IPENZ Engineering Heritage Registration Report

Hikitia

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Last amended: 6 December 2010

Floating crane *Hikitia* in Wellington Harbour, taking the Steeple Rock Lighthouse out to site, circa1930. Alexander Turnbull Library, EP-0779-1/2-G

Contents

A. General information

Name: *Hikitia*

Alternative names: Floating Crane *Hikitia*; *Hikitia* Crane Steamship; *Hikitia* Heavy Lift Floating Crane

Location:

Usually berthed at Taranaki Street Wharf

Wellington Harbour

Wellington

Geo-reference: N/A

Legal description: N/A

Access information: Access to the ship is restricted, although the *Hikitia* is visible at close range at its usual berth on Wellington city's waterfront at the northern end of Taranaki Street, and close to Te Papa Tongarewa Museum of New Zealand.

City/District Council: Wellington City Council

IPENZ category: Engineering Plant

IPENZ subcategory: Transport

IPENZ Engineering Heritage number:

Date registered: 13 December 2009

IPENZ recognition: Plaque (on the vessel)

Other heritage recognition:

- *New Zealand Historic Places Trust*: N/A
- *Local Authority District Plan*: N/A
- *Other:* N/A

B. Description

Summary

The *Hikitia* is a self-propelled steam powered floating crane which was constructed in 1926. That same year it travelled the oceans from Scotland to Wellington, where it has been based ever since. Once at its destination, the *Hikitia* entered the service of the Wellington Harbour Board, adding a further dimension to their existing stock of wharf based cranes. The *Hikitia* was owned by the Wellington Harbour Board for over 60 years, during which time it was involved in cargo handling, wharf and harbour facility construction and maintenance, and other heavy lifting activities. However, in the late 1980s the ship was sold, eventually being purchased by a dedicated group of enthusiasts whose aim was to conserve the *Hikitia* and maintain its operable state. This policy has been continued by the current owners, the Maritime Heritage Trust of Wellington, and recently involved the *Hikitia* going to the Lyttelton dry dock for remedial work in 2009.

The *Hikitia* is usually berthed at the Taranaki Street Wharf in Wellington. It is basically a floating platform, originally constructed by Fleming and Ferguson of Paisley, Scotland. At this time it had a crane from Sir William Arrol and Co. of Glasgow mounted on it. The ship has not undergone significant changes in the meantime, aside from several boiler replacements.

Because it is thought to be the oldest remaining self-propelled operable floating crane in the world, the *Hikitia* is of outstanding engineering significance. This vessel is also special for many notable feats. Besides its record-setting journey to New Zealand, *Hikitia*'s long service in Wellington Harbour has contributed greatly to the region's economy. The *Hikitia* is also a well-known and recognisable vessel which has been associated with many events, but none as sombre as the recovery of the *Wahine*.

Historical narrative

In Maori *Hikitia* means to lift and steer, which are the basic functions of the vessel.[1] The *Hikitia*'s floating platform was built in 1926 by Fleming and Ferguson of Paisley, Scotland, and then a crane, constructed by Sir William Arrol and Co. of Glasgow was mounted upon it. After initial testing and trials were completed, the *Hikitia* left Glasgow on 29 September 1926 bound for Ponta Delgardo in the Azores, under the command of Captain J. Fullerton. It took a few weeks to travel the 2,325 kilometre (km) distance, and then after bunkering the *Hikitia*'s journey continued to Colon and then through the Panama Canal on 2 November.[2]

Once in the Pacific Ocean, *Hikitia* encountered rough seas. The crew endured two anxious days with the superstructure of the vessel straining and some deck plates beginning to crack. However, conditions gradually improved which enabled repairs to be made. The ship reached Papeete Harbour, Tahiti, on 1 December and took on stores and coal, before setting out for its final stage to New Zealand. The last part of the journey was not without incident though, with the *Hikitia* running into a submerged object and also spending several more days battling rough seas and strong winds.[3]

