

# 3<sup>rd</sup> Australasian Engineering Heritage Conference 2009

## Telling Engineering Heritage Stories

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**SUMMARY:** *Engineering heritage is one of the most difficult areas of heritage management. On the positive side, two engineering heritage places are highly popular with the NZ public. For any heritage place, the essential element of long-term success is to effectively communicate its value in a manner that will capture the interest of the next generation. Modern audiovisual has great potential to both preserve engineering heritage and also communicate its value, and it must be used more widely.*

*This paper sets the strategic context for Tom Williamson's conference presentation on the power of audiovisuals as a medium to both preserve and to tell engineering heritage stories.*

### 1. MANAGING HERITAGE

Heritage involves people. Success in heritage involves being successful with people. Heritage is not predominantly a technical 'preserving' activity; it is equally a cultural 'valuing' activity. Heritage requires us to use communications to succeed in gaining people's interest and support. Crucial to this is getting people to see the value of heritage. In fact, when we focus on winning people's interest and support for the values, we find the 'technical' then tends to take care of itself.

The link between heritage and people's values is stressed by many heritage leaders. For example, in 2004 when ICOMOS celebrated its 40<sup>th</sup> year, Cevat Erder of Turkey was invited to contribute reflections and aspirations. Cevat is an eminent international ICOMOS leader, a foundation member who served nine years on the executive. Of the future he stated: "One should always keep in mind that the (cultural) attitudes of people towards their own heritage is fundamental. Only in this way can one correctly diagnose and cure the ailments affecting cultural heritage. For those that think that conservation is basically and merely a technical problem, I am thoroughly opposed to this belief, and take side with those who think that conservation is above all a cultural issue."

Where would we look to find the most effective way to get people to see value? We would look to the techniques of marketing. Around the world, it is the effective marketing of values that produces the strongest results. Professor Sam Ham of Idaho State University is considered a world leader in interpretation practice. He strongly advocates applying the marketing approach to creating effective interpretation of heritage sites, and it can be applied to heritage site management overall.

In order to effectively communicate heritage values of a site, the leading messages must be simple and clear. This often means that from several heritage values identified, we must select a single key value to lead communications about the site. This lead value is the one that is most likely to win the interest and support of people. Ideally we work on expressing this value in a single engaging sentence. For example, two marketing concepts useful to promoting a heritage site are the 'compelling reason to visit' and 'point of difference'.

A starting point in increasing success is agreement on exactly what heritage is. A simple clear definition is 'heritage is things of value to pass on to the next generation' and is promoted by Francois Le Blanc of the Getty Conservation Institute. Its simplicity and clarity give this definition great power. Even children can understand it, a vital quality, since we particularly must win children's interest. The table below analyses the elements of this definition:

Heritage element	Analysis
Things	Tangibles: artefacts, places, structures & buildings. Intangible: stories, skills & traditions.
Value	Value can be at a range of levels: personal, local, national, & international value. Values change over time. The work of heritage is to grow value.
Pass on	Essential to effective passing on: 1. The thing must be maintained in good condition 2. Someone must get to value it enough to want to accept it
Next generation	Not future generations, the next generation here now. This is not a task to postpone; it is inherent, vital and on-going

This strong definition exhibits one shortcoming; it can be seen to have a focus on things. Since the critical element of heritage is cultural, then the definition should inherently involve people. Adapting it to define heritage *management* creates a stronger proposition. 'Heritage management is passing on things of value to the next generation'. This clearly requires us to be successful in getting the next generation to value the sites being passed on to them.

**Case study 1:**

***Managing heritage at the 1908 Cape Brett Lighthouse***

In 2005 the redundant Cape Brett lighthouse urgently needed painting to save it from serious damage. Step one was to communicate to DOC managers - and Kiwis - why it was worth saving since NZ has 31 other lighthouses. It had no heritage listing.

