TARRALEAH POWER STATION

Conservation Management Plan

Prepared by
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For

Hydro Tasmania

April 2007

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1.0 Introduction

1.1 Background

This report has been prepared for Hydro Tasmania by Austral Archaeology Pty Ltd and Ian Terry with input from Paul Davies Pty Ltd.

In 2003 Paul Davies Pty Ltd was commissioned by Hydro Tasmania to evaluate all heritage assets within the hydro-power schemes for the upper and lower Derwent catchments. Under the Cultural Heritage Program, an inventory database has been created that contains significance assessments of all assets within the catchment and makes recommendations on those which require conservation management plans (CMPs). The conservation management plan for Tarraleah Power Station – this document - is one of a series of plans being progressively prepared for Hydro's most significant assets.

Tarraleah Power Station is located on the Nive River in the Upper Derwent Catchment (see Figure 1 for location).

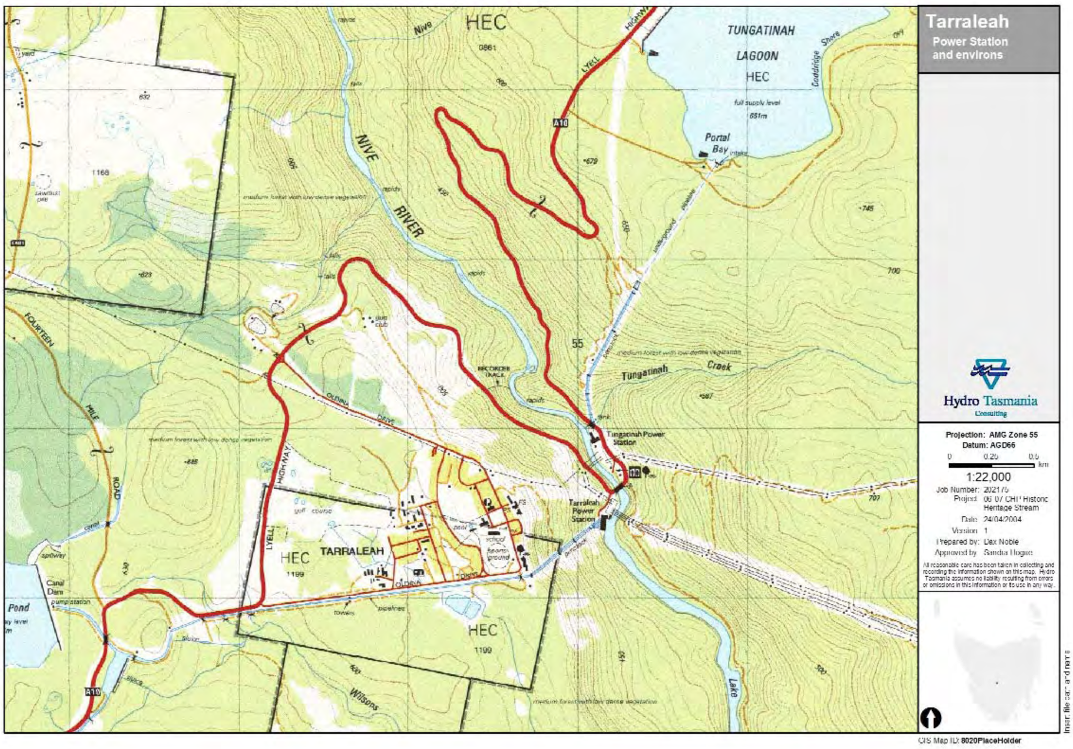

Figure 1: Tarraleah Power Station Location

1.2 Heritage Listings

The power station is not currently heritage listed.[1] Checks of the following registers were made: the Tasmanian Heritage Register, the Register of the National Estate, the National Heritage Register and the Central Highlands Planning Scheme 1998.

[1] It would, however, easily satisfy the requirements for heritage listing to State level if it were nominated.

1.3 Objectives

The objectives of the CMP have been summarised below (refer to Appendix 1 – Extracts from the Project Brief for further information):

- To prepare a conservation management plan for the Tarraleah Power Station that meets Hydro Tasmania’s needs as well as statutory and best practice heritage management requirements.

- To assess the cultural significance of the Tarraleah Power Station and to use this information as the basis for the philosophy of the management policies and strategies.

- To recognize the power generation responsibilities of Hydro Tasmania. The CMP must acknowledge that ongoing use of the station is an essential element of its future survival as a viable asset. The CMP must therefore be a pragmatic document that can accommodate the ongoing use requirements within its cultural heritage management guidelines.

- To undertake the work in accordance with the Australia ICOMOS Burra Charter.

