

Economical Preservation of Places of Engineering Heritage

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SUMMARY A method is presented whereby places of Engineering Heritage can be preserved economically. This would enable the preservation and promotion of public understanding of Australian Engineering Heritage through the creation of commercially operated tourist attractions.

1 INTRODUCTION

Many studies have been carried out on places of interest and of places of Engineering significance. For such places to be economically viable and financially self supporting, one method of operation is to develop that place as a tourist attraction. However, as a tourist attraction it must compete for the tourist dollar, without sacrificing its Engineering Heritage. As a result of promotion and use of the place, management is able to promote a better understanding of our Engineering Heritage through the creation of recreational and educational facilities at the site.

2 EVALUATION OF PLACES OF ENGINEERING SIGNIFICANCE

2.1 Conservation Plan

Every place of Engineering Heritage requires the appropriate conservation process. The term process is taken from the Burra Charter, meaning the type of conservation undertaken.

In preparing a conservation plan first analyse the documentary evidence of reports, ground photos, maps, plans, surveys, oral information and publicised material as well as the physical evidence of the fabric of the place. Prepare a statement of significance stating precisely why the place is significant.

Secondly prepare a conservation policy. This is a summary of the conservation approach and the use proposed for the building or site.

The implementation of the policy will be the guideline for its future development. The policy should ensure that our Australian Engineering Heritage is preserved and allow for future restoration and reconstruction. The place may be suited for adaption and compatible uses, which could sustain a financially viable development.

2.2 Market Potential

The success of a tourist attraction is dependent upon its proximity to a large residential or tourist population. If there is no large population base, it must rely on tourists from adjoining population areas, therefore the closer the attraction is to other tourist nodes, the higher will be the "market penetration rate".

The market potential can be divided into three main

segments:

- The Resident and Regional Segment
- The Domestic Tourist Market
- The International Tourist Market

Each have their own growth rate potential and visitor penetration rates.

2.3 Financial Assessment

From the assessed market penetration rates, projected attendance levels and admission charges, the commercial viability of the complex can be assessed. The capital requirements, revenue and operating cost profile for the complex, needs to be developed.

2.4 Constraints and Benefits

The constraints to development, such as location, access, capital costs, physical features of the site and alternate competing attractions must be analysed and included in the overall assessment of the project. The benefits should include the preservation of Engineering Heritage in a form that it will promote public interest. The tourist attraction should educate the tourist and at the same time provide a means of recreation.

3 WALKA WATERWORKS

3.1 History and Description

The conservation of the Walka Waterworks can be used to illustrate the above concepts.

The Waterworks are situated 1.5 kilometres north of Maitland in New South Wales. The site of 64.27 ha is comprised of the old machinery buildings, filter tanks and a storage reservoir with a stated capacity of 782 megalitres.

Construction began in 1880 and it supplied water to Newcastle and surrounding districts from 1887 to 1940. It was put on standby after the completion of the Chichester Dam north of Dungog and in 1945 the last steam trials were conducted. In 1949 the machinery was removed and sold for scrap. The N.S.W. Electricity Commission used the pumping station site as a power station from 1953 to 1978 and the buildings have since been maintained by the Hunter District Water Board.

3.2 Planning Study

In 1983 a planning study was carried out to determ-

ine the most appropriate use of the site.

3.2.1 Analysis of existing buildings

The site had been thoroughly researched by M's N. Malnic. The research covered the documentary evidence including an oral description by John McLeod the resident engineer of the last steam trials of the machinery, conducted in 1945. The existing structures are the two storey brick building that housed the beam engines, boiler rooms and chimney stack. Adjacent to these are the filter beds, settling tanks, water intake structure, clear water tank, reservoir and the stone faced dam wall.

These structures are in a good state of repair although no machinery has been left.

3.2.2 Heritage

The total site is one of cultural significance in terms of identifying its archaeology and the more obvious Engineering Heritage items on the site consisting of the items listed in paragraph 3.2.1. There are also the remains of the Chief Engineer's Cottage and workmen's cottages.

3.3 Tourist Demand Analysis

3.3.1 Market potential

In order to predict the market demand, the market was segmented into categories described below. The potential market and estimated probable penetration rates for each market segment was estimated to arrive at the projected range of attendance levels.

3.3.2 Resident market

The site is located near the centre of population of the main urban areas of Cessnock, Singleton, Maitland and Newcastle.

Within a radius of 0 to 50 kilometres live 407 350 people, within 0 to 100 kilometres live 641 790 people.

3.3.3 Tourist and regional demand

The Hunter Region, with an estimated population in 1981 of 455 400 is second only to Sydney as the State's most populous region. The region is the third most popular tourist destination in N.S.W., after Sydney and the North Coast with an estimated 2 600 000 visitors in 1980/81. The regional population is projected to rise to 556 000 by the year 2001.

This project will attract visitors from surrounding regions. The following table shows the total number of people in each segment.