The value chosen to lead communications was this: 'Cape Brett will be always popular to visit because it is the *only* lighthouse to survive complete in NZ - all the others are gutted shells.' This strong value statement along with considerable internal advocacy persuaded key DOC managers that \$450K was money well spent.

Today the painted lighthouse looks durable and it would be easy to think that it is now 'saved'. Not so. In 25 years this paint job will be showing stress, and will need re-doing. This means that DOC doesn't get a 25 year rest from working on Cape Brett.

DOC now faces 25 years of consistent hard work to effectively communicate to Kiwis the value of Cape Brett as a NZ Icon site, a must-do. If we get that right, funding in 2030 will be assured.

Managing the heritage at Cape Brett involves an on-going commitment to an equal partnership: the technical activity of painting together with the cultural activity of communicating value.

Communicating the value of engineering heritage has proved to be one of the hardest challenges in heritage management. How do you win people's interest and support of the value of sites that most people have hardly heard of, let alone seen?

As the motor age developed in the 1950s and 60s, people often included visits to engineering feats in their holiday itinerary, especially new bridges and hydro dams. These attractions have now been replaced by adventure tourism, vineyards and malls. In the same era, school parties visited factories, and some factories even offered public tours, but this too has also largely gone. Even back then, many key major industries were not visited, such as freezing works, dairy factories, and pulp mills. The engineering heritage conundrum then is if people didn't visit an industry in its operational heyday ... why would they want to once it is closed?

Engineering heritage in NZ was born more than 80 years ago in 1925 when the national rail system's first locomotive, Josephine, was rescued from the scrap yard and placed on display outside the Otago Early Settlers Museum, Dunedin. It remains there today, indoors.

Over the next 50 years development was slow, but it took off in the 1980s. In retrospect, the vital ingredient was the leadership of Historic Places Trust with John Daniels director and Geoffrey Thornton technical expert. They are the first to point out that many others contributed significantly too. Trust leadership was expressed in the recognition by registration of a range of engineering heritage places, quite visionary, the protection by purchase of 12 engineering heritage properties, the definitive 1982 Thornton book, and the 1983 national seminar with imported keynote speaker Neil Cossons. Another key overseas element was the 1979 Hudson book *World Industrial Archaeology* which provided an academic base.

However within ten years progress reached a plateau because the agency programs soon ran ahead of public support/values. Heart can now be taken from the recent success of two sites that have a significant engineering heritage dimension: developing the Otago Central Rail Trail and Karangahake Gold Mines. A 2007 Automobile Association study identified these two as the heritage sites that Kiwis most aspire to visit.

**Case study 2:**

***Whose values? The Otago Central Rail Trail***

The Rail Trail concept was grown from 1987 by a few biker locals, and a DOC ranger, who were aware of the growing success of rail trails overseas. Hardly anybody else could see value in the idea. Organised opposition was led by Federated Farmers who found support in a local MP. Amusingly, support emerged from farmer's wives who could see the potential for bed & breakfast businesses. Somehow, despite the odds, the 150 km trail opened in 1998.

In 2007 the Central Otago mayor, addressing an economic development forum, stated 'the future of Central Otago lies in the Rail Trail.' The former Federated Farmers leader even said on camera 'I opposed the rail trail and I was wrong'. This shows how values change over time. This is the job of heritage to work on value, whatever it takes.

It's not the heritage value that changed attitude, it's the economic value. The Otago Central Rail Trail Trust therefore picks economic value to lead their communications. They research economic value on an annual basis and communicate their findings: the number of bed & breakfast businesses, bed-night numbers, the number of jobs generated, average daily spend, and ... the estimated \$1M overall economic benefit in 2008.

## 2. THINGS OF VALUE

Heritage management is the activity of passing on *things of value*. A key step is determining which ‘things’ are of highest value to keep. We (should) have learned that the value criteria cannot run too far ahead of public support/values, or projects simply do not get funded. On the other hand, heritage is about creating a future for the past, so the value assessment must include a visionary element.

Initially value criteria were based on the *notable*, like the *first* NZ locomotive, Josephine, and the *last* NZ horse-drawn coach at Arthurs Pass, both rescued in the 1920s. In the 1970s emerged the wider notion of preserving a *representative range* of sites. A major NZ work was the 1982 Otago Goldfields Park Strategy by Tony Perrett. While theoretically sound, this approach proved to be too expansive and too ahead of public values to be applied very widely.

The 1980 Historic Places Act set out the ‘academic’ value criteria to be used in their registration program. These criteria were elaborated in the 1993 Act, but they include 26 different value ideas, which are too many to be applied individually, although the Trust persists in vain. Around the world a variety of value criteria are used, but they all can be, and should be, grouped under three main headings: history, fabric and culture. Values must be expressed simply to successfully engage the public.

In 2007 the Te Ara (on-line encyclopaedia) section on the timber industry tested an alternative more focused approach to NZ’s timber industry heritage based on just two value criteria: *outstanding & distinctive*, ideas taken from the World Heritage criteria. This approach suggested that the 1930s bush tramway system on Great Barrier Island might be a more outstanding engineering feat than the established Kiwi railway icons Raurimu Spiral, Rimutaka Incline or Denniston Incline. But even this approach is not sufficiently aligned to public demand to be useful.

### Case study 3:

#### *Edwin Fox - The Vision of a Future for the Past*

In 1940, NZ celebrated 100 years of its founding as a nation when the Treaty of Waitangi was signed with the Maori tribes. From 1840 onwards, tens of thousands of European settlers had arrived by ship. The major heritage achievement of 1940 was the securing and preservation of the Waitangi Treaty site, which is today a key site for national identity and tourism.

Immigrants to NZ severed their family and cultural ties forever and endured six weeks or more of privation to seek hope in a new land. In 1940 an opportunity existed to honour their courage and preserve their story. One immigration sailing ship, the 1853 *Edwin Fox* still survived in sound condition, one of few in the world. The 1940 challenge was to try to see what future generations might value.

Another 50 years would pass before the then much-decayed *Edwin Fox* was rescued for preservation, now in a ruined state. By then genealogy had become one of the most popular hobbies in NZ.

In 2003 the Department of Conservation began its 20 Icon sites program. This was a response to the Tourism NZ 2003 Research into Cultural Tourism Demand which identified the current nature of public demand for heritage. Icon sites are based on criteria that seek to reflect that public demand as revealed by the research. These values define an Icon site:

1. Tells a popular story of Kiwi identity ... *which sites*
2. Provides a wow visitor experience that is recommended to others ... *how we work*

Criteria (1) is founded on the notion of a high academic heritage value, and favours initially developing those sites whose values are most popular. Criteria (2) is about the potential of the site to effectively communicate those values. The approach matches current public demand, rather than trying to create a public demand through social marketing. Interestingly, half the Icon sites are engineering heritage sites. The growing public success of Icon sites indicates that this is an effective approach to responding to public value.

### 3. PASSING ON

Heritage management is the activity of *passing on* things of value. Success involves meeting two challenges:

1. The thing to be passed on must be maintained in good condition ... and
2. To be successful the pass must be made to an enthusiastic recipient

Tackling these challenges was addressed in two linked papers presented by this Author to the 2005 Sydney engineering heritage conference. Maintaining *good condition* arises from the difficulty of finding a sustainable future use for redundant engineering heritage. The paper 'Saving the Un-savable' offered five strategies to tackle this situation: buy time, invent use, branding & landmarks, finance strategies and build profile.

Creating *enthusiastic recipients* arises from the weak connection between engineering heritage and most people's lives. The second paper, 'Connecting People', provided a toolbox of actions to build public understanding and support, and thus create enthusiastic heritage recipients. The six tools discussed were: marketing, media, partnerships, wow visitor experience, celebrations, and measuring benefits.

This paper follows on from those two. It reviews four management approaches and assesses their success and potential in *passing on* engineering heritage:

- Heritage Places
- Museums
- Archives
- Audiovisual

The first two are mainstream approaches to all heritage that have provided some success for NZ engineering heritage, but have limits. The second two approaches are worthy of more serious consideration from now on. They offer worthwhile alternatives for engineering heritage that is truly unable to be saved.

### 4. HERITAGE PLACES

A mainstream approach to heritage is the preservation of heritage *places*. This approach offers high authenticity: a heritage place can potentially be preserved as a complete entity and retain the value added by its location. But location can be a liability too: sites in valuable locations face redevelopment pressure and conversely it may be difficult to develop a future for a site in a poor location.

Only the highest *value* places, key places, can be considered for preservation. In fact to try to preserve too much would be socially unhealthy because each generation must be allowed to make its contribution to development. The accepted tool for identifying the most valuable places is the *heritage assessment*.

Once a valuable place is identified, the ICOMOS charter provides guidance on the best *approach* to its preservation. Typically, *options* are considered before an agreed approach is chosen. An essential element of preservation success is *sustainability*. This usually means a viable *new use* must be found and some *adaptation* of the place may be required to suit that new use.

#### *Case study 4:*

##### *A New Use for Ormondville Railway Station*

Farming is the core of the NZ economy and we once boasted 1000 country railway stations to service those farm communities. During the 1980s the last of these stations faced extinction and immediate action was required to save the best of what remained. This led to the historic Ormondville railway station project, in Hawkes Bay, which aims to combine the heritage of rail along with its total economic and social interface with a rural community.

In 1988 the founders knew of no example in the world where the preservation of a complete country station on a working railway had been achieved. Hurdles included railways culture (opposition to the retention of facilities and to cooperating with outsiders), public safety issues with on-going rail use, and inventing a sustainable new use. Evidence showed that the local museum model was unlikely to succeed.

Success required a combination of approaches, none of which is viable individually, but which can work together to provide a sustainable future. The blend involves a bed and breakfast business in the station building, hosting visitors by charter bus or train, modest rail operations, and a regional heritage preservation group. It has proved possible to retain an entire country rail precinct dating from 1880 including signals, sidings and rolling stock.

The preservation of engineering heritage *places* began in the 1930s when water engineers surreptitiously shielded from demolition the redundant Western Springs pumping station in Auckland.

Since the 1970s NZ has had significant success in preserving a range of key industrial places including these: brick manufacture, bridges, coal gas, coal mining, coastal fortifications, engineering workshops, flax milling, flour milling, gold mining, lighthouses, lime burning, power generation, rail routes, sawmilling, water supply and whaling.

Despite that success, NZ has not managed to preserve key heritage places representing the core economy, the farming industry. Success here might involve preserving a freezing works, a dairy factory and a woollen mill to represent the three principal farm exports. These should be supplemented by other related sites like a sale yards, a milking shed and a shearing shed. Historic Places

Trust made a visionary start in 1980 by securing and preserving Totara Estate near Oamaru, where meat was prepared for NZ's first export shipment.

This raises the conundrum: if people didn't want to visit such places in their operational heyday, why would they want to visit once they are closed and lifeless? Is too great a shift in values required for a historic dairy factory, for example, to ever become a reality? A radical shift in approach may be required. Shantytown museum, for example, met this challenge innovatively in 2007 by animating its historic sawmill. Earlier plans to continue to operate the sawmill small-scale commercially at the museum proved to be not practically feasible.

In terms of genuine operations, Dawson Falls power station managed by DOC stands proudly alone. Its 1894 (circa) General Electric generator still works 24/7 placing it in world class. You can stay there in the up-market mountain lodge that it powers. Three other places offer operations on occasions as special demonstrations: Dunedin gas works, Golden Point stamper battery (Otago) and MOTAT beam engine (Auckland).

In terms of management, most of these engineering heritage places are funded by central government, mostly by DOC. The exceptions are few: council support (gas works), voluntary groups (rail station sites) and private (a flax mill). This situation shows an inherent shortcoming in the historic *places* approach. Places are managed by staff whose positions get funded regardless of results. In contrast, many museums have an economic discipline - they have to be successful each year to survive.

At Denniston Coal Mine, and other recent projects, DOC is seeking to remedy this shortcoming. The approach is to entice visitors with popular angles of kiwi identity and to provide a memorable visitor experience. At these sites, visitor numbers and visitor recommendation will be measures of success, not just the number of relics preserved. At Denniston, hosting of visitors to the mine will be a private contract.

The very minor involvement of volunteer groups in engineering heritage also illustrates how hard it is to succeed relative to other heritage. This is why this paper promotes archives and audiovisuals as vital supplementary key tools for engineering heritage.

## 5. MUSEUMS

Museums usually take things away from their sites and context, a possible down-side. Their strengths are they can provide a secure environment and potential for greater visitor numbers. Most museums featuring engineering heritage date from 1970s: some struggle, some are a huge success; one even closed; none are central government; some are private, with the Caterpillar Museum in Rotorua as a great example.

Museums have to be successful with the public or they may not survive. NZ has some outstanding museums that have a strong engineering heritage theme: Kauri (Northland), MOTAT (Auckland), Tawhiti (Hawera), Shantytown (West Coast) and Ferrymead (Christchurch). Tawhiti is a modest private undertaking that provides an extraordinary visitor experience. Notably, the national museum, Te Papa, has downplayed both engineering and farming heritage.

In the private sector, transport heritage has survived the best: aviation & shipping but particularly road and rail, with a focus on vehicles and locomotives in particular. The rail heritage sector is outstandingly successful; it is voluntary, a well-organised business, and reaches a large audience by offering train rides. I must resist delving too far into the realm of museums as they are an area of great expertise in which I have only limited professional experience.

## 6. ARCHIVES

Archives have, in theory, a particularly strong role to play in engineering heritage. Most industrial undertakings have proved impossible to retain and preserve as heritage places. Preserving the key relevant plans and specifications would provide a more modest alternative. In reality, there is no NZ archive for such material, and no immediate prospect for one. It would likely take a bequest from a successful retired industrialist, along with institutional partners, to make this initiative happen.

In 2002 Professor Peter Lowe, of Auckland University Engineering Faculty, recognised this need and proposed through IPENZ to develop an archives concept, but the initiative stalled once he moved to Australia. A model is found in the USA where the HAER, Historic American Engineering Record, is federally funded and has assembled a stunning archive of US engineering achievement.

HAER was established in 1969 as a joint venture by the National Park Service, Societies of Professional Engineers and the Library of Congress to document historic sites and structures related to engineering and industry. Subjects range from individual sites or objects, such as a bridge, ship, or steel works; to larger systems, like railroads, canals, electronic generation and transmission networks, parkways and roads. HAER works with a related program, HABS, Historic American Buildings Survey.

The resultant permanent collection of architectural, engineering and landscape documentation at the Library of Congress consists of measured and interpretive drawings, large-format black and white and colour photographs, written historical and descriptive data, and original field notes. The collection captures the American experience through approximately 40,000 recorded historic structures and sites, from American

Indian cliff dwellings at Mesa Verde to space-age technology at Cape Canaveral.

Archival institutions in themselves have little potential to be widely valued by the general public as a place to visit. In fact a growing trend is to visit archives on line, as attested by the success of NZ's Papers Past. It is the job of the researcher and author to transform the stories held in the archives into books that engage a wider public. Thus Hearn and Hargreaves unfold the story of the development of gold dredge technology in Otago. And Bremner, in contrast, captures as the social and economic history of NZ woollscours, 'dark satanic mills' rarely visited by anyone.

**Case study 5:**

***A Future for Tuck's Sawmill Engineering Plan.***

Over the course of 100 years New Zealand evolved a distinctive technology of sawmill machinery designed to successfully handle the variable special characteristics of our 'native' timbers. NZ technology was based on adaptation of ideas from North America, England, and Europe, rather than invention. This native timber industry, as it was called at the time, and its specialised sawmills, faded away in the 1980s and little remains. Luckily a complete sawmill is preserved at Shantytown.

In my possession is an original 1.4 x 0.9m detailed plan of Tuck's Sawmill built near Taupo in 1947. This was one of the last native sawmills built in NZ, and incorporated all the best features, a significant step up from the more typical mill at Shantytown. As such Tuck's Sawmill represents the peak of NZ distinctive technology.

Today nothing remains of the mill except the plan. This sets out all the design parameters for the mill, and as such it comprehensively documents the technology. It has a temporary safe home with me, but key issues are who in the future will value this plan and where will it be preserved?

**7. AUDIOVISUAL**

NZ is very fortunate that from 1941 to 1987 the National Film Unit documented a wide range of NZ life, including our farming and engineering heritage. Much of this footage was custom-shot for the *Weekly Review*, a ten minute, later 20 minute *Pictorial Parade*, both mini-documentaries screened between the cartoons and the main movie. This footage is high-quality and the creative approach taken 50 years ago stands up well with the passing of time. For example, women and children get some strong coverage. Thankfully all this is preserved in the Archives New Zealand, and it offers a rich resource for modern audiovisual presentations.

Audiovisual is a medium that connects with the next generation: consider the success of YouTube. It has also become very accessible: most homes have a DVD player. Niche DVD products are now readily found and

purchased on the web. Accessibility will further improve as DVDs become downloadable on line. Techniques like animation permit the reconstruction in an engaging manner of vanished facilities and processes.

Tom Williamson of Upper Hutt is a Kiwi example of a professional film-maker working in engineering heritage. Tom has recently brought to life very successfully a range of industrial themes, and for this reason he is the partner in this paper. His contribution here is a 15 minute selection of material that demonstrates the powerful role that audiovisual can play, and must play in the future, in promoting the value of engineering heritage sites, thus leading to their preservation.

The presentation demonstrates key elements that help bring to life an engineering heritage audiovisual:

- Archival footage
- Contemporary footage
- Animated recreations
- Oral interviews
- Preservation work in progress
- Bringing history to life

Audiovisual might be the only effective way to preserve difficult heritage like freezing works, wool scours and dairy factories. At minimum, a powerful audiovisual is a great first step towards increasing the value seen by the public in that heritage.

Audiovisuals enable us to initially engage people in their homes via short clips hosted on the web. These must be cleverly designed to tantalize. Audiovisual enables us to communicate much more powerfully with visitors on-site or in museums. Research shows that the average person spends very few minutes reading static site panels.

At the North Head Fort in 2009, DOC counted 43,000 visitors watching its new 12-minute audiovisual, with 97% watching the full length. A theatre is not always necessary. A Rail Trail audiovisual could be made for bed & breakfast hosts to show in their lounges to guests. We can reach further into people's homes by selling visitors extended versions of the audiovisuals viewed on site.

It is vital that audiovisual approach and content are skilfully designed to capture the viewer's imagination, so that they come to strongly value the heritage that is being presented. Then we will have succeeded in bringing to life and passing on something of value, which is the essence of heritage.

#### Case Study 6:

##### *Bringing the forgotten NZ Flax Industry to Life*

The story of New Zealand's all-but-forgotten flax industry is brought to life by Tom Williamson in DVD format as a pilot on NZ engineering heritage topics. The flax industry used processing technology specifically developed for NZ.

The heritage core of this DVD is high quality film programs created by the New Zealand National Film Unit in its heyday. These are supplemented by contemporary custom footage including the UK Chatham Naval Dockyards, Dunedin's 100 year old plus rope-works (since closed) and extended interviews with two industry old-timers. Gaps are filled by 200 archival pictures and paintings from museums and libraries in New Zealand and overseas.

## 8. CONCLUSION

Engineering heritage is proving to be one of the most challenging facets of heritage. This paper sets out an approach that will increase success in the future. The approach is to focus on improving effective communications to win the interest and support of a far wider range of people. Audiovisual is a medium that has powerful potential to communicate heritage values. Once we get the people part right, the preservation part seems to take care of itself.

## 9. SCOPE

This paper does not define or set boundaries on *engineering* heritage. As a guide, it is the engineering element of any heritage. While traditional farming practices are not included, the farm products processing industries are. However the mechanisation of a farm process introduces an engineering element. This is demonstrated in the mechanisation of ploughing, top-dressing, milking and shearing. Hayes Engineering Works (Otago) represents the early evolution this important link between engineering and lifting the efficiency of farm operations. An element of innovation links the Hayes wire strainer, still used, to the specialised Fletcher top-dressing aircraft designed and manufactured in Hamilton. Civil works to improve farming include, for example, major 1920s dredging works on the Hauraki and Rangitikei Plains to establish drainage and transform them into prime dairy production areas. The term *engineering* heritage can be broadly considered the same as *industrial* heritage.

## 10. REFERENCES:

Automobile Association: 101 Kiwi Must-do's, find at [www.aatravel.co.nz/101/index.php](http://www.aatravel.co.nz/101/index.php)

*Comment: the results of an innovative research project to determine the travel aspirations of Kiwis. The Central Otago Rail Trail and Karangahake Gold Mines were rated as the two heritage sites that Kiwis most aspire to visit: and both are engineering heritage sites.*

Bremner J, 1985, *Woolscours of New Zealand. Tales of the Early Industry*, Caxton Press, Christchurch.

HAER Historic American Engineering Record: find at [www.nps.gov/history/hdp/haer/index.htm](http://www.nps.gov/history/hdp/haer/index.htm)

*Comment: The research program is run by the US National Parks Service while the records created are held by the Library of Congress.*

Hearn T J & Hargreaves R P, 1985, *The Speculators Dream. Gold Dredging in Southern New Zealand*, Allied Press, Dunedin.

Ham S, 2003, 'Rethinking Goals, Objectives and Themes', *Interpscan*, vol. 29, no. 4, pp 9-12.

*Comment: Sam Ham advocates marketing techniques to attract people's initial attention and communicate key values. He more fully develops this approach in a training program delivered in NZ in 2005 and 2005, sponsored by DOC & Te Papa.*

Historic Places Trust, 1984, *New Zealand's Industrial Past. Papers presented at a seminar on Industrial Archaeology in NZ Christchurch 1983*, Historic Places Trust, Wellington.

*Comment: This seminar brought together those working on NZ's engineering heritage and signalled the Trust's support for this new activity.*

Hudson K, 1979, *World Industrial Archaeology*, Cambridge University Press, London.

*Comment: Hudson's work provided much of the academic inspiration for the 1980s growth in NZ engineering heritage activity.*

LeBlanc F, 2007, *What is Heritage? An Introduction to Values-Based Management*, UNITAR, Hiroshima. [http://www.unitar.org/hiroshima/sites/default/files/WHS\\_07\\_Executive\\_Summary.pdf](http://www.unitar.org/hiroshima/sites/default/files/WHS_07_Executive_Summary.pdf)

*Comment: François LeBlanc was Head of Field Projects for the Getty Conservation Institute, Los Angeles. He presented at the 2007 Workshop on the Management and Conservation of World Heritage Sites, hosted by UNITAR (United Nations Institute for Training & Research) in Hiroshima.*

Mahoney P (with other authors), 1991, 'IPENZ 1990 Project: Marking 100 Notable Engineering Works', *Proceedings of the 6<sup>th</sup> National Engineering Heritage Conference*, Engineers Australia, Perth, Western Australia.

Mahoney P, 2005, 'Saving the Un-Saveable Non-adaptable Heritage', *Proceedings of the Second International Engineering Heritage Conference*, Engineers Australia, Sydney, New South Wales, published on CD.

Mahoney P, 2005, 'Connecting People', *Proceedings of the Second International Engineering Heritage Conference*, Engineers Australia, Sydney, New South Wales, published on CD.

Mahoney P, 2009 *Industrial Heritage in NZ*: lecture to heritage management post-graduate students, Victoria University, Wellington

Mahoney P, 2009 (paper in preparation) *The KTC Great Barrier Tramway: An Outstanding Railway Incline Achievement*, Department of Conservation, Wellington

National Film Unit productions, the Weekly Review and successor black & white film programs; held by Archives New Zealand in Wellington; find on Ziln, NZ's first on-line TV channel, [www.ziln.co.nz](http://www.ziln.co.nz).

*Comment: Weekly Review was a 10-minute program offering two or three stories, many with an engineering heritage element. It became a 20-minute program renamed Pictorial Parade. Some programs had a single subject such as the brilliant record of the Denniston Incline just before it was closed (Parade no. 195). All programs are now available on-line in sufficient quality to enable assessment of potential audiovisual use.*

Perrett T, 1982, *Managing the Otago Goldfields Park*, DOC, Dunedin, find at [www.doc.govt.nz](http://www.doc.govt.nz), keywords: Otago Goldfields.

*Comment: This paper, first published in the 1984 'New Zealand's Industrial Past', set out a comprehensive thematic approach to heritage management.*

Te Ara, Bush Transport, contributed by Paul Mahoney; find at [www.teara.govt.nz](http://www.teara.govt.nz), keywords: bush tram

Thornton G, 1982, *New Zealand's Industrial Heritage*, Reed, Wellington.

*Comment: This book provided the first comprehensive overview of NZ's industrial and engineering heritage and is a major reference work.*

Tourism NZ, 2003, *Demand for Cultural Tourism Research*, by Colmar Brunton, find at [www.tourisminfo.co.nz](http://www.tourisminfo.co.nz), keywords: demand cultural tourism research

## 11. APPENDIX 1: BRINGING HERITAGE TO LIFE

Engineering heritage audiovisuals by Tom Williamson:

- New Zealand Flax - A Fortunate Fibre
- Bottled Lightning: *an astonishingly early hydro-electric power station at Reefton*
- Dawson Falls: *the earliest General Electric dynamo working outside the USA*
- The Lyttelton Timeball Station: *the importance of time explained, in establishing 'place'*
- The Last Voyage of the Edwin Fox: *an immigrant ship now the 9<sup>th</sup> oldest surviving ship in the world*

These programs are available from Tom Williamson

Custom work on Department of Conservation sites:

- Kaiarara Dam (Great Barrier Island)
- Woodstock Gold Mine (Karangahake)
- Golden Gateway (the Karangahake Gorge railway)
- Big River Gold Mine (near Reefton)

## 12. APPENDIX 2: FINDING KEY PLACES

Find information on heritage places referred by searching their names in Google NZ:

Dunedin Gasworks Museum  
Dawson Falls Power Station, Taranaki  
Caterpillar Museum, Rotorua  
Edwin Fox, Picton  
Ferrymead Museum, Christchurch  
Golden Point Stamper Battery, Otago  
Great Barrier Island Tramway  
Hayes Engineering Works, Otago  
Kauri Museum, Matakoho, Northland  
MOTAT, Auckland  
Ormondville Railway Station, Hawkes Bay  
Otago Central Rail Trail  
Shantytown Sawmill, West Coast  
Tawhiti Museum, Hawera  
Totara Estate, Otago