- To prepare the CMP as a plain English document which will be clear and comprehensible to non-technical readers.

1.4 Study Area

The study area primarily includes the forebay, hilltop pipelines, valve house, hillside penstocks, switchyard and power station.

1.5 Authorship and Acknowledgments

This report was prepared by David Parham (Austral Archaeology Pty Ltd) and Ian Terry (historian & heritage consultant).

The following people and institutions are acknowledged for their assistance with the project:

Sandra Hogue
Jack A. Lawson
Stephen Kelly
Trent Wadley
Elvin Gleeson
Margo Graeme-Evans
Marija Rae
John Marriott
Beverley Armstrong
Sarah Waight
Randal Coleman
Heather Felton
Staff of the Tasmaniana Library, State Library of Tasmania
Staff of the Archives Office of Tasmania

2.0 Historical Overview

2.1 Abbreviations

AOT	Archives Office of Tasmania
HEC	Hydro-Electric Commission of Tasmania
HT	Hydro Tasmania
JPPP	Journals and Printed Papers of Parliament

2.2 General Context

The Tarraleah Power Station, which opened in 1938, was the first stage of the Upper Derwent Valley Power Scheme. This station was the largest power development undertaken by the Hydro-Electric Commission to that date. It significantly increased the power generating capacity of the HEC and helped to assure the growth of industrial development and domestic power consumption in the state. The scheme also heralded a 45 year period of hydro-industrialisation, the most significant twentieth century period of Tasmanian industrial and economic development. This policy of industrial development conjoined with the development of a hydroelectric power resource underpinned Tasmanian political and economic thought until the early 1980s.[2]

The potential to generate electricity using water had been recognised in Tasmania in the late nineteenth century. The state's first hydroelectric power stations were small privately operated concerns, built to provide power for specific mining and industrial enterprises. These included Henry Kayser's small generator at the Mt Bischoff tin mine in 1883, Peter Bulman's 1889 power plant at Launceston's Waverley Woollen Mills, the Pioneer Tin Mining Company's 1907 Moorina power station, and the Mt Lyell Mining and Railway Company's 1914 Lake Margaret scheme.[3] Tasmania's first public hydroelectric power station was built at Launceston's Duck Reach and commissioned in December 1895. Deloraine followed suit and built a small hydroelectric plant on the Meander River in 1906-07.[4] Elsewhere electricity was generated by steam and gas powered machines.

Tasmania's first large scale hydro-electric power scheme was begun in 1910 when the Complex Ores Ltd began work to divert the River Shannon into the Ouse and build a power station at Waddamana to provide power for a proposed zinc processing works at Risdon in Hobart. The state government took the project over in 1914 and formed the Hydro Electric Department, which completed the Waddamana scheme and began operating the station's two machines in May 1916.[5] As power demand increased the Waddamana scheme was enlarged in 1922 and 1931, the latter involving the construction of a small new power station at Shannon.[6] The Upper Derwent Valley Power Scheme was the next state's major power development, and almost doubled the State's power capacity in a single project.

The Tarraleah power station was the third power station built by the HEC.[7] It was an important late Depression job creation project and played a key part in the initial post Depression era industrial development. It was the first stage of a substantial power

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[2] See Lupton, p. 117; also, Townsley, pp. 42-42.
[3] Lupton, pp. 19, 42; for the Moorina power station, see also website accessed 9/5/2005; www.tco.asn.au/oac/community_overview.cgi?oacID=39&articleID=179438
[4] Terry, p. 52.
[5] Garvie, p. 20.
[6] Lupton, p. 105
[7] The Hydro-Electric Department became the Hydro-Electric Commission in 1929.

scheme involving the construction of a number of power stations along the Derwent River system, each of which reused water previously captured for power generation. In this way it heralded a new methodology of power generation in Tasmania, in which a series of power stations were constructed along a catchment system enabling water to be re-used by several stations to generate power. This strategy was continued up until the 1980s.

Despite its age, the Tarraleah power station still has one of the highest annual power outputs in the state, only being regularly surpassed by the later underground power stations, Poatina and Gordon, and the Reece power station, with their modern efficient machines (see Table 1).

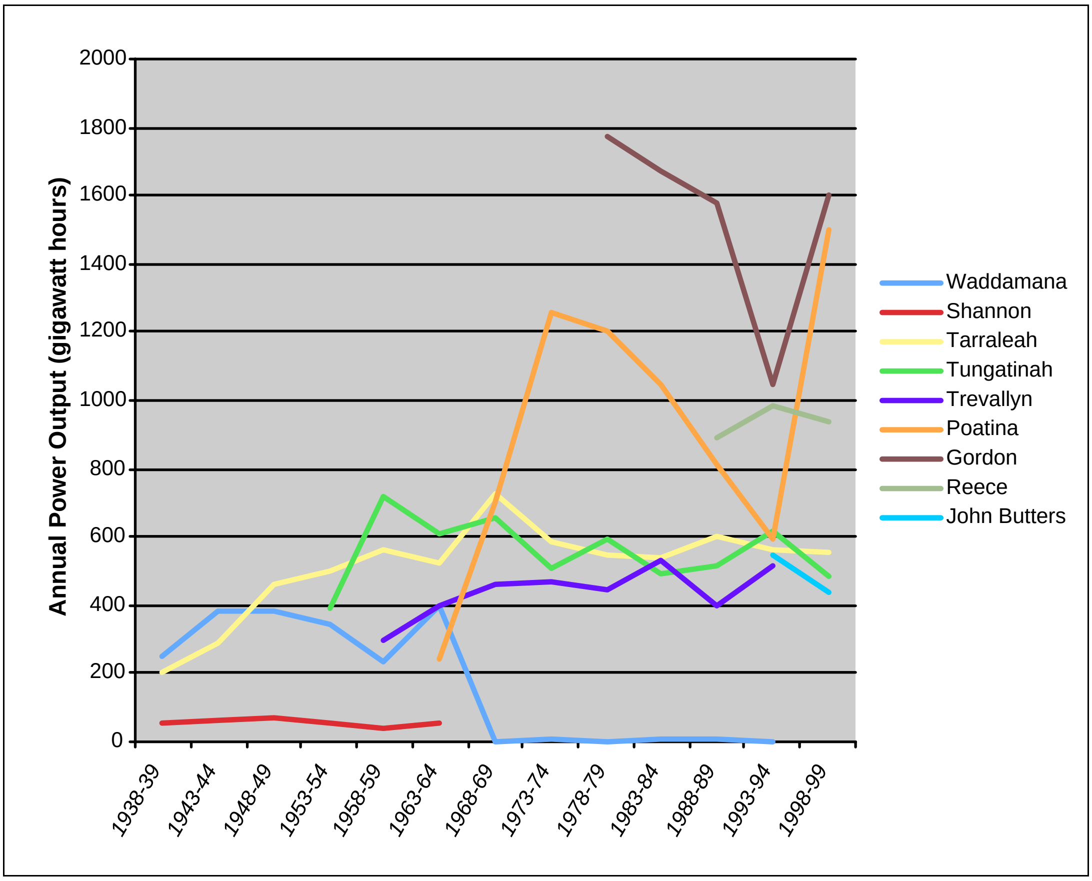

Table 1: Annual power output of the HECs three earliest power stations (Waddamana, Shannon, Tarraleah) and the seven with the highest annual output (Gordon, John Butters, Poatina, Reece, Tungatinah, Tarraleah, Trevallyn). Fluctuations in annual output are often caused by machines/penstocks etc, being taken out of service for major overhauls (figures drawn from HEC Annual Reports, 1938-99).

As the first of the state's large-scale power developments Tarraleah was critical to the transformation of Tasmania from a primary resource exploitation dependent economy to a modern industrial economy emerging from the Depression. The scheme also demonstrates the growing involvement of government in building infrastructure and operating major utilities to promote economic development, and the concomitant growth of an expanding government bureaucracy needed to manage a large organisation. The HEC quickly became a highly influential organisation in Tasmania with its commissioner described by some historians as Tasmania's most powerful public servant.[8]

[8] Robson, p. 510; see also Townsley, pp. 4, 124-125.

With its Art Deco detailing the power station and its offices embody the spirit of the modern age. Art Deco's description as the last of the 'truly sumptuous' architectural styles[9] is evident in the progression of styling from the richly Edwardian fitout of the first Waddamana power station, through the Art Deco Tarraleah to the more austere and utilitarian styles and fitouts of postwar power stations such as Tungatinah. For the HEC Art Deco was ideal — it was seen to reflect the 'exciting, dynamic aspects of the machine age' and was particularly popular in internal fitouts of commercial and industrial buildings.[10] That the style was applied in the remote Tasmanian mountains where a more utilitarian aesthetic might have been adopted in the interests of cost saving is indicative of Art Deco's ability to reflect the aspirations of the era.

2.3 First Stage Development (Generators 1, 2 and 3)

2.3.1 Planning & Design

As early as 1917, only three years after the war-time formation of the Hydro-Electric Department by the Tasmanian government, Surveyor J. Leslie Butler proposed twin power developments bringing the waters of the Upper Derwent River and the Nive and Dee Rivers, via a storage basin at Lake Echo, to a single point on the Nive River.[11] The Depression put these plans on hold. However, by the mid 1930's the revival of mining on the west coast and north east, the growth of domestic power use and the development of a pulp and paper industry, signalled an improvement in economic conditions. The state's growing industrial capacity made the construction of the scheme a 'pressing necessity'.[12] Investigations were commenced in 1933 and the following March, the HEC presented to the Treasurer a report that recommended the construction of the scheme. This timing became critical as drought had just forced the temporary shutdown of the Lake Margaret power station and Mt Lyell mine, and the Premier, Sir Walter Lee, called an election. The HEC's report was leaked to Opposition Leader, Albert Ogilvie, who made it a key plank of his election campaign. He saw in it an opportunity to present himself as a dynamic modern leader ready to confront a serious crisis by undertaking the necessary steps to develop public infrastructure and hydro-electric power to provide employment and encourage economic growth.[13] Having positioned himself as the champion of an intensive program of industrial development backed by the rapid expansion of the state's hydro resource, Ogilvie succeeded in narrowly winning the election against a government mired in the effects of the Depression.[14] The HEC became one of the Premier's most important vehicles of economic development and Labor was to remain in power for some 35 years in a government characterised by massive public infrastructure programs underpinned by the development of water resources for hydro-electric power. Tarraleah then, while not Ogilvie's idea (as much as he implied it was during the campaign), can be seen as a symbol of a new direction in the political, social and economic life of the State.[15]

The HEC noted that the project began a 'period of almost unparalleled activity' and that the new power station would 'herald a new era of prosperity for Tasmania' with an addition of 63,000 horsepower (47 megawatts) of generating capacity on

[9] Alastair Duncan, quoted in van Daele & Lumby, p. 16.
[10] Apperley et al, p. 188.
[11] HEC, 1947, p. 3.
[12] Annual Report of the Hydro-Electric Commission for 1934-35, p. 3.
[13] Annual Report of the Hydro-Electric Commission for 1933-34, p. 19; Rackham, p. 51.
[14] See *Mercury*, I May 1934, p. 9; 4 May 1934, 9; and 16 June 1934, p. 9; see Lowe, p. 3.
[15] Lupton, p. 117.

completion of the first stage in 1937 and an eventual capacity of 126,000 horsepower (94 megawatts).[16]

After deliberating on the project for seven weeks Parliament approved the Derwent Valley Power Scheme in July 1934, shortly after Ogilvie's electoral win.[17] The scheme was a complex one(Figure 2). It entailed drawing water from Lake St Clair and diverting it to a storage pond at Butlers Gorge. From there a canal would convey the water to Tarraleah where it would fall via steel pipelines 967 feet (295m) to a power station situated on the Nive River. It was envisaged that the water would then be utilised by future power stations built downstream along the Nive and Derwent Rivers. The scheme in its entirety was ambitious — it proposed to utilize a wide catchment area of the Derwent River to provide electric power for many years. The estimated cost for the first stage of construction was £1,200,000.[18]

The name Tarraleah was soon adopted in recognition of the abundance of Forrester kangaroos in the immediate region - Tarraleah being an indigenous name for the species.[19]

The power station would have three generators each capable of generating 21,000hp (15.67mW) with room for three more to be installed when the need arose. Higher capacity power lines than the earlier 88,000 volt lines used to transmit power from the Shannon and Waddamana power stations would be used. These 110,000 volt lines would transfer power to Rosebery on the west coast and to Hobart. The west coast transmission towers, in particular, were designed to shed snow.[20] It was not until 1957 that 220,000 volt transmission lines were used in Tasmania.[21]

A temporary transmission line some 21 miles (34km) long was laid from the power station site to Waddamana to provide power for the project. Although a dam would not be constructed during this stage, one was planned at Butlers Gorge for the second stage of the project.

The power station at Tarraleah cannot be seen in isolation. The project required substantial organisational change with staff selection and training, additional head office accommodation and massively increased store and transport facilities. It also entailed upgrading existing substations, a substantial construction program at Lake St Clair and the erection of a network of high voltage transmission towers between Tarraleah and Rosebery, Hobart and Waddamana. Due to the scope of work there was a re-organisation within the HEC with both the Electrical Branch and the Hydraulic Branch being divided into construction and design branches. In 1935 the engineer for the Hydraulic Construction branch was designated the Resident Engineer-in-Charge, Tarraleah.[22]

The HEC's chief hydraulic design engineer, Ted Rowntree, initiated the Tarraleah Scheme, being responsible for the layout of the scheme, and the location and construction of access roads. The designs for all civil engineering works (including the power station) connected with the Tarraleah and Lake St Clair works were made by several engineers under his close direction.[23] The scale of work involved is shown

[16] Annual Report of the Hydro-Electric Commission for 1934-35, p. 3.
[17] Rackham, p. 51.
[18] Annual Report of the Hydro-Electric Commission for 1934-35, pp. 3-4; Lupton, p. 119.
[19] Lupton, p. 120.
[20] Annual Report of the Hydro-Electric Commission for 1934-35, pp. 21-24.
[21] Garvie, p. 40.
[22] Annual Report of the Hydro-Electric Commission for 1934-35, p. 21.
[23] Lupton, p. 140. See also quotations from Rowntree and other engineers who worked on the project, provided by Heather Felton to the author via email on 21 July 2005.

by the HEC's drawing office workload. In 1934-35 it turned out 390 drawings as well as 3854 blueprints, 1709 helio prints and 713 photostats.[24]

Design work was not confined to the HEC. A significant amount of testing was done both at the HEC and by the hydraulics laboratory at the Hobart Technical College to ensure that all parts of the scheme were safe and economical.[25]

[24] Annual Report of the Hydro-Electric Commission for 1934-35, p. 5.
[25] Annual Report of the Hydro-Electric Commission for 1935-36, p. 21.

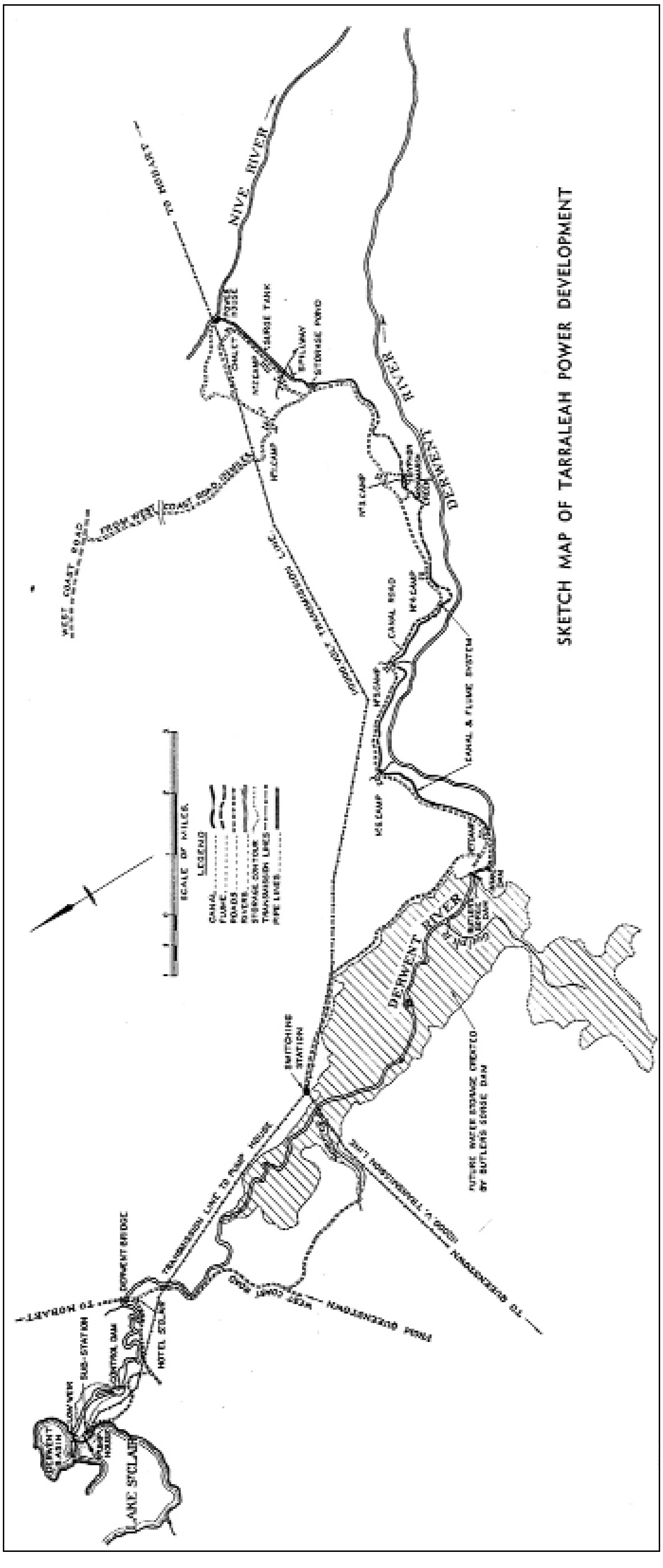

Figure 2: Plan of Tarraleah Power Development showing layout of infrastructure and camps between Lake St Clair and Tarraleah (HEC annual report for 1934-35).

2.3.2 Construction Phase

Roads

The power station site was located in a remote part of the *Californita*[26] property and construction of an access route from the Hobart to Bronte road had already begun on 16 July 1934. The Nive or 14-Mile Road was completed in late October and construction of the power station commenced.[27] The direct road route between Ouse and Tarraleah (now the Lyell Highway) was not completed until 1940.[28] Immigrant Polish workers widened the road between Tarraleah township and the power station in 1947 and then began building the road to Bronte Park.[29]

Power Station

The powerhouse and adjacent switchyard were erected on a shelf excavated on the right bank of the Nive River (Figure 3). The power station building was designed as a steel framed structure with curtain walls of reinforced concrete and steel framed windows, and with offices and workshop contained within the building (Figures 4 & 5).[30] The roof was of corrugated asbestos and was designed to withstand heavy snowfalls.[31] A haulageway, built down the hillside adjacent to the penstock, provided access to the building site (Figure 7). Pouring of concrete for the power station began in June 1935 and by early 1937 the power station was ready for the installation of equipment.[32] Transporting plant to the remote site proved to be an enormous task with special trailers drawn by traction engines taking up to two weeks (Figure 8). Transport was strictly supervised by HEC employees and undertaken under contract by the Tasmanian Government Railways.

The power station itself had a concrete floored main chamber, which initially accommodated the three generators, as well as rooms on the western side on the ground and mezzanine floors (Figures 21 & 31). On the ground floor were an auxiliary room at the southern end, with a terminal room adjacent, then battery room, a room for motor generator sets, a supervisory equipment room, a stairwell and storage space followed by a room of transformer cubicles and lastly, at the northern end, a store. A workshop was located at the north western corner of the building. Upstairs there were, from the northern end, a landing and entrance vestibule, then a series of three offices followed by toilets over the stairwell, the District Operating Superintendent's office, a Shift Engineer's office (later reduced in size and converted to a control room annex) and the large control room with windows giving out to the machines and a stairway at its southern end adjacent to a small room housing AC and DC switchboards.[33] There was a passageway with railings outside the mezzanine offices (Figure 4). The offices and passageway were notable for their fine Art Deco styling and parquetry floor (Figures 9 - 11). Rubber mats were laid on the floor in the control room. There was a workshop at the north eastern end of the building.

A single storey workshop with blacksmiths' and carpenters' shops as well as garage and store were located adjacent to the switchyard (Figure 12). The workshop was damaged in a flood in 1939 with the blacksmith's wing washed away and rebuilt

[26] Lupton calls the property *Californita*, while Rackham , p. 51 , uses *Californida*.
[27] Annual Report of the Hydro-Electric Commission for 1934-35, pp. 3, 26.
[28] Rackham, p. 61.
[29] Interview with Tony Rozmaryniewicz, in Central Plateau Oral History Project, vol 5, p. 8.
[30] Annual Report of the Hydro-Electric Commission for 1934-35, p. 24.
[31] Tender to supply roof dated 13 August 1935, HEC file—Tender Specifications-Electrical Department, Box 1795.
[32] Progress Report no. 2 (June 16, 1935), p. 7 — HEC file DW145, vol 1.
[33] See HEC plans A5485 & A5005.

although this wing had been removed by the late 1950s.[34] The entire building was removed from the site during the late 1990s.[35]

Although much of the work was done with pick and shovel and there were few cars or trucks at Tarraleah, construction of the scheme was more mechanised than earlier schemes at Waddamana and Shannon. Nonetheless there were only eight cars and 27 trucks in the area in 1935 as well as tramways and a haulageway (Figures 13 & 14). Other construction infrastructure included a sawmill, fitting and turning shops, blacksmiths, six mechanical excavators, compressors and pumping equipment, and a steel fabrication plant where Hume Steel fabricated the steel pipes for the penstock.[36] By June 1936 most of the turbines, alternators, transformers and other mechanical and structural material had been received at Hobart with some of it consigned to the construction site.[37] Almost all of the plant was imported from European manufacturers.

[34] See HEC plans—B6179. Cf photo by Wolfgang Sievers in 1959 — www.nla.pic-an25044627
[35] Stephen Kelly, pers comm., 20 June 2005.
[36] Lupton, pp. 120, 129.
[37] Lupton, p. 121; Annual Report of the Hydro-Electric Commission for 1935-36, p. 21

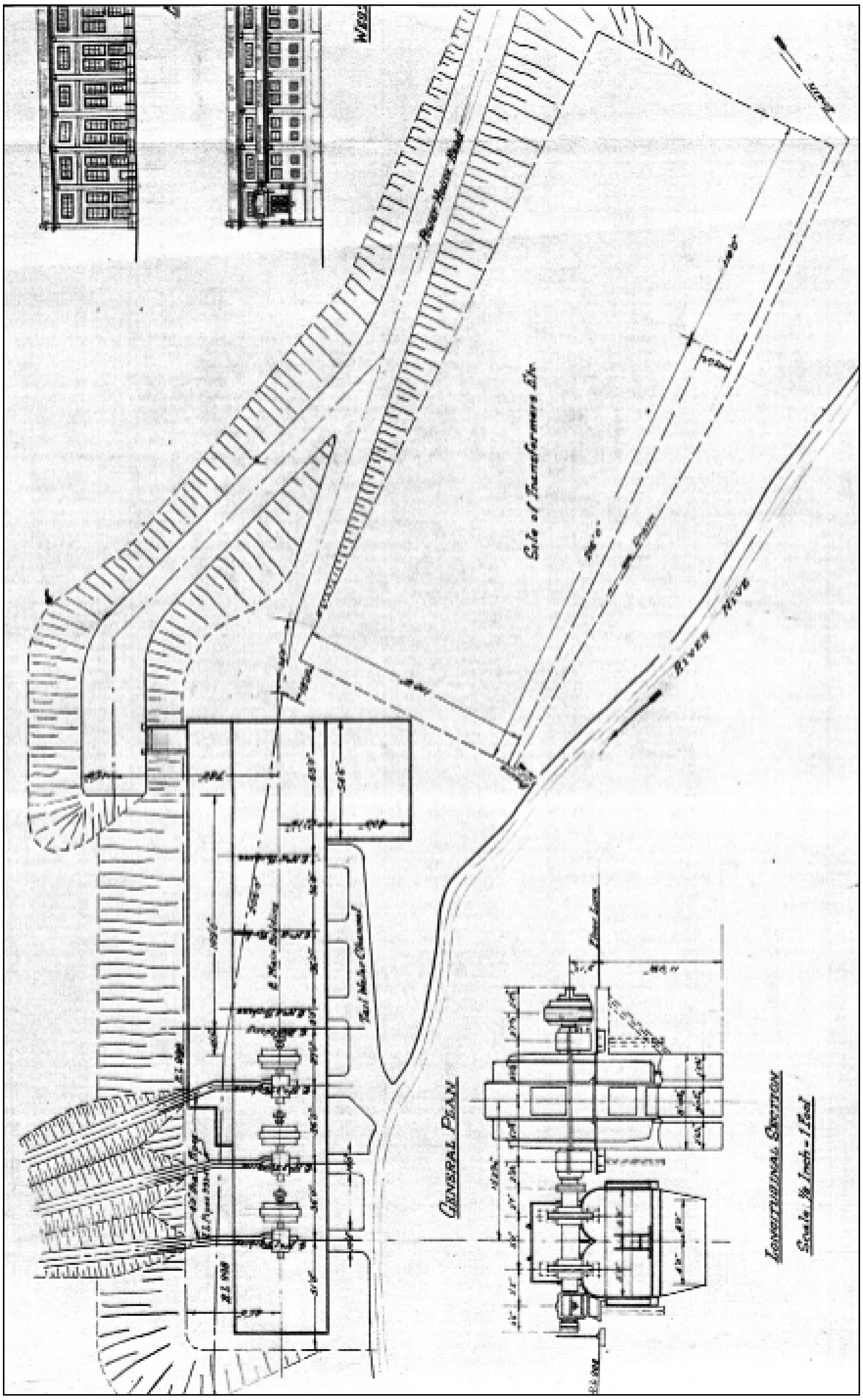

Figure 3: Plan of site showing location of power station and switchyard (HEC, DW145, vol 1—Tarraleah Power Station, 1935-1937).

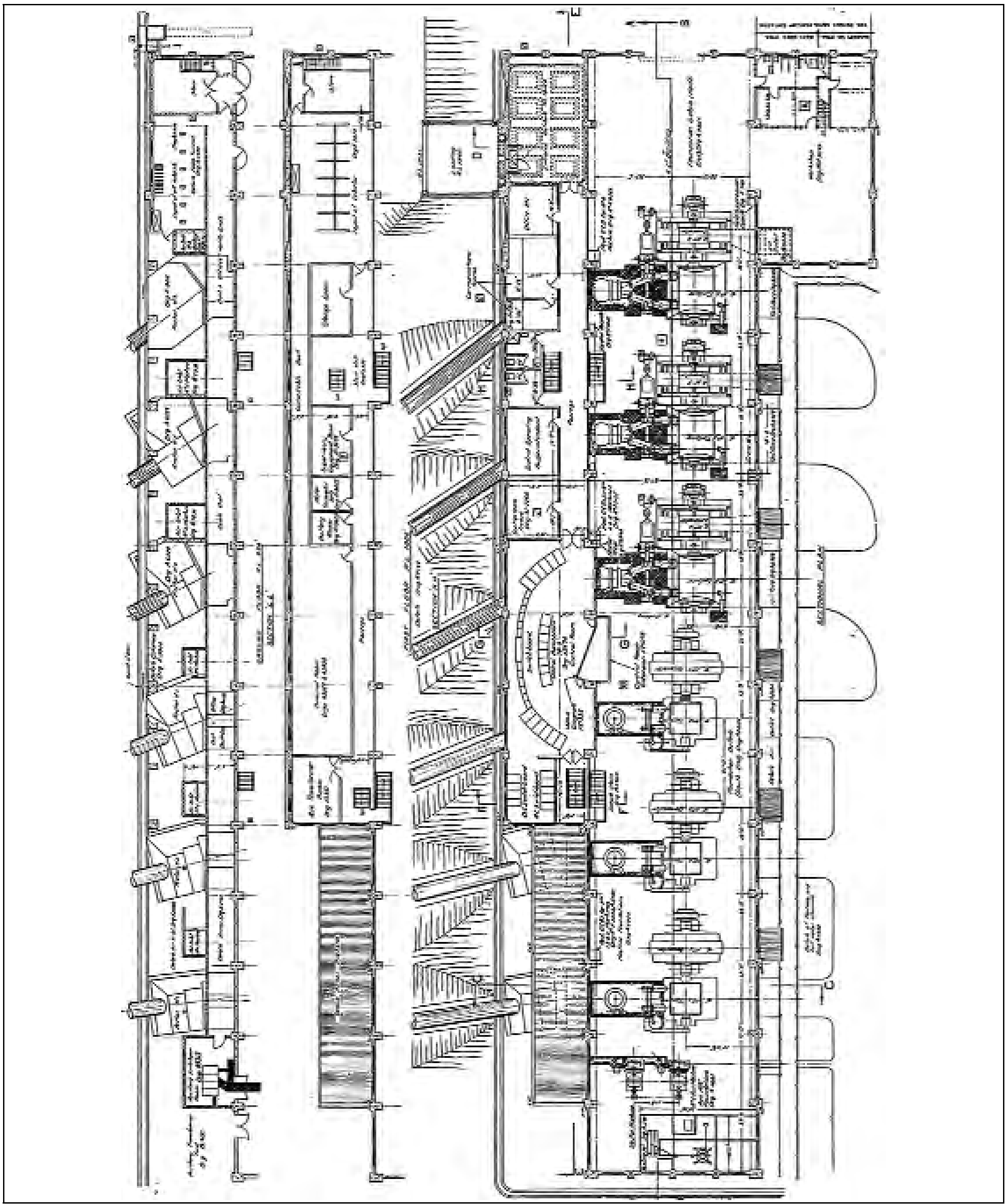

Figure 4: Internal layout of power station after installation of machines 4-6, showing layout of offices etc (HEC plans A5005).

Garvie notes that over the three stages of Tarraleah's development there were major changes in building techniques. Initially machines were expensive and labour cheap so that the latter was used extensively. In contrast, work in the 1950s was much more highly mechanised with mechanical plant and vehicles common and pick and shovel wielding labourers a small minority.[38]

Photographs indicate that temporary timber buildings were built at the power station site to provide site offices and accommodation, workshops and crib rooms (Figure 6).

[38] Garvie, pp. 59-60.

Other buildings were erected at the No. 1 camp near the site of the Tarraleah village for accommodation and the associated needs of a settlement.[39]

By mid 1937 the international political situation had deteriorated markedly and, as Britain and Australia began to rearm, the delivery of plant and equipment to Tarraleah was delayed, adding considerably to its cost.[40]

The first three machines were manufactured by Boving & Co of London and were twin wheeled four-jet pelton driven alternators, the turbines with an output of 21,000h.p. each and the alternators 18,750 kilovolt amperes (kva) at 0.8 power factor, and operating at 428rpm under a 967ft head. Thompson's Engineering and Pipeworks Ltd manufactured parts of the turbines in Castlemaine. The alternators were three phase, 50 cycle, and 11,000 volt units with direct-driven exciters equipped with pilot exciters. They were manufactured by Brown, Boveri Ltd of Switzerland (figures 19-21). Two further 360hp turbines were installed for 'house service' as was an electrically operated Babcock and Wilcox Ltd crane with a 50 ton main hoist and 10 ton auxiliary hoist.[41] Two smaller auxiliary single jet Boving pelton generators were installed at the southern end of the building to supply standby emