaweka and Vinegar Hill', Ref: RDC 00064 : 4 : 20, Archives Central, Feilding
 <sup>82</sup> 'Rangitikei Bridge Book, A/2012/1 : 160 – Bridge No. 69, Archives Central, Feilding



refers to Plan No 2987, dated 11 December 1946 showing cross sections of the various Rangitikei River bridges. Plan No. P2930, dated 26 April 1950, refers to the Rangitikei River at Mangaweka, in relation to the Easter Flood of 1897. Then Plan No. S4263, dated 16 April 1951, covers the proposed sites of maximum water lever recorders on the river, including at this bridge site, that were being installed by the Rangitikei Catchment Board.<sup>83</sup>

A pencilled note on the November 1899 plan of the bridge, PWD 18543, records that during the construction of the Rangitikei Catchment Board's water level recorder tower at the bridge site in late 1953, it was found that the largest abutment in the Mangaweka side of the river (built 1896), was by this time only between 2ft 6ins to 3ft 6ins into the papa.<sup>84</sup>

Plans began to re-deck the bridge in early 1950s, with the specifications drawn up being dated 13 August 1953. The bridge was described as containing 466ft of two steel cantilever truss spans, and three totara beam shore spans. The proposed new decking was to consist of 'MA Hardwood complying with NZSS485 NSW Hardwoods'. The transverse decking was to be 8in x 4in x 15ft generally, while the handrail post planks and safety bay planks were to be 8in x 4in x 20ft. However, this document was then apparently cancelled.<sup>85</sup>

A Design Certificate, dated 16 August 1954, indicates that the decking upgrade was designed by Oswald Donal Bell, Civil Engineer. The estimated cost for the work, consisting of renewal of the decking and stringers, was  $\pounds 6,348-10-0.^{86}$  However, the aforementioned 1953 document contains pencilled alterations drawn up with a view to trimming this sum. The bridge was completely redecked in 1957, with hardwood beams replacing the old totara timberwork. The deck consisted of 8ins x 4ins hardwood.<sup>87</sup>

In 1960, the first timber pier 'on the left bank' was found to have sunk two inches on the downstream side. A temporary prop was placed at an angle to stop any further movement, and more permanent work was anticipated.<sup>88</sup> The bridge still had its 10/6 ton load limit.

## 2.2.101961-1980

In 1963, the road became State Highway 54, and control of it was passed to the Kiwitea County Council.<sup>89</sup>

In 1971 the process of renewing the bridge's land spans began. The Kiwitea County Council published a tender notice in the *Wanganui Chronicle* of 23 September 1971,

RDC 00068 : 2: 932 B/26, Archives Central, Feilding. Note that the only online reference found to Oswald Donal Bell related to his marriage to Margaret Miller in 1931:

<sup>&</sup>lt;sup>83</sup> See the Appendix for more information on this Plan Register

<sup>&</sup>lt;sup>84</sup> Plan of Mangaweka Bridge, Ref: A/2012/2 Roll 318, Archives Central, Feilding

 <sup>&</sup>lt;sup>85</sup> 'Mangaweka Bridge Main Highway 829', RDC 00068 : 2 : 898 B/24, Archives Central, Feilding
 <sup>86</sup> 'Awahuri-Mangaweka via Kimbolton. M.H. 829 Mangaweka Bridge. Renewal of deck & stringers',

http://archiver.rootsweb.ancestry.com/th/read/NEW-ZEALAND/2006-07/1151993774 ; and that at one time the couple owned land in Waipawa: https://gazette.govt.nz/notice/id/1994-lt633

<sup>&</sup>lt;sup>87</sup> 'Mangaweka Bridge Main Highway 829', RDC 00068 : 2 : 898 B/24, Archives Central, Feilding

<sup>&</sup>lt;sup>88</sup> 'Mangaweka Bridge Main Highway 829', RDC 00068 : 2 : 898 B/24, Archives Central, Feilding

<sup>&</sup>lt;sup>89</sup> 'Mangaweka Bridge Main Highway 829', RDC 00068 : 2 : 898 B/24, Archives Central, Feilding

and the tender of M. Bullock Bridge Builders Ltd., of \$14,626.75, was successful. This became Contract No. 407. The contract's General Description states that: "*The* work included in the contract to which this specification refers consists of the removal of the western and eastern land spans of the Rangitikei River bridge on S.H. 54 between Mangaweka and Rangiwahia, approximately 1 mile east of Mangaweka." The old timberwork was to be replaced by reinforced concrete abutments, and upon the completion of the work, the "existing timber abutment piles" were to be cut off at ground level, with the same being done to the old timber piles from the "existing eastern pier".<sup>90</sup>

## 2.2.11 1981-2000

Two files held by Archives New Zealand refer to the bridge during this time. Although not sighted for this study, their titles provide a good indication of what was involved. They both refer to "Contract WG1775 – SH 54 - Rangitikei River Bridge at Mangaweka - Replacement of Holding Down Bolts and Repair of Crack in Pier A."<sup>91</sup>

## 2.2.12 2001-Present

On 10 June 2000, work was completed on the installation of running boards along the length of the bridge. Previously the bridge had been very noisy when large vehicles travelled over the bridge and local people were complaining. The running boards were widened in February 2001, when additional boards were added between the running boards, as previously the gap between the two sets of boards had been too wide.<sup>92</sup>

In June 2001, the bridge was assessed in relation to its carrying capacity rating, and in June 2006, the bridge underwent a feasibility study in relation to upgrading it. In October 2007, sampling and testing were undertaken on the bridge, and its actual strength proved to be better than had previously been anticipated.<sup>93</sup>

On Saturday, 15<sup>th</sup> February 2012, the 170km Gorges to Sea Cycleways<sup>94</sup> opened through the region as part of the NZ Cycle Trail project introduced by the Government in 2009. Part of this, the 54km Pemberton Trail, includes the Mangaweka Bridge. In describing the venture the *Manawatu Standard*, of 20<sup>th</sup> February 2012 (p. 3), reported that "Cyclists will be treated to some of the very best the region has to offer, including soaring white mudstone cliffs in Mangaweka, the dramatic backdrop of the Ruahine Ranges and the lush farmland along the Pohangina Valley terraces." Having their photos taken at the bridge site also seems to be a feature for the cyclists.

Minor damage to deck timbers at the eastern approach in 2013 briefly saw the bridge restricted to 'light vehicles only. However, the speed limit remained at 10kmh, and

<sup>&</sup>lt;sup>94</sup> Gorges to Sea Cycleways: <u>http://rangitikei.com/gorges-sea-cycleways</u>



<sup>&</sup>lt;sup>90</sup> 'Renewal of Land Spans of Rangitikei River Bridge at Mangaweka on SH 54', MDC 00129 : 9 : 407, Archives Central, Feilding.

<sup>&</sup>lt;sup>91</sup> Item R15182504 ACCL 24576 W5532 50/C40/775; and Item R15182560 ACCL 24576 W5532 57/WG 1775; <u>both</u> referring to Contract WG1775 - Rangitikei River Bridge, Mangaweka, replace holding down bolts. Repair crack in Pier A, Archives New Zealand, Wellington

<sup>&</sup>lt;sup>92</sup> Interview with Jim Mestyanek, Manawatu District Council, 1 April 2015

<sup>&</sup>lt;sup>93</sup> 'Mangaweka Bridge Upgrade,' Report for Manawatu District Council, by GHD Ltd. (June 2006), p.

<sup>1; &#</sup>x27;Mangaweka Bridge Reassessment' Report for Manawatu District Council, by GHD Ltd. (December 2007), p. i, 2 (Source: Manawatu District Council)

the weight restriction remains at 90% of Class One.95

## 2.2.13 The Official Opening - 2015

On Saturday, 7<sup>th</sup> March 2015, approximately 110 years and six months after the event was supposed to have occurred, the Official Opening of the Mangaweka Bridge finally took place as part of a Mangaweka Heritage project. Some 300 people were present to see the town's current oldest resident, Dulcie Kraiger, cut the ribbon to declare it open. A number of people were dressed in period costume to suit what should have been worn at the original event, while various forms of transport that have used the bridge from its earliest time, formed up to parade across it. A number of related displays were also on show at the neighbouring Mangaweka campground. The organisers of the event were also conscious that Council is considering improvements to the bridge in 2018.<sup>96</sup>



Figure 4 Testing the bridge's timberwork on 30 January 2009 (Photo: Manawatu District Council)

## 2.2.14 Conclusion

There is no doubt that this bridge and its predecessor/s – including the cage – have played a major role within the history of their community and the surrounding district. Few bridges would have a history and a pre-history matching this one – this includes engineering technology, transportation (including the newly-completed railway now able to deliver the heavy parts) and the political to-ing and fro-ing, in addition to the more basic farming, commercial and social needs satisfied once the bridge was complete. Early newspaper coverage sighted during this study, suggests

<sup>&</sup>lt;sup>95</sup> Manawatu Standard, 9 April 2013, p. 3; Central District Times, 16 April 2013 (per Stuff.co.nz)

<sup>&</sup>lt;sup>96</sup> Tina White, 'At last – historic bridge officially opens', in Manawatu Standard, 14 March 2015, p. 17

that the dilemma relating to this bridge (or mostly the lack of it) had even seen it become famous nationally.

A number of the finer points of this bridge's history would doubtless be revealed in the records held by Archives NZ that were not able to be accessed in the course of this study. Another option for further research is to seek out remains of the buildings that appear in the background of photos in Appendix 1 that once stood behind the present camping grounds. If this was in fact Andersons' camp, there might be the remains of the engine block/s, or features associated with the compressor or about a year of occupancy by the workmen.

Jim Mestyanek reported that there is a local story that the bridge was designed for another location. The research to date has not uncovered any validity to the story. In addition the original drawings for the bridge (figure 6) are headed "Mangaweka Bridge" indicating the the current bridge was specifically designed for the site.

| Period | Event   |
|--------|---|
| 1894   | First recorded request for a bridge crossing the Rangitikei River on the<br>Otara Road by residents of Ohingaiti. This was refused with the<br>government preferring to build one near Mangaweka (then called Three<br>Log Whare) |
| 1895   | Settlement of Kawhatau established on south bank of the Rangitikei  |
|        | Crossing from the Mangaweka side was enabled by a wire cage   |
| 1895   | Funds granted by the Government for the Mangaweka bridge  |
| 1897   | Construction of the first low bridge at Mangaweka but including concrete<br>piers for a higher two span bridge with cylindrical pier  |
|        | 30 January floods swept away the bridge construction but retaining the concrete piers at either side of the river   |
|        | 15,16 April worse flooding causing further damage including any rebuilding work on the bridge   |
|        | Following April floods, abandonment of bridge design with two spans and<br>central pier to a cantilever bridge using the piers already constructed on<br>either side of the banks   |
| 1898   | July floods wash away the low level bridge, the cage becomes the only means of crossing the river   |
| 1899   | Reconstruction of the low level bridge  |
|        | Drawings prepared by the Public Works Department for a cantilever<br>bridge   |
| 1900   | First tenders called for the permanent high level bridge but neither accepted   |
| 1902   | Flooding washes the low level bridge away again   |

2.3 Outline chronology of events



| 1903      | Contract awarded for the cantilever bridge to J & A Andersons Ltd of<br>Christchurch   |
|-----------|--|
| 1904      | February and March flooding damages the low level bridge   |
|           | August the new bridge was passed for use   |
|           | 10 September proposed for the official opening but this did not eventuate  |
| 1913      | Repairs undertaken on the bridge deck  |
| 1923      | Concerns about the condition of the deck raised by the Kiwitea County<br>Clerk   |
| 1934      | The bridge is painted by George Salt   |
| 1947      | A report following an inspection of the bridge considered it to be in good<br>condition but with running boards needing replacement and troughs and<br>chords needing painting |
| 1951      | Installation of water level recorder   |
| 1954      | Contract prepared for redecking and renewal of stringers of the bridge   |
| 1957      | Complete redecking of the bridge   |
| 1960      | An inspection finds that the pier on the left bank had sunk two inches and<br>temporary propping was installed   |
| 1961      | Repairs to pier E  |
| 1971      | Renewal of bridge's land spans   |
| 1981-1999 | Renewal of holding down bolts and repair of crack in pier A  |
| 2000      | Installation of running boards   |
| 2001      | Running boards widened   |
| 2012      | Opening of Gorges to Sea Cycleway which includes the Mangaweka<br>Bridge   |
| 2013      | Minor damage to deck timbers at the eastern approach which restricts the bridge to light vehicles  |
| 2015      | 7 March 2015 official opening of the bridge takes place  |

## 2.4 People associated with the bridge

### J and A Anderson and Son Ltd<sup>97</sup>

John Anderson, son of Jean Harper and her husband, Alexander Anderson, a ploughman, was born on 7 November 1820 and baptised at Inveresk, near Edinburgh, Scotland. After an apprenticeship with a blacksmith, John was employed at the North British Railway Company, Leith, and in Edinburgh. He also attended evening classes in mathematics, mechanical philosophy and chemistry at the School of Arts, Edinburgh, and gained a diploma and medal. On 3 June 1845 he married Jane Gibson at Leith. Before her marriage Jane had been employed by the Dalmahoy family, who later provided a vital stimulus to the Andersons' emigration hopes by advancing them £300 to buy goods to take to New Zealand. John and Jane Anderson's first two children, Marion and Alexander, died in infancy, and this probably contributed to their decision to emigrate.

Although they were Presbyterians, the Andersons came to New Zealand under the auspices of the Canterbury Association. With their third child, John, they arrived in Lyttelton in December 1850 on the Sir George Seymour. John Anderson's first night ashore was spent with John and William Deans at Riccarton, who are said to have influenced him to settle at Christchurch, rather than the more developed Lyttelton.

For about a year John Anderson practised his blacksmithing skills at The Bricks, on Oxford Terrace. A fourth child, Andrew, was born in 1851. In February



Figure 5 John Anderson, Canterbury Museum

1852 Anderson bought section No 877 in Cashel Street from Daniel Inwood for  $\pm$  12 and moved his business and household to this new site. Later, more land was purchased

<sup>&</sup>lt;sup>97</sup> Peter Lowe. 'Anderson, John', from the Dictionary of New Zealand Biography. Te Ara - the Encyclopedia of New Zealand, updated 30-Oct-2012, URL: http://www.TeAra.govt.nz/en/biographies/1a6/anderson-john



on the other side of Cashel Street, where the family home, Inveresk, was built. In 1857 the plant of 'J. Anderson, Engineer, Millwright, Boiler Maker & C', as described on a contemporary invoice, expanded to include a foundry, for which raw materials were imported. Anderson acquired agencies for a range of equipment imports; in particular, Aveling and Porter traction engines and road rollers. The business expanded and eventually the Cashel Street site extended through to Lichfield Street. The family also expanded – Jean, Alexander, Elizabeth and Frederick were born between 1853 and 1861. The Andersons became involved in the Presbyterian community in Christchurch. John Anderson was instrumental in bringing the first Presbyterian minister to Canterbury, and was a founding member of the congregations of St Andrew's Church (1854) and St Paul's Church (1864).

In the next decade the firm began to manufacture steam boilers and also made equipment to process the province's primary products, especially wool, flax and livestock. After 1860 Anderson's commercial interests extended beyond engineering. He was a shareholder and director of the Union Fire and Marine Insurance Company of New Zealand, the Christchurch Gas, Coal and Coke Company Limited, the Press Company Limited, and the New Zealand Shipping Company Limited, which had its origins in Christchurch.

Anderson was also drawn into public life from about 1860. He took an active interest in the Canterbury Agricultural and Pastoral Association, the Lyttelton Harbour Board, the Christchurch Mechanics' Institute (later the Canterbury Public Library), the Canterbury Chamber of Commerce, the Christchurch Licensing Committee and the Canterbury Club. In 1862 he was elected to the Christchurch City Council and in 1869 served as the second mayor of Christchurch. During his year in office he hosted the visit to Christchurch by the young Prince Albert, Duke of Edinburgh.

Anderson's social standing and aspirations grew. In 1866 his sons John and Andrew were sent to the élite Merchiston Castle School in Edinburgh. Later both sons worked in Scotland: John with a firm of mechanical engineers in Glasgow, Andrew with a firm of civil engineers in Edinburgh. They returned to New Zealand in 1873 and 1876 respectively, and entered the family business.

In the 1870s Anderson's firm took advantage of Julius Vogel's policy of railway and infrastructure expansion. One of its projects was the construction of the Rakaia and Ashburton Forks railway to Methven, during 1878 and 1879. Contracts such as these were tendered for by 'J. and A. Anderson', to protect the main business in case unexpected contract liabilities were incurred. By this time the firm was prospering: in 1875 John Anderson and his daughter Jean embarked on an overseas business trip to Australia, Great Britain and the United States.

In 1881 John Anderson relinquished his business interests and in the same year stood unsuccessfully as a parliamentary candidate for Christchurch South. His sons John and Andrew became proprietors of the family firm, which, in the phase after his retirement, went on to establish a pre-eminent position among New Zealand construction companies. In particular, it gained a reputation for building road and rail bridges. The Beaumont road bridge (1886–87) was the first outstanding example. Alluvial gold dredges were also built, and vessels were constructed and repaired at the Lyttelton works, which opened in 1887. Local expertise for large-scale projects was regarded as suspect but the firm undertook major contracts, including the impressive viaducts at Waiteti (1888) and Makatote (1908) on the main trunk railway, and the manufacture of the steel lighthouse for Farewell Spit (1895–96). In 1903 a private limited liability company, Andersons Limited, was formed. It merged with Mason Brothers Limited in 1964 and ceased trading in 1986.