TABLE I

MARKET SEGMENTS AND POPULATION

Distance from Maitland	Population
0 - 50 km	407 350
50 - 100 km	234 440
100 - 160 km	3 100 000

3.3.4 Age structure

The age structure is an important consideration in the planning of recreational developments, as different facilities tend to attract different age groups.

Of the total regional population of 455 400, 34% were aged between 0 to 19 years, 30% between 20 to 39 years and 36% between 40 to 75+ years.

3.3.5 Domestic tourist monitor

This monitor records the visits to various regions and analyses the reasons for these visits. This gives a very good indication of the tourist potential of the region. Of the total visits to the Hunter Region, 55% were for pleasure/holiday, 27% for visiting friends or relatives, 1.5% for educational or school excursions and the remainder for business and other reasons.

3.4 Demand Characteristics

Analysis and projection of visitation levels are generally best based on visitor attendance by geographically defined market segments.

Analysis of outdoor museums and historic site attractions by Economic Research Unit has indicated a definite relationship between distance of visitor's place of residence from an attraction and their propensity to visit the attraction, called the "market penetration rate".

The available markets are those people residing in large residential populations within 150 to 160 kilometres from the attraction. This is also the overseas experience.

Potential markets do not guarantee attendance levels or financial viability, however, they identify the market associated with the development.

TABLE II

MARKET SEGMENT PENETRATION RATES

Market Segment Kilometres	Suggested Achievable Penetration Rates %
0 - 50 km	15% - 25%
51 - 100 km	10% - 20%
101 - 160 km	10% - 15%

3.4.1 Projected visitor attendance

The Waterworks site has a large residential population within 50 kilometres together with a large potential tourist population situated within 100 kilometres of the site.

The projected visitor attendance for the short term and long term has been estimated using conservative figures of market penetration.

TABLE III

ASSUMED WALKA WATERWORKS MARKET POTENTIAL

Market Segment Kilometres	Population	Market Penetration Rates %
0 - 50 km	407 350	7.5% - 15%
50 - 100 km	234 440	5% - 10%
100 - 160 km	3 100 000	0.5% - 5%

Existing visitor attendances for museums and outdoor attractions are given to compare with the anticipated visitor attendance for Walka. These figures are from a report by W.D. Scott and Co. P/L 1980:

- Lachlan Vintage Village at Forbes	47 000 p.a.
- Norman Lindsay Gallery & Museum at Springwood	26 960 p.a.

3.4.2 Elements of successful attraction

From the various studies that have been conducted, a number of points emerge that can be identified as criteria for success. W.D. Scott identified:

- location near major population centres or major tourist resorts
- the need for entrepreneurial backing to develop a theme with wide appeal and market it successfully
- to continually develop theme parks in order to gain repeat patronage.

3.5 Financial Feasibility

This analysis covers the estimated revenue and expenditure in operating the attraction for various stages.

Stage 1 has the initial high capital works costs, whilst Stages 2 and 3 attractions should be on a franchise or lease agreement, where the operator would pay on a percentage of gross turnover of the attraction.

The financial viability will depend on:

- a) Manpower
The general ratio of one staff member per 5 000 to 6 000 visitors is considered to be an acceptable average
- b) Complementary Attractions
These attractions should account for 20% to 35% of total revenue
- c) Promotion
Promotion is essential for this development. It should be integrated with other surrounding attractions and form part of a cluster within the region.

3.5.1 Revenue

Visitor expenditure can be estimated at \$4.50 to \$6.50 per visitor in 1980 terms. This includes admission charges, books, leases and concessions.

3.5.2 Expenditure and running costs

The expenditure will vary from site to site with the capital expenditure on access roads, parking areas, provision of water, sewer, and power being

large cost items early in the project life. Sufficient funds must be available to create a favourable tourist impression when the site is opened.

The main running costs will be staff, maintenance, cleaning, administration expenses, insurance and promotion at approximately \$0.30 per visitor.

3.6 Constraints and Benefits

The major internal constraints to development of the Waterworks relate to the heritage items, unique physical features of the land form, water quality and the existing flora and fauna.

The benefits of the development are the conservation of our Engineering Heritage. The technical knowledge as portrayed by the Waterworks are to be preserved and displayed, together with the history of other technology, particularly those related to water uses and the use of steam power. The development calls for the retention and restoration of all existing buildings and structures.

The lagoon will provide a major attraction in the summer months for passive water recreational activities such as sailing, wind surfing and canoeing.

Some of the tanks could be converted to shallow wading pools for children, providing a background for engineering education, without abusing the existing structure.

4 CONCLUSION

Many places of engineering significance, with the correct conservation policy and through preservation, restoration, reconstruction and adaption may be commercially viable tourist attractions. This would then ensure that our Engineering Heritage is not lost and these places could be part of our educational and recreational public facilities.

5 REFERENCES

- BURRA CHARTER. The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance
- ECONOMIC RESEARCH UNIT (1976). Study of Man-Made Tourist Attractions.
- W.D. SCOTT & CO. PTY. LTD. (1980). Market Intelligence Report No.1 for the Department of Industrial Development and Decentralisation, N.S.W. Government