Despite this adversity, the *Hikitia* arrived in Wellington Harbour on 21 December 1926 after a voyage of 82 days, 77 of which were spent at sea. The *Hikitia* was the last of a group of three vessels the Wellington Harbour Board (WHB) acquired in 1926 in an effort to modernize and expand its cargo handling and tug facilities.[4] According to Captain Fullerton the *Hikitia* proved to be a good sea boat, and although the journey was relatively slow going with an average speed of 7.5 knots (approximately 15 km per hour), it has been generally accepted that the *Hikitia*'s delivery voyage represents a record distance sailed for a ship of this type with its jib up. Travelling in this way was quite unusual, as most floating cranes journey with their jib dismantled and stored on deck in order to keep the vessel's centre of gravity low.[5]

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[1] 'Hiki,' Maori Dictionary, URL: http://www.maoridictionary.co.nz/index.cfm?dictionaryKeywords=hiki&n=1&idiom=&phrase=&proverb=&loan= (accessed 30 November 2010). Other synonyms include: to raise, take away, and convey; 'Tia,' Maori Dictionary, URL: http://www.maoridictionary.co.nz/index.cfm?dictionaryKeywords=tia&n=1&idiom=&phrase=&proverb=&loan= (accessed 30 November 2010).

[2] G. Bennett, 'Hikitia: A brief history,' MAANZ Marine Archaeological Association of NZ, URL: http://www.maanz.wellington.net.nz/hikitia/index.html (accessed 30 November 2010)

[3] Ibid.

[4] D. Johnson, *Wellington Harbour*, Wellington, 1996, pp.286-88

[5] Ibid., p.288; Bennett

Upon arrival in Wellington the *Hikitia* underwent a brief inspection at the Evans Bay Patent Slip before beginning service for the WHB. The *Hikitia* quickly became a valuable asset because it had almost double the lifting capacity of the WHB's existing wharf cranes.[6] Over its career the duties of the *Hikitia* included constructing wharves, erecting navigation lights around the harbour, and many heavy lifts, such as lifting railway locomotives and equipment for the platform at the Maui gas field, off-shore of Taranaki. The *Hikitia* also hoisted many sunken fishing boats and sadly was used to help demolish and lift large sections of the interisland ferry *Wahine*, which tragically foundered and sank as a result of damage sustained entering Wellington Harbour on 10 April 1968 (Figures 1-2).[7]

Figure 1: Floating Crane '*Hikitea'* [sic] lifting a small ship, Wellington Harbour, November 1931. Alexander Turnbull Library, EP-Transport-Supplies-Cranes-01

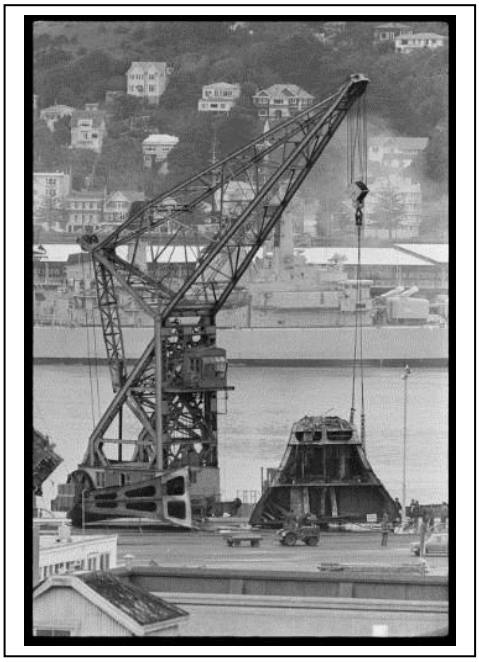

Figure 2: *Hikitia* floating crane lifting a portion of the ferry *Wahine*, Wellington, 1976. Alexander Turnbull Library, 35mm-00036-b-F

Perhaps the busiest time for the *Hikitia* was during World War Two. Indeed, during this period the demand for heavy lifting facilities in Wellington was so great that for a time the Lyttelton Harbour Board's floating crane, *Rapaki*, was sent to Wellington to assist the *Hikitia*. It was in this period that the *Hikitia* carried out one of its most delicate, and little known, operations. The *John Davenport*, a supply ship for the United States of America Marine Corps, was berthed in the inner harbour when a fire broke out on board. This posed a serious threat as the ship had sufficient munitions on board to cause a large explosion and potentially blow up a considerable part of

[6] Johnson, p.288

[7] Bennett

Wellington's waterfront. However, any crisis was averted with the *John Davenport* being hastily moved to Aotea Quay where the *Hikitia* was used to remove the deck cargo. This action enabled the fire brigade to get to the heart of the fire and extinguish it.[8]

In the early 1960s the *Hikitia* was generally only in use for 20 hours per week at most, and by the mid-1980s the vessel had become surplus to the requirements of the WHB.[9] Therefore the *Hikitia* was laid up for several years, then offered for sale, before being purchased by the Port of Wellington in 1988. However, it was not in this owner's possession for long as the *Hikitia* was sold to enthusiasts, Bob and Mary Box and John and Joy Ackrill, who formed the private company Hikitia Heavy Lift Limited in April 1990. With the help of a small group of supporters, this company substantially restored the upper structure of the neglected vessel and carried out the necessary on-going maintenance for the *Hikitia* to remain operational.[10] In doing so, the *Hikitia* escaped the scrapyard, as well as the fate of its sister crane, *Rapaki*, which has become a static exhibit in Auckland. As the *Hikitia* had not had its hull surveyed, it was considered a barge and not permitted to be self-propelled despite all the propulsion machinery being intact. Therefore, it had to be manoeuvred by tug, and from 1990 to 2006 nearly 300 lifts were carried out. This included a test lift of 100 tonne in September 2004 to maintain the survey limit of 80 tonne.[11]

In March 2006 ownership of the *Hikitia* passed to the Maritime Heritage Trust of Wellington, a fully incorporated charitable trust. The Trust aims to retain the vessel as a working ship and crane in order to continue to demonstrate the purpose for which it was built, and in doing so preserve the integrity of the vessel. The income earned through the commercial lifts that the *Hikitia* does helps fund these goals.[12]

In mid-2009 the vessel left Wellington Harbour for the first time in 83 years, when it was towed down to the Lyttelton dry dock to undergo maintenance and some repairs to its aging hull (Figure 3). As a means of repaying some of the cost of docking the vessel for over a month, the *Hikitia* undertook some work for the Lyttelton Port Company before it headed back to Wellington. Like most ports, Lyttelton no longer operates a floating crane and as such the *Hikitia* was used to relocate a large ice plant, which would otherwise have had to be dismantled in order to move it, saving

[8] Johnson, p.320

[9] Ibid., p.369

[10] Ibid., p.502; S. Ryan, 'Crane Event,' *Heritage New Zealand*, Iss.96 (Autumn 2005), p.29

[11] 'A Brief History of the Hikitia,' The home of the Hikitia, URL: http://www.hikitia.com/index.php?option=com_content&task=view&id=10&Itemid=25 (accessed 30 November 2010)

[12] Ibid.

time and expense.[13] The cost of the project exceeded $780,000 and several key contributors made it possible. These included the Lotteries Grants Board, Community Trust of Wellington, Lion Foundation, Wellington City Council, Pelorus Trust, Pub Charity, Wellington Waterfront Ltd, CentrePort Limited and significant private donations. The *Hikitia* returned to Wellington on 5 November 2009.

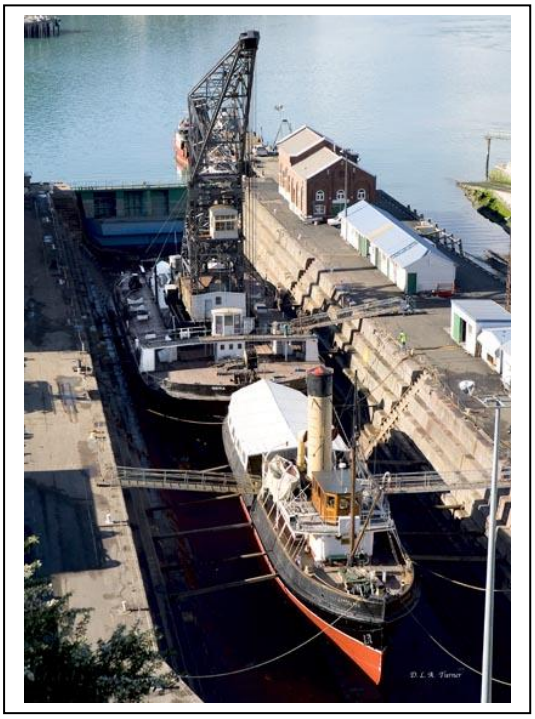

Figure 3: *Hikitia* in Lyttelton dry dock, 2009. Photograph courtesy of D. L. A. Turner

The on-going conservation efforts of the Maritime Heritage Trust of Wellington and its volunteers continue, and work is underway in the gear room, at the base of the crane, as well as on the reinstatement of the steam bilge pump, and the repair of rudder boxes and stocks.

The engineering heritage importance of the *Hikitia* was recognised by the Institution of Professional Engineers New Zealand with a plaque on the vessel, unveiled 7 December 2010.

[13] J. Hampton, '*Hikitia*: rare steam crane comes out of retirement,' 3news, 20 October 2009, URL: http://www.3news.co.nz/*Hikitia*-rare-steam-crane-comes-out-of-retirement/tabid/309/articleID/126201/Default.aspx (accessed 29 November 2010)

Social narrative

Throughout the human occupation of New Zealand, sailing and shipping have been vital to society and the economy. As European settlement developed from the mid nineteenth century, networks of ports and wharves became an essential and effective means of transporting people and cargo, as well as communications, around New Zealand.[14] In the newly established colony of New Zealand, Wellington was one of only three officially sanctioned ports, and makeshift jetties soon sprang up.[15]

By 1880, when the WHB was founded, Queen's Wharf and many other wharves and sheds lined the waterfront; this socially important space bustled with people and machinery.[16] Lifting machinery is an essential aspect of wharf operations, and wharf based cranes were common by the early twentieth century. In addition, cargo handling facilities included floating steam cranes in major ports, such as Lyttelton and Wellington. During the *Hikitia's* career, the WHB port operations grew exponentially, and with changes in technology and the shift to containerisation in the mid to late twentieth century there was a gradual move away from the use of floating cranes. By the early 1970s, when the *Hikitia*'s service was winding down, the port handled nearly four million tonnes of cargo and was the second busiest port in New Zealand. These changes in the way ports operated occurred throughout the nation, and as a consequence the *Hikitia* is now the only steam power floating crane in New Zealand which remains operable.

Its long service history around Wellington Harbour has meant that the *Hikitia* has been a familiar site to generations of people in the capital city. It had a considerable social impact, while in the service of the WHB, as an important component in the cargo handling facilities at the port, and in turn, the economy of the region. The vessel has also left an indelible mark through its role in significant operations, such as the high profile recovery of parts of the *Wahine*. Aside from its use as a floating crane, the *Hikitia* has also been involved in numerous other social activities in Wellington Harbour, such as being the platform and control centre for many public fireworks displays, as well as acting as a breakwater at the starting line of dragon-boat races.[17]

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[14] W. A. Laxon, 'New Zealand's Marine Engineering Heritage,' in R. F. Hill & P. G. Lowe (ed.), *Proceedings of Second Australasian Conference on Engineering Heritage*, *Auckland 14-16 February 2000*, Auckland, 2000, p.157

[15] Johnson, pp.41, 46

[16] Ibid., pp.142-43

[17] 'Hikitia leaves harbour after 83 years,' *Dominion Post*, 5 June 2009, URL: http://www.stuff.co.nz/dominion-post/wellington/2474257/Hikitia-leaves-harbour-after-83-years (accessed 29 November 2010)

Physical narrative

The *Hikitia* consists of a moulded hull with a flat deck on and mounted crane, which is a relatively basic, but effective, form. The overall length of the vessel is 48.58 metres (m), with a beam of 15.88m, and a moulded depth of 3.44m. The *Hikitia* is driven by compound surface condensing direct drive engines which were supplied with steam by a coal fired scotch boiler with two furnaces, and it is piloted from a small bridge on the deck and the crane controlled from a room high on the tower. The *Hikitia*'s displacement is recorded as 926 tonnes.

The crane is a separate unit mounted on the flat deck. The crane weighs 310 tons, has a radius of 19.5m, and the maximum height of the hook above water is 28.5m. It was designed to lift 80 tons at 15m radius, but bettered this on test by 25 per cent. The crane can lift 60 tons at 19.5m, and 15 tons at 22.5m. The speed of the lift is 80 tons at 1.2m per minute, 40 tons at 2.4m per minute, 25 tons at 3.6m per minute, and 15 tons at 7.2m per minute.

The only significant modifications made to the vessel over the years have been the replacement of the original boiler in 1963, and then in 1980 a similar but oil fired boiler was replaced by two small packaged oil fired units (Figure 4). In 2009 the vessel was towed to Lyttelton to be placed in dry dock and undergo maintenance, and hull and tailshaft repairs. This project began in June 2009 and was completed by late October.[18]

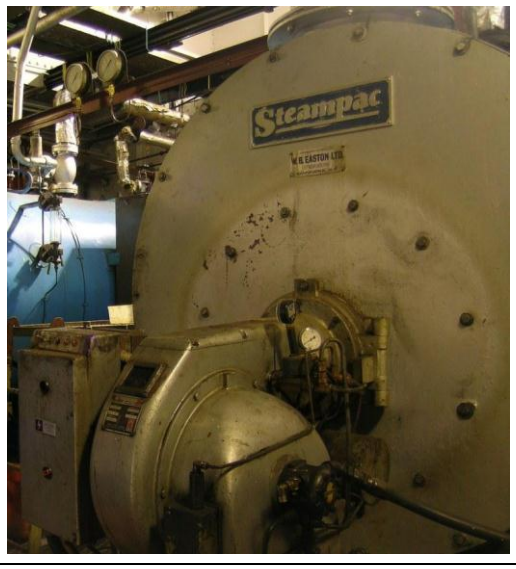

Figure 4: Boiler room of the *Hikitia*, 2010.

[18] '*Hikitia* leaves harbour after 83 years', '*Hikitia*: rare steam crane comes out of retirement'

Besides being the only operational vessel of this kind in New Zealand, the *Hikitia* is recorded in Norman Brouwer's, *International Register of Historic Ships* (2nd edition, 1999) as one of only eight floating cranes. Aside from the *Rapaki* and *Hikitia*, all of these vessels are barge cranes and therefore are not self-propelled. The oldest is the *Hercules* still operational in Panama, dating from 1913. It is not known whether this is steam powered or diesel, but it is noted as having to be moved by tugs it is evidently a barge crane. One other crane, the *Saatse*, in Germany was steam powered and is preserved intact as a museum exhibit. This means that the *Hikitia* is of international interest because it is probably the only remaining steam powered boat crane in the world which is still operable.[19]

Key physical dates

1926 Constructed

1963 Original boiler replaced

1980 1963 boiler replaced

2009 Maintenance and repairs at Lyttelton dry dock

[19] W. H. Pitt, '*Hikitia* Heavy Lift Floating Crane,' IPENZ National Heritage Committee Report, 2007

C. Assessment of significance

This ship is special because over its long history of service for the WHB it had a significant social and economic impact in its key cargo handling role. It is also significant because of its involvement with projects around the harbour which required its heavy lifting capacity, such as the demolition and retrieval of the *Wahine*. The *Hikitia* has outstanding engineering heritage importance as a now rare example of a steam floating crane dating from the early twentieth century. Remarkably, it is still operable and because of this the *Hikitia* is thought to be internationally unique, and it remains a valued asset in Wellington Harbour. The *Hikitia* is also of special engineering heritage significance for its mechanical engineering and notable feats, including its 1926 voyage to New Zealand from Scotland, which is believed to be the longest sea voyage for this type of vessel with its jib up.

D. Supporting information

List of supporting documents

Link to:

- *Hikitia*, URL: http://www.hikitia.com/index.php?option=com_frontpage&Itemid=1 (accessed 29 November 2010)
- '*Hikitia*: rare steam crane comes out of retirement,' 3news, URL: http://www.3news.co.nz/Hikitia-rare-steam-crane-comes-out-of-retirement/tabid/309/articleID/126201/Default.aspx (accessed 29 November 2010)

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