John Anderson died on 30 April 1897 at Christchurch; Jane Anderson had predeceased him in 1894. A practical man, he made a valuable contribution to the development of industry and communications in New Zealand. He was rewarded in large measure by social, financial and business success.

#### Public Works Department/ Ministry of Works.

In 1870 Premier Julius Vogel proposed extensive infrastructure development to assist with economic development and immigration. The Department of Immigration and Public Works was established to manage the proposed development with 20 staff including eight engineers. Following the abolition of the Provincial system the Public Works Act was passed in 1876. This defined the role of the department as including

surveys, railways, tramways, roads, bridges, drains, harbours, docks, canals, waterworks, and mining works, electric telegraphs, lighthouses, buildings, and every undertaking of what kind soever, which the General Government or a County Council or a Road Board is authorised to undertake under this or any other Act or Ordinance of the General Assembly or of any Provincial Legislature for the time being in force.

The Public Works Act 1928 brought the Public Works Department and the Ministry of Works into a single unit, and at that stage the responsible Minister was known as the Minister of Works, while the head of the department was the Commissioner of Works. The department was re-named the Ministry of Works and Development in 1973, with the Minister of Works and Development having responsibility for it. The Ministry of Works and Development was abolished in 1988 when it became the Consultancy Division of the State-Owned-Enterprise Works and Development Services Corporation NZ Limited. The Division became a separate subsidiary in 1992 known as Works Consultancy Services Ltd. Works Consultancy Services was sold to Kinta Kellas of Malaysia in November 1996. The Company's name changed to Opus International Consultants Limited in April 1997.



# 4 Physical description

## 4.1 Setting

The Mangaweka Bridge crosses the Rangitikei River about 1.5kms from Mangaweka, a small township between Taihape to the north and Hunterville to the south. The bridge is part of Ruahine Road which leads to Rangiwahia and Apiti to the south west. The area is of considerable natural beauty and, as stated in section 1, is listed on the RDC District Plan as an outstanding landscape. The District Plan describes the area as "Very steeply sided, incised, meandering river valley and gorges with significant tracts of remnant indigenous riparian vegetation and exposed rocky outcrops. "

Both sides of the bridge are motor camps with small-scale buildings, those on the west bank being mostly hidden by trees.



Figure 6 Bridge plans, 1899, MDC archives

## 4.2 Bridge type and antecedents

## 4.2.1 Description

The Mangaweka bridge is a three span riveted steel cantilever truss with a timber deck. A cantilever bridge receives its name from the two sections on either side of the river which resemble springboards (or cantilevers) – refer to figure 7, areas circled in red. These cantilever sections extend from either bank and rest on two concrete supports each. However, the ends near the centre of the river are left unsupported (ie no pier at midstream). In some cantilever bridges, these two unsupported ends are connected directly to one another. However, in this instance, an additional span was designed to bridge the gap between the cantilever ends. This central span is a separate simply-supported section which rests upon the two cantilever ends – refer to figure 7 highlighted in yellow.

All three sections (the two cantilevers and central span) are trusses, or latticed structures. The arrangement and geometry of the individual component members

identifies them as Howe Trusses. Finally, they are classified as "through trusses" because the deck is suspended between the trusses. Bridge users pass "through" the trusses on either side of the deck. This is different from a "deck truss," in which the truss is located underneath the deck.

The two short spans at either end of the bridge are simply-supported approach spans for which truss support was not needed – refer to figure 7 highlighted in blue.



Figure 7 Cantilever bridge elements

Geoffrey Thornton, in 'Bridging the Gap: Early Bridges in New Zealand 1830-1939' (p. 226), refers to this bridge as being somewhat like a miniature version of the famous Quebec Bridge over the St. Lawrence River in Canada. That bridge, which was completed in 1917, is still the world's longest cantilever bridge. Construction of both bridges began around the same time, but fortunately there is no indication that the Mangaweka Bridge shared anything remotely like the tragedy that dogged the larger bridge. This had suffered two collapses and the deaths of 89 workers.<sup>98</sup>

## 4.2.2 Background history<sup>99</sup>

Engineers in the nineteenth century knew that a bridge which was built across multiple supports would distribute the loads among them. This meant there would be lower stresses in the girder or truss and meant that longer spans could be built.<sup>[1]</sup> Several nineteenth century engineers designed continuous bridges with hinge points mid-span.<sup>[2]</sup> The use of a hinge in the multi-span system meant that engineers could better work out the loads and stresses on the bridge<sup>[3]</sup> It also meant the bridge that could handle the foundations settling at different rates.<sup>[1]</sup>

Heinrich Gerber was one of the engineers to obtain a patent for a hinged girder (1866) and is recognized as the first to build one.<sup>[2]</sup> The Hassfurt Bridge over the Main River in Germany has a central span of 124 feet (38 meters). Completed in 1867, it was the first modern cantilever bridge.<sup>[3]</sup> Other early cantilever bridges included the High Bridge of Kentucky by C. Shaler Smith (1877), the Niagara Cantilever Bridge by Charles Conrad Schneider (1883) and the Poughkeepsie Bridge by John Francis

 <sup>&</sup>lt;sup>98</sup> 'Quebec City's Cantilever Bridge', in *Encyclopedia of French Cultural Heritage in North America*:
 <u>http://www.ameriquefrancaise.org/en/article-381/Quebec\_City%E2%80%99s\_Cantilever\_Bridge.html</u>
 <sup>99</sup> http://simple.wikipedia.org/wiki/Cantilever\_bridge



O'Rourke and Pomeroy P. Dickinson (1889).<sup>[3]</sup> The Kentucky River Bridge spanned a gorge that was 275 feet (84 meters) deep. It was built with a cantilever which meant that it did not need to be supported during the building.<sup>[3]</sup> The most famous early cantilever bridge is the Forth Rail Bridge. This bridge held the record for longest span in the world for 17 years.

The design of the Forth Bridge was noted in the New Zealand press. The *Wanganui Chronicle* of 9 May 1890 (p. 2) published an article entitled 'Marvels of the Forth Bridge,' outlining a recent report given to the Working Men's meeting of the British Association. The newly opened bridge was described in detail, with the report concluding with: *"The work is undoubtedly one of the greatest, if not the greatest feat of engineering ever performed. Oddly enough, the cantilever principle of construction, though it has long been in use in China, was never employed in Europe or America till the publication of the designs for the Forth Bridge. It is likely, however, to become common enough in the future."* 

## 4.3 New Zealand bridge building<sup>100</sup>

## 4.3.1 Early beginnings<sup>101</sup>

In the early days of the colony, most deaths were caused be drowning and consequently bridge building was a high priority for the government. Road and rail construction also necessitated the construction of bridges, however a lack of skilled engineers and contractors, not to mention finance, led to the slow initial building of bridges. These three problems had, in part, been overcome by the 1870's and 1880's with the expansion of Public Works through the borrowings of Julius Vogel.

The oldest surviving bridge in New Zealand is the four span masonry bridge over the Waianakarua, in North Otago, which was constructed in 1869. This is still in use but has had modifications to the upper structure. A nearby masonry bridge, also over the Waianakarua River, is a twin masonry bridge built in 1874 and designed by J T Thomson, Chief Commissioner of Surveys and Works for the Otago Provincial Government. This is almost completely unmodified and may be the oldest intact bridge in New Zealand.

Two other Otago rivers have significant bridges. The Taieri River has a steel girder bridge designed by R H Brown, Maniototo County Engineer, and built in 1878. The Kawarau River has a timber suspension bridge designed in 1878 by H P Higginson.

The Avon River in Christchurch is crossed by a number of significant bridges. The brick arched Armagh Street bridge and the cast-iron arched Victoria and Gloucester Street bridges were designed by city engineer C Walken in the late nineteenth century.

Railway viaducts in the North and South Islands have contributed impressive bridges. The North Island Main Trunk railway has the Makohine viaduct, completed in 1902

<sup>&</sup>lt;sup>100</sup> This information has been summarised from Geoffrey G Thornton, "New Zealand's Industrial Heritage", Reed, 1982

<sup>&</sup>lt;sup>101</sup> This information has been summarised from H J Hopkins, "A Span of Bridges", David and Charles: Newton Abbot, 1970.

as well as the Mangaweka and Makatote viaducts, all designed by engineer P S Hay.

## 4.3.2 Common New Zealand bridge types<sup>102</sup>

The Howe timber truss was possibly the most commonly used truss for road and rail bridge design in the Victorian and Edwardian period in the United States, Australia and New Zealand. William Howe, a Massachusetts builder introduced iron into wooden truss design in 1840 by substituting adjustable iron rods for the vertical members of Long's truss. Metal became the preferred material for railway bridges because of the danger from fire. Trains showered sparks and hot coals and timber members are combustible and vulnerable to fire.

The Howe truss and its many variations were the most popular bridge type in New Zealand. There were literally thousands of this form of timber truss bridge throughout New Zealand, mostly for road bridges, however<sup>103</sup>. The Warren truss was the most common for railway bridges in both the United States and New Zealand<sup>104</sup>.

Thornton's includes in his book a compilation of New Zealand's timber truss bridges. He considers timber truss bridges were common in New Zealand until the 1930's when their replacement began with reinforced concrete bridges. At first the truss bridges were constructed in New Zealand native timbers such as kauri, rimu and totara, but Australian hardwoods were found to be more durable. Puriri was used north of Auckland as this was nearly as long lasting as Australian hardwoods<sup>105</sup>.

He estimates that there are only 25 timber truss bridges still surviving in New Zealand of the great many built. 15 of these remaining bridges are disused and 10 remain in use.

## 4.3.3 New Zealand cantilever bridges

Thornton (pp. 225-226) lists the Waiau Ferry Bridge as the first cantilever bridge in New Zealand. This timber bridge (which is still in use) was completed in 1887. Its contractors were also J. & A. Anderson of Christchurch, who subsequently built the Mangaweka Bridge, also listed in Thornton's book. The other cantilever bridge Thornton describes is the Makohine Viaduct, a steel railway bridge south of Ohingaiti and built between 1896 and 1902<sup>106</sup>.

He describes two other bridges, which have elements of cantilevering but which were not specifically designed as such. The first was a railway bridge built at Ongaroto across the Waikato about 1931 and which has since been replaced. The bridge was not designed as a cantilever but because of a problem with the central pier, the already constructed steel truss cantilevered a small extent over a new pier.

<sup>&</sup>lt;sup>106</sup> See also: 'Makohine Viaduct', IPENZ Engineers NZ – Engineering Heritage NZ: http://www.ipenz.org.nz/heritage/itemdetail.cfm?itemid=2175



<sup>&</sup>lt;sup>102</sup> This information has been summarised from H J Hopkins, "A Span of Bridges", David and Charles: Newton Abbot, 1970.

<sup>&</sup>lt;sup>103</sup> pers com. Geoffrey Thornton, 9 June, 1999

<sup>&</sup>lt;sup>104</sup> pers com. Geoffrey Thornton, 9 June, 1999

<sup>&</sup>lt;sup>105</sup> Paul Wilson, <u>Historic Bridge Preservation An Integrated Approach</u>, unpublished thesis Lincoln College, 1988, page 29

The other was a concrete girder bridge that had end spans cantilevering a small distance to the abutments and was built in 1938 spanning the Taungatara Stream in South Taranaki.

That Thornton only lists three purpose-designed cantilever bridges suggests that the bridge type is very rare. Karen Astwood, IPENZ heritage adviser, confirmed that these three were the only known cantilever bridges<sup>107</sup>. Jim Mestyanek has confirmed that there are no other cantilever bridges in the Rangitikei or Manawatu districts<sup>108</sup>.

## 4.3.4 Other bridge types<sup>109</sup>

There are a considerable number of historic designs for bridges. Age, function and material largely determine bridge designs. The Minnesota Historical Society State Historic Preservation Office lists Minnesota's Nationally Registered bridges by type, which gives a good range of historic bridge designs. A number of these bridge types were used in New Zealand. The types include:

Bowstring arch through truss; Camelback through truss; Concrete girder; Concrete slab; Covered bridges; Deck pratt truss; King post pony truss; Masonry arch; Multi-plate arch; Parker through truss with a vertical-lift span; Pennsylvania through truss; Pratt through truss; Rainbow concrete arch; Reinforced concrete arch; Reinforced concrete barrel-arch; Steel arch: Steel through truss; Swing span; Vertical lift span;

<sup>&</sup>lt;sup>107</sup> pers comm. Ian Bowman with Karen Astwood 6 May, 2015

<sup>&</sup>lt;sup>108</sup> email J Mestyanek to I Bowman 5 May 2015

<sup>&</sup>lt;sup>109</sup> The University of Florida Civil Engineering Historic Bridge HomePage at http://www.lehigh.edu/~pg06/Historic\_Bridge\_HomePage/historic\_bridge.html discusses cast and wrought iron bridges, early steel bridges and early stone and concrete bridges.

Warren deck truss;

Warren pony truss.

## 4.3.5 IPENZ list of bridges

The following are extant complete bridges considered of significance to the Institute of Professional Engineers of New Zealand up to the completion of the Mangaweka Bridge in 1904:

- Beaumont Bridge, Clutha, 1887, the first of four iron truss bridges to be constructed with iron fabricated in New Zealand, constructed by Anderson and Son
- Clifton Suspension Bridge, Waiau, 1898-99, stone piers and steel framing
- Daniell O'Connor suspension bridge, Ophir, 1879-80, schist piers and steel framing
- Millers Flat bridge, Central Otago, 1897-99, steel bowstring arch bridge. J and A Anderson Ltd
- Ohau River bridge, near Twizel, 1889, steel single span deck arch bridge
- Skippers Canyon Suspension bridge, 30 km north of Queenstown, 1898-1901, timber deck and stiffening truss

# 4.3.6 Bridges and viaducts recognised by IPENZ and constructed by J and A Anderson

- Beaumont Bridge (above)
- Makatote Viaduct, 1905-08, North American steel trestle, HNZPT Category 1
- Midland Railway Line, 9 km section of line from Springfield to Patterson Creek, 1890
- Millers Flat bridge (as above)
- Oamaru Borough Council public water supply race, 1880, manufacture of cast iron pipes
- Manganui-a-te-Ao Viaduct

## 4.3.7 Viaducts and bridges listed by Heritage New Zealand

Heritage New Zealand lists 84 viaducts and bridges with the following in the Manawatu, Whanganui, Rangitikei regions.

- Matapuna Bridge, category 1, 1904, Ruapehu District
- Manguturuturu Viaduct, category 2, 1908, Ruapehu District, (J and A Anderson Ltd)
- Makohine Railway Viaduct, category 1, 1902, Rangitikei District
- Hapuawhenua Viaduct, category 1, 1908, Ruapehu District
- Makatote Viaduct, category 2, 1905–08, Ruapehu District, (J and A Anderson Ltd)



- Springvale Suspension bridge, category 2, 1926, Rangitikei
- Mangapurua "Bridge to Nowhere", category 1, 1936, Ruapehu District
- Kaitawa Bridge, 1932, category 2, Tararua District
- ANZAC Memorial bridge, category 2, 1925, Kaiaparoro

# 5 Assessment of significance

## 5.1 Criteria for assessment

The criteria for assessment are taken from three sources. The first is the Ministry of Transportation, *Ontario Heritage Bridge Guidelines for Provincially Owned Bridges*, 11 January 2008. These guidelines include a numerical scoring system, which is not used in this assessment as it has well known problems in giving a seemingly mathematically accurate quantitative value for an issue, which is qualitative in nature. The assessed rating of the particular value is highlighted in bold with the criteria and explanation alongside.

The HNZPT Sustainable Management of Historic Heritage Guidance, Information Sheet 2, Assessment Criteria to Assist in the Identification of Historic Heritage Values, 2007 covers several values not included in the Ontario document while the ICOMOS Riga Charter on Authenticity and Historical Reconstruction in Relationship to Cultural Heritage, 2000 covers issues of authenticity.

## 5.2 Assessment

| Value                | Rating    | Criteria  | Assessment  |
|----------------------|-----------|---|---|
| Design/physica       | l value   |   |   |
| Functional<br>design | Excellent | Displays a high degree of<br>technical merit or<br>scientific achievement<br>and;<br>• Is one of a kind or<br>prototype (first or earliest<br>example of its kind)<br>• Is exemplary for its<br>kind (i.e. the longest,<br>highest, etc. of its kind) | The bridge is the first<br>and only steel cantilever<br>road bridge in New<br>Zealand and one of only<br>three known extant<br>cantilever bridges or<br>viaducts in New<br>Zealand. Including the<br>Makohine Viaduct, the<br>Mangaweka Bridge is the<br>third oldest and last<br>known to be built of its<br>type in New Zealand.<br>That few were designed<br>suggests that the<br>engineering requirements<br>for cantilever bridges<br>were more complex or<br>were only suited to<br>unusual or rare situations. |
|                      | Very Good | Displays a high degree of<br>technical merit or<br>scientific achievement   | -   |

## 5.2.1 Ontario Heritage Bridge Guidelines for Provincially Owned Bridges



|               |              | and;  |  |
|---------------|--------------|---|--|
|               |              | • Includes types in which<br>fewer than five survive<br>within a region   |  |
|               | Fair         | This category includes<br>types of which fewer<br>than five survive within a<br>Region, regardless of<br>degree of technical merit<br>or scientific achievement,<br>even if many were<br>originally constructed                         | -  |
|               | Fair         | This category includes<br>types of which fewer<br>than five survive within<br>a Region, regardless of<br>degree of technical<br>merit or scientific<br>achievement, even if<br>many were originally<br>constructed.                     | _  |
|               | Common       | Of little value from a<br>technical or scientific<br>perspective. Many<br>were built, many<br>remain.   | -  |
| Visual appeal | Excellent    | High degree of<br>craftsmanship or stylistic<br>merit for most of the<br>elements of the bridge;<br>the design elements are<br>well balanced and<br>overall the structure is<br>well proportioned;<br>modifications are<br>sympathetic. | -  |
|               | Very<br>Good | Well-proportioned<br>bridge that has a general<br>massing that is<br>appropriate to the<br>landscape in which it is<br>situated.  | The design of the<br>bridge is appropriate to<br>the landscape because:<br>• its design and height<br>allows for the<br>uninterrupted width<br>and flow of the river;<br>• the view of the |
|               |              |   | <ul> <li>the view of the</li> </ul>  |

river is unbroken at river level; • although substantial, the bridge is set down from the Mangaweka plateau so that it does not affect or compete with views of the listed outstanding landscape the form and scale • of each of the elements and their open truss design with the symmetry and balance inherent in the cantilever design contribute to a sense of strength, delicacy and harmony the horizontal, ٠ curved and angular forms of the bridge mimic the surrounding geography of the area the bridge structure ٠ is largely authentic however the deck, running boards and land spans having been replaced Fair Structure has only one or two noteworthy elements or is severely altered from its original form. None No noteworthy features Excellent Provincially rare or **Materials** unusual materials. Stone, wrought iron are examples of provincially rare materials.



|          | Very<br>Good | Regionally rare or<br>unusual<br>materials. Wood and<br>riveted steel are<br>examples of regionally<br>rare materials.  | _  |
|----------|--------------|---|--|
|          | Fair         | Unusual Combinations:<br>this is reserved for<br>materials that are used<br>in combination(s) that<br>are considered unusual<br>or remarkable.  | _  |
|          | Common       | Common materials or combinations.   | The bridge uses mass<br>concrete, steel and<br>timber, which were<br>common materials at<br>the time of<br>construction.   |
| Landmark | Excellent    | Physically prominent:<br>The bridge is highly<br>significant physically<br>and a primary symbol<br>in the area. This<br>includes 'gateway'<br>structures.   | _  |
|          |              | • It is a critical element<br>in understanding a<br>family of bridges within<br>a corridor  |  |
|          | Very<br>Good | Locally significant: The<br>bridge is perceived in<br>the community as<br>having symbolic value<br>rather than purely<br>visual or aesthetic<br>value.<br>• It is an important<br>element in<br>understanding a family<br>of bridges within a | Consultation with local<br>landowners reflects an<br>interest in and<br>emotional attachment<br>to the bridge, most of<br>whom wish to see the<br>bridge remain <sup>110</sup> . This<br>is reinforced with the<br>recent opening of the<br>bridge 111 years after<br>the original was<br>abandoned. |

<sup>&</sup>lt;sup>110</sup> File note 4-0006, MDC, Jim Mestyanek, 5 March 2015

|                                | Fair      | A familiar structure in the context of the area.   | _  |
|--------------------------------|-----------|--|--|
|                                |           | o It is a contributory<br>element in<br>understanding a family<br>of bridges within a<br>corridor  |  |
|                                | Common    | No prominence in area  | -  |
| Character<br>contribution      | Excellent | The bridge is the<br>critical element in<br>defining the character<br>of the area and is of<br>great importance in<br>establishing or<br>protecting this<br>character. | _  |
|                                | Good      | Maintains or<br>contributes to the<br>overall character of the<br>area and is of municipal<br>importance in<br>establishing or<br>protecting this<br>character.        | Although not part of<br>the NIMT railway<br>system, the age, design,<br>contractor and materials<br>of the bridge are<br>consistent with the<br>nationally significant<br>and well recognized<br>railway in the region.<br>Many of the bridges in<br>in the Rangitikei and<br>Manawatu districts use<br>a truss design, with the<br>Mangaweka Bridge the<br>oldest, the most visually<br>interesting and the<br>longest. |
|                                | Common    | Character contribution is minimal.   | -  |
| Historic/associative value     |           |  |  |
| Designer/cons<br>truction firm | Excellent | Known influential<br>designer-builder:<br>structure demonstrates<br>or reflects the<br>innovative work or<br>ideas of companies,<br>engineers and/or                   | The Mangaweka<br>Bridge is one of a<br>number of bridges and<br>viaducts constructed by<br>J and A Anderson Ltd<br>throughout New<br>Zealand. Their  |



|      | builders having major<br>impacts on the<br>development of a<br>community. For this<br>item, community is<br>broadly defined to<br>include professional<br>groups who have<br>been demonstrably<br>affected by the work<br>in question. | expertise was called on<br>to construct some of<br>the most complicated<br>and difficult<br>engineering structures<br>in demanding locations.<br>Often they were<br>required to establish an<br>entire workshop in<br>remote areas next to<br>the project while<br>maintaining the highest<br>of standards. Their<br>engineering projects<br>included railway and<br>road bridges, gold<br>dredges, coastal<br>steamers, hydro electric<br>works and the Farewell<br>Spit lighthouse. The<br>founder of the firm,<br>John Anderson, was not<br>only a highly respected<br>engineer but also served<br>the community as<br>Christchurch's second<br>mayor. He was also a<br>director of a number of<br>companies.<br>The bridge design was<br>prepared by the Public |
|------|--|---|
|      |  | prepared by the Public<br>Works Department, the<br>government agency<br>charged with the design<br>and construction of<br>New Zealand's<br>infrastructure from its<br>inception in 1876 to its<br>demise in the late<br>1980s. Many of its<br>engineers and architects<br>were leaders in their<br>field.   |
| Good | Known prolific<br>builder-designer:<br>companies, engineers,<br>and/or builders<br>directly responsible  | -   |

|   | Fair      | for a large number of<br>structures whose<br>activities led to design<br>or construction<br>refinements and the<br>establishment of<br>standard forms.<br>Known undetermined<br>contribution:<br>companies, engineers,<br>and/or builders about<br>who have made a<br>limited/minor<br>contribution to a<br>community. |  |
|---|-----------|--|--|
|   | Unknown   | Those responsible for<br>the<br>design/construction<br>are not known   | _  |
| Association<br>with an<br>historical<br>theme, person<br>or event | Excellent | Direct Association<br>with a theme or event<br>that is highly<br>significant in<br>understanding the<br>cultural history of the<br>nation, province or<br>municipality.  | In a wider perspective<br>the bridge is a part of<br>the theme of<br>construction and<br>development of<br>transport and<br>communications<br>infrastructure that the<br>Public Works<br>Department were<br>established in 1876 to<br>achieve. The NIMT<br>railway, one of the<br>most ambitious of the<br>PWD projects and in<br>the same general region<br>as the bridge, was built<br>at a similar time and<br>using similar<br>technology and<br>materials.<br>In a somewhat<br>narrower focus, the<br>bridge is associated with |
|   |           |  | the theme, and<br>difficulties, of<br>settlement and   |



development of farming and forestry of the central Manawatu-Whanganui Region. The Kawhatau Settlement, which the bridge served, was typical of government programmes to settle and develop the lower central North Island. However, the experiences of the settlers, the initial difficulties and setbacks, the lack of adequate transportation and communications, the constant need to harass government for funding despite settlers having paid levies for the bridge were perhaps extreme with the construction of the bridge a major focus of the community. Without the bridge the area could not be developed. The issue of the bridge was national news for some time. Once constructed, the road over it became an important highway from Mangaweka to Feilding, allowing for further opening up and development of farmland. As discussed above, the bridge is associated with nationally significant engineers J and A

Anderson Ltd and the

Public Works Department.

| Good   | Close association with<br>a theme or event<br>within an area       |
|--------|--|
| Common | Limited or no<br>association with<br>historic themes or<br>events. |

# 5.2.2 Assessment Criteria to Assist in the Identification of Historic Heritage Values

The HNZPT information sheet 2 has several additional assessment criteria as set out below.

### Archaeological information

The first means of crossing the river was constructed in 1895 and the first low bridge was constructed in 1897. Therefore the bridge location is an archaeological site as a place occupied prior to 1900.

### Scientific

The extreme flooding recorded since the Kawhatau settlement was established and the need for a bridge above the highest flood level reflect the natural geography of the area.

### Vulnerability

The bridge has weight and speed restrictions indicating that speeds and weights in excess of those specified could do damage to the bridge. It is also vulnerable to flood and earthquake damage and, being constructed with timber elements, there is the potential for fire.

### Education

Given its extensive heritage values, the bridge has educational values in the areas of local and regional history of settlement and development, governmental decision making on infrastructure spending, the history of road bridge engineering and the projects undertaken by the Public Works Department and J and A Anderson Ltd.

### 5.2.3 Riga Charter on Authenticity and Historical Reconstruction in Relationship to Cultural Heritage

### Authenticity

Form and design

The form and design of the bridge remain unchanged.

Materials and substance

The steel structure and concrete piers are largely authentic however the timber deck, timber running boards and land spans have been replaced

Use and functions

The structure remains in use as a road bridge.



#### Tradition, techniques, and workmanship

Apart from the replaced materials, the tradition, techniques and workmanship applied when building the bridge have been retained.

#### Location and setting

In the immediate environment, construction of the motor camps on either side of the bridge has introduced small scale buildings, many of which are hidden by large trees. There have been possible changes to the river bed and bank from natural causes, however, in general, the location and setting are unchanged since 1904.

#### Spirit and feeling

In its location, form, style and materials, the bridge evokes a sense of delicacy, harmony, age and strength.

### 5.3 Summary statement of heritage significance

The bridge is **nationally** significant as the first and only steel cantilever road bridge in New Zealand. It is also significant as one of only three such bridge types purposebuilt in New Zealand. The bridge has high associative values having been designed by the Public Works Department and constructed by nationally significant engineers J and A Anderson Ltd who completed a number of engineering projects in a similar time period and now recognized as of national heritage value. The bridge has high symbolic and emotional values for residents, many of whom participated in the opening ceremony 111 years after its completion. The bridge is of an appropriate design that complements the natural beauty of the area listed locally as an outstanding landscape.

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# Appendix 1

See attached photographic chronology

# Appendix 2

#### ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value Revised 2010 Preamble

New Zealand retains a unique assemblage of **places** of **cultural heritage value** relating to its indigenous and more recent peoples. These areas, **cultural landscapes** and features, buildings and **structures**, gardens, archaeological sites, traditional sites, monuments, and sacred **places** are treasures of distinctive value that have accrued meanings over time. New Zealand shares a general responsibility with the rest of humanity to safeguard its cultural heritage **places** for present and future generations. More specifically, the people of New Zealand have particular ways of perceiving, relating to, and conserving their cultural heritage **places**.

Following the spirit of the International Charter for the Conservation and Restoration of Monuments and Sites (the Venice Charter - 1964), this charter sets out principles to guide the **conservation** of **places** of **cultural heritage value** in New Zealand. It is a statement of professional principles for members of ICOMOS New Zealand.

This charter is also intended to guide all those involved in the various aspects of **conservation** work, including owners, guardians, managers, developers, planners, architects, engineers, craftspeople and those in the construction trades, heritage practitioners and advisors, and local and central government authorities. It offers guidance for communities, organisations, and individuals involved with the **conservation** and management of cultural heritage **places**.

This charter should be made an integral part of statutory or regulatory heritage management policies or plans, and should provide support for decision makers in statutory or regulatory processes.

Each article of this charter must be read in the light of all the others. Words in bold in the text are defined in the definitions section of this charter.

This revised charter was adopted by the New Zealand National Committee of the International Council on Monuments and Sites at its meeting on 4 September 2010.

## Purpose of conservation

#### 1. The purpose of conservation

The purpose of conservation is to care for places of cultural heritage value.

In general, such places:

- (i) have lasting values and can be appreciated in their own right;
- (ii) inform us about the past and the cultures of those who came before us;
- (iii) provide tangible evidence of the continuity between past, present, and future;
- (iv) underpin and reinforce community identity and relationships to ancestors and the land; and
- (v) provide a measure against which the achievements of the present can be compared.

It is the purpose of **conservation** to retain and reveal such values, and to support the on-going meanings and functions of **places** of **cultural heritage value**, in the interests of present and future generations.

## **Conservation principles**

#### 2. Understanding cultural heritage value

**Conservation** of a **place** should be based on an understanding and appreciation of all aspects of its **cultural heritage value**, both **tangible** and **intangible**. All available forms of knowledge and evidence provide the means of understanding a **place** and its **cultural heritage value** and cultural **heritage significance**. **Cultural heritage value** should be understood through consultation with **connected people**, systematic documentary and oral research, physical investigation and **recording** of the **place**, and other relevant methods.



All relevant **cultural heritage values** should be recognised, respected, and, where appropriate, revealed, including values which differ, conflict, or compete.

The policy for managing all aspects of a **place**, including its **conservation** and its **use**, and the implementation of the policy, must be based on an understanding of its **cultural heritage value**.

#### 3. Indigenous cultural heritage

The indigenous cultural heritage of **tangata whenua** relates to **whana**, **hapu**, and **iwi** groups. It shapes identity and enhances well-being, and it has particular cultural meanings and values for the present, and associations with those who have gone before. Indigenous cultural heritage brings with it responsibilities of guardianship and the practical application and passing on of associated knowledge, traditional skills, and practices.

The Treaty of Waitangi is the founding document of our nation. Article 2 of the Treaty recognises and guarantees the protection of **tino rangatiratanga**, and so empowers **kaitiakitanga** as customary trusteeship to be exercised by **tangata whenua**. This customary trusteeship is exercised over their **taonga**, such as sacred and traditional **places**, built heritage, traditional practices, and other cultural heritage resources. This obligation extends beyond current legal ownership wherever such cultural heritage exists.

Particular **matauranga**, or knowledge of cultural heritage meaning, value, and practice, is associated with **places**. **Matauranga** is sustained and transmitted through oral, written, and physical forms determined by **tangata whenua**. The **conservation** of such **places** is therefore conditional on decisions made in associated **tangata whenua** communities, and should proceed only in this context. In particular, protocols of access, authority, ritual, and practice are determined at a local level and should be respected.

#### 4. Planning for conservation

Conservation should be subject to prior documented assessment and planning.

All **conservation** work should be based on a **conservation plan** which identifies the **cultural heritage value** and **cultural heritage significance** of the **place**, the **conservation** policies, and the extent of the recommended works.

The conservation plan should give the highest priority to the authenticity and integrity of the place.

Other guiding documents such as, but not limited to, management plans, cyclical **maintenance** plans, specifications for **conservation** work, interpretation plans, risk mitigation plans, or emergency plans should be guided by a **conservation plan**.

#### 5. Respect for surviving evidence and knowledge

**Conservation** maintains and reveals the **authenticity** and **integrity** of a **place**, and involves the least possible loss of **fabric** or evidence of **cultural heritage value**. Respect for all forms of knowledge and existing evidence, of both **tangible** and **intangible values**, is essential to the **authenticity** and **integrity** of the **place**.

**Conservation** recognises the evidence of time and the contributions of all periods. The **conservation** of a **place** should identify and respect all aspects of its **cultural heritage value** without unwarranted emphasis on any one value at the expense of others.

The removal or obscuring of any physical evidence of any period or activity should be minimised, and should be explicitly justified where it does occur. The **fabric** of a particular period or activity may be obscured or removed if assessment shows that its removal would not diminish the **cultural heritage value** of the **place**.

In conservation, evidence of the functions and intangible meanings of places of cultural heritage value should be respected.

#### 6. Minimum intervention

Work undertaken at a **place** of **cultural heritage value** should involve the least degree of **intervention** consistent with **conservation** and the principles of this charter.

**Intervention** should be the minimum necessary to ensure the retention of **tangible** and **intangible values** and the continuation of **uses** integral to those values. The removal of **fabric** or the alteration of features and spaces that have **cultural heritage value** should be avoided.

#### 7. Physical investigation

Physical investigation of a **place** provides primary evidence that cannot be gained from any other source. Physical investigation should be carried out according to currently accepted professional standards, and should be documented through systematic **recording**.

Invasive investigation of **fabric** of any period should be carried out only where knowledge may be significantly extended, or where it is necessary to establish the existence of **fabric** of **cultural heritage value**, or where it is necessary for **conservation** work, or where such **fabric** is about to be damaged or destroyed or made inaccessible. The extent of invasive investigation should minimise the disturbance of significant **fabric**.

#### 8. Use

The conservation of a place of cultural heritage value is usually facilitated by the place serving a useful purpose.

Where the use of a place is integral to its cultural heritage value, that use should be retained.

Where a change of **use** is proposed, the new **use** should be compatible with the **cultural heritage value** of the **place**, and should have little or no adverse effect on the **cultural heritage value**.

#### 9. Setting

Where the **setting** of a **place** is integral to its **cultural heritage value**, that **setting** should be conserved with the **place** itself. If the **setting** no longer contributes to the **cultural heritage value** of the **place**, and if **reconstruction** of the **setting** can be justified, any **reconstruction** of the **setting** should be based on an understanding of all aspects of the **cultural heritage value** of the **place**.

#### 10. Relocation

The on-going association of a **structure** or feature of **cultural heritage value** with its location, site, curtilage, and **setting** is essential to its **authenticity** and **integrity**. Therefore, a **structure** or feature of **cultural heritage value** should remain on its original site.

Relocation of a **structure** or feature of **cultural heritage value**, where its removal is required in order to clear its site for a different purpose or construction, or where its removal is required to enable its **use** on a different site, is not a desirable outcome and is not a **conservation** process.

In exceptional circumstances, a **structure** of **cultural heritage value** may be relocated if its current site is in imminent danger, and if all other means of retaining the **structure** in its current location have been exhausted. In this event, the new location should provide a **setting** compatible with the **cultural heritage value** of the **structure**.

### 11. Documentation and archiving

The **cultural heritage value** and **cultural heritage significance** of a **place**, and all aspects of its **conservation**, should be fully documented to ensure that this information is available to present and future generations.

Documentation includes information about all changes to the place and any decisions made during the conservation process.

**Documentation** should be carried out to archival standards to maximise the longevity of the record, and should be placed in an appropriate archival repository.

**Documentation** should be made available to **connected people** and other interested parties. Where reasons for confidentiality exist, such as security, privacy, or cultural appropriateness, some information may not always be publicly accessible.

#### 12. Recording

Evidence provided by the **fabric** of a **place** should be identified and understood through systematic research, **recording**, and analysis.

**Recording** is an essential part of the physical investigation of a **place**. It informs and guides the **conservation** process and its planning. Systematic **recording** should occur prior to, during, and following any **intervention**. It should include the **recording** of new evidence revealed, and any **fabric** obscured or removed.



Recording of the changes to a place should continue throughout its life.

#### 13. Fixtures, fittings, and contents

Fixtures, fittings, and **contents** that are integral to the **cultural heritage value** of a **place** should be retained and conserved with the **place**. Such fixtures, fittings, and **contents** may include carving, painting, weaving, stained glass, wallpaper, surface decoration, works of art, equipment and machinery, furniture, and personal belongings.

**Conservation** of any such material should involve specialist **conservation** expertise appropriate to the material. Where it is necessary to remove any such material, it should be recorded, retained, and protected, until such time as it can be reinstated.

#### Conservation processes and practice

#### 14. Conservation plans

A conservation plan, based on the principles of this charter, should:

- be based on a comprehensive understanding of the cultural heritage value of the place and assessment of its cultural heritage significance;
- (ii) include an assessment of the **fabric** of the **place**, and its condition;
- (iii) give the highest priority to the **authenticity** and **integrity** of the **place**;
- (iv) include the entirety of the **place**, including the **setting**;
- (v) be prepared by objective professionals in appropriate disciplines;
- (vi) consider the needs, abilities, and resources of **connected people**;
- (vii) not be influenced by prior expectations of change or development;
- (viii) specify **conservation** policies to guide decision making and to guide any work to be undertaken;
- (ix) make recommendations for the **conservation** of the **place;** and
- (x) be regularly revised and kept up to date.

#### 15. Conservation projects

Conservation projects should include the following:

- (i) consultation with interested parties and **connected people**, continuing throughout the project;
- (ii) opportunities for interested parties and **connected people** to contribute to and participate in the project;
- (iii) research into documentary and oral history, using all relevant sources and repositories of knowledge;
- (iv) physical investigation of the **place** as appropriate;
- (v) use of all appropriate methods of **recording**, such as written, drawn, and photographic;
- (vi) the preparation of a **conservation plan** which meets the principles of this charter;
- (vii) guidance on appropriate **use** of the **place**;
- (viii) the implementation of any planned **conservation** work;
- (ix) the **documentation** of the **conservation** work as it proceeds; and
- (x) where appropriate, the deposit of all records in an archival repository.

A conservation project must not be commenced until any required statutory authorisation has been granted.

#### 16. Professional, trade, and craft skills

All aspects of **conservation** work should be planned, directed, supervised, and undertaken by people with appropriate **conservation** training and experience directly relevant to the project.

All **conservation** disciplines, arts, crafts, trades, and traditional skills and practices that are relevant to the project should be applied and promoted.

#### 17. Degrees of intervention for conservation purposes

Following research, **recording**, assessment, and planning, **intervention** for **conservation** purposes may include, in increasing degrees of **intervention**:

- (i) preservation, through stabilisation, maintenance, or repair;
- (ii) **restoration**, through **reassembly**, **reinstatement**, or removal;
- (iii) **reconstruction**; and
- (iv) adaptation.

In many **conservation** projects a range of processes may be utilised. Where appropriate, **conservation** processes may be applied to individual parts or components of a **place** of **cultural heritage value**.

The extent of any **intervention** for **conservation** purposes should be guided by the **cultural heritage value** of a **place** and the policies for its management as identified in a **conservation plan**. Any **intervention** which would reduce or compromise **cultural heritage value** is undesirable and should not occur.

Preference should be given to the least degree of intervention, consistent with this charter.

Re-creation, meaning the conjectural **reconstruction** of a **structure** or **place**; replication, meaning to make a copy of an existing or former **structure** or **place**; or the construction of generalised representations of typical features or **structures**, are not **conservation** processes and are outside the scope of this charter.

#### 18. Preservation

**Preservation** of a **place** involves as little **intervention** as possible, to ensure its long-term survival and the continuation of its **cultural heritage value**.

**Preservation** processes should not obscure or remove the patina of age, particularly where it contributes to the **authenticity** and **integrity** of the **place**, or where it contributes to the structural stability of materials.

#### i. Stabilisation

Processes of decay should be slowed by providing treatment or support.

#### ii. Maintenance

A **place** of **cultural heritage value** should be maintained regularly. **Maintenance** should be carried out according to a plan or work programme.

#### iii. Repair

**Repair** of a **place** of **cultural heritage value** should utilise matching or similar materials. Where it is necessary to employ new materials, they should be distinguishable by experts, and should be documented.

Traditional methods and materials should be given preference in conservation work.

**Repair** of a technically higher standard than that achieved with the existing materials or construction practices may be justified only where the stability or life expectancy of the site or material is increased, where the new material is compatible with the old, and where the **cultural heritage value** is not diminished.

#### 19. Restoration

The process of **restoration** typically involves **reassembly** and **reinstatement**, and may involve the removal of accretions that detract from the **cultural heritage value** of a **place**.

**Restoration** is based on respect for existing **fabric**, and on the identification and analysis of all available evidence, so that the **cultural heritage value** of a **place** is recovered or revealed. **Restoration** should be carried out only if the **cultural heritage value** of the **place** is recovered or revealed by the process.

Restoration does not involve conjecture.



#### i. Reassembly and reinstatement

**Reassembly** uses existing material and, through the process of **reinstatement**, returns it to its former position. **Reassembly** is more likely to involve work on part of a **place** rather than the whole **place**.

#### ii. Removal

Occasionally, existing **fabric** may need to be permanently removed from a **place**. This may be for reasons of advanced decay, or loss of structural **integrity**, or because particular **fabric** has been identified in a **conservation plan** as detracting from the **cultural heritage value** of the **place**.

The **fabric** removed should be systematically **recorded** before and during its removal. In some cases it may be appropriate to store, on a long-term basis, material of evidential value that has been removed.

#### 20. Reconstruction

Reconstruction is distinguished from restoration by the introduction of new material to replace material that has been lost.

**Reconstruction** is appropriate if it is essential to the function, **integrity**, **intangible value**, or understanding of a **place**, if sufficient physical and documentary evidence exists to minimise conjecture, and if surviving **cultural heritage value** is preserved.

Reconstructed elements should not usually constitute the majority of a **place** or **structure**.

#### 21. Adaptation

The **conservation** of a **place** of **cultural heritage value** is usually facilitated by the **place** serving a useful purpose. Proposals for **adaptation** of a **place** may arise from maintaining its continuing **use**, or from a proposed change of **use**.

Alterations and additions may be acceptable where they are necessary for a **compatible use** of the **place**. Any change should be the minimum necessary, should be substantially reversible, and should have little or no adverse effect on the **cultural heritage value** of the **place**.

Any alterations or additions should be compatible with the original form and **fabric** of the **place**, and should avoid inappropriate or incompatible contrasts of form, scale, mass, colour, and material. **Adaptation** should not dominate or substantially obscure the original form and **fabric**, and should not adversely affect the **setting** of a **place** of **cultural heritage value**. New work should complement the original form and **fabric**.

#### 22. Non-intervention

In some circumstances, assessment of the **cultural heritage value** of a **place** may show that it is not desirable to undertake any **conservation intervention** at that time. This approach may be appropriate where undisturbed constancy of **intangible values**, such as the spiritual associations of a sacred **place**, may be more important than its physical attributes.

#### 23. Interpretation

Interpretation actively enhances public understanding of all aspects of **places** of **cultural heritage value** and their **conservation**. Relevant cultural protocols are integral to that understanding, and should be identified and observed.

Where appropriate, interpretation should assist the understanding of **tangible** and **intangible values** of a **place** which may not be readily perceived, such as the sequence of construction and change, and the meanings and associations of the **place** for **connected people**.

Any interpretation should respect the **cultural heritage value** of a **place**. Interpretation methods should be appropriate to the **place**. Physical **interventions** for interpretation purposes should not detract from the experience of the **place**, and should not have an adverse effect on its **tangible** or **intangible values**.

#### 24. Risk mitigation

**Places** of **cultural heritage value** may be vulnerable to natural disasters such as flood, storm, or earthquake; or to humanly induced threats and risks such as those arising from earthworks, subdivision and development, buildings works, or wilful damage or neglect. In order to safeguard **cultural heritage value**, planning for risk mitigation and emergency management is necessary.

Potential risks to any **place** of **cultural heritage value** should be assessed. Where appropriate, a risk mitigation plan, an emergency plan, and/or a protection plan should be prepared, and implemented as far as possible, with reference to a conservation plan.

## Definitions

For the purposes of this charter:

- Adaptation means the process(es) of modifying a place for a compatible use while retaining its cultural heritage value. Adaptation processes include alteration and addition.
- Authenticity means the credibility or truthfulness of the surviving evidence and knowledge of the cultural heritage value of a place. Relevant evidence includes form and design, substance and fabric, technology and craftsmanship, location and surroundings, context and setting, use and function, traditions, spiritual essence, and sense of place, and includes tangible and intangible values. Assessment of authenticity is based on identification and analysis of relevant evidence and knowledge, and respect for its cultural context.
- **Compatible use** means a **use** which is consistent with the **cultural heritage value** of a **place**, and which has little or no adverse impact on its **authenticity** and **integrity**.
- **Connected people** means any groups, organisations, or individuals having a sense of association with or responsibility for a **place** of **cultural heritage value.**
- Conservation means all the processes of understanding and caring for a **place** so as to safeguard its **cultural heritage value**. Conservation is based on respect for the existing **fabric**, associations, meanings, and **use** of the **place**. It requires a cautious approach of doing as much work as necessary but as little as possible, and retaining **authenticity** and **integrity**, to ensure that the **place** and its values are passed on to future generations.
- **Conservation plan** means an objective report which documents the history, **fabric**, and **cultural heritage value** of a **place**, assesses its **cultural heritage significance**, describes the condition of the **place**, outlines **conservation** policies for managing the **place**, and makes recommendations for the **conservation** of the **place**.
- **Contents** means moveable objects, collections, chattels, documents, works of art, and ephemera that are not fixed or fitted to a **place**, and which have been assessed as being integral to its **cultural heritage value**.
- **Cultural heritage significance** means the **cultural heritage value** of a **place** relative to other similar or comparable **places**, recognising the particular cultural context of the **place**.
- Cultural heritage value/s means possessing aesthetic, archaeological, architectural, commemorative, functional, historical, landscape, monumental, scientific, social, spiritual, symbolic, technological, traditional, or other tangible or intangible values, associated with human activity.
- Cultural landscapes means an area possessing cultural heritage value arising from the relationships between people and the environment. Cultural landscapes may have been designed, such as gardens, or may have evolved from human settlement and land use over time, resulting in a diversity of distinctive landscapes in different areas. Associative cultural landscapes, such as sacred mountains, may lack tangible cultural elements but may have strong intangible cultural or spiritual associations.
- **Documentation** means collecting, **recording**, keeping, and managing information about a **place** and its **cultural heritage value**, including information about its history, **fabric**, and meaning; information about decisions taken; and information about physical changes and **interventions** made to the **place**.
- Fabric means all the physical material of a **place**, including subsurface material, **structures**, and interior and exterior surfaces including the patina of age; and including fixtures and fittings, and gardens and plantings.

Hapu means a section of a large tribe of the tangata whenua.



- Intangible value means the abstract cultural heritage value of the meanings or associations of a place, including commemorative, historical, social, spiritual, symbolic, or traditional values.
- Integrity means the wholeness or intactness of a **place**, including its meaning and sense of **place**, and all the **tangible** and **intangible** attributes and elements necessary to express its **cultural heritage value**.
- **Intervention** means any activity that causes disturbance of or alteration to a **place** or its **fabric**. **Intervention** includes archaeological excavation, invasive investigation of built **structures**, and any **intervention** for **conservation** purposes.
- Iwi means a tribe of the tangata whenua.

Kaitiakitanga means the duty of customary trusteeship, stewardship, guardianship, and protection of land, resources, or taonga.

Maintenance means regular and on-going protective care of a **place** to prevent deterioration and to retain its **cultural heritage value**.

Matauranga means traditional or cultural knowledge of the tangata whenua.

Non-intervention means to choose not to undertake any activity that causes disturbance of or alteration to a place or its fabric.

Place means any land having cultural heritage value in New Zealand, including areas; cultural landscapes; buildings, structures, and monuments; groups of buildings, structures, or monuments; gardens and plantings; archaeological sites and features; traditional sites; sacred places; townscapes and streetscapes; and settlements. Place may also include land covered by water, and any body of water. Place includes the setting of any such place.

Preservation means to maintain a place with as little change as possible.

Reassembly means to put existing but disarticulated parts of a structure back together.

Reconstruction means to build again as closely as possible to a documented earlier form, using new materials.

**Recording** means the process of capturing information and creating an archival record of the **fabric** and **setting** of a **place**, including its configuration, condition, **use**, and change over time.

Reinstatement means to put material components of a place, including the products of reassembly, back in position.

Repair means to make good decayed or damaged fabric using identical, closely similar, or otherwise appropriate material.

- **Restoration** means to return a **place** to a known earlier form, by **reassembly** and **reinstatement**, and/or by removal of elements that detract from its **cultural heritage value**.
- Setting means the area around and/or adjacent to a **place** of **cultural heritage value** that is integral to its function, meaning, and relationships. Setting includes the **structures**, outbuildings, features, gardens, curtilage, airspace, and accessways forming the spatial context of the **place** or used in association with the **place**. Setting also includes **cultural landscapes**, townscapes, and streetscapes; perspectives, views, and viewshafts to and from a **place**; and relationships with other **places** which contribute to the **cultural heritage value** of the **place**. Setting may extend beyond the area defined by legal title, and may include a buffer zone necessary for the long-term protection of the **cultural heritage value** of the **place**.
- Stabilisation means the arrest or slowing of the processes of decay.
- Structure means any building, standing remains, equipment, device, or other facility made by people and which is fixed to the land.
- Tangata whenua means generally the original indigenous inhabitants of the land; and means specifically the people exercising kaitiakitanga over particular land, resources, or taonga.
- **Tangible value** means the physically observable **cultural heritage value** of a **place**, including archaeological, architectural, landscape, monumental, scientific, or technological values.

Taonga means anything highly prized for its cultural, economic, historical, spiritual, or traditional value, including land and natural and cultural resources.

Tino rangatiratanga means the exercise of full chieftainship, authority, and responsibility.

**Use** means the functions of a **place**, and the activities and practices that may occur at the **place**. The functions, activities, and practices may in themselves be of **cultural heritage value**.

Whanau means an extended family which is part of a hapu or iwi.

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# Appendix 3

Photography of the opening ceremony



Speeches at the Official Opening ceremony on 7<sup>th</sup> March 2015 (The photo is from the 'My Manawatu' Facebook page)



A veteran car and a horse returning from participating in the parade over the bridge -

## 7<sup>th</sup> March 2015 (Photo: Val Burr)



The Rangitikei Cycleway Sign alongside the bridge, following the opening ceremony, 7<sup>th</sup> March 2015 (Photo: Val Burr)



A scene from the Auckland Cycle Touring Association's North Island Tour, 2008, dated 7<sup>th</sup> November 2008. (Photo by 'Maurice', <u>http://acta.org.nz/gapix0804.htm</u>)





A scene from the Iron Gates Experience website: <u>http://www.irongates.co.nz/manawatu-</u>cycleway-on-the-country-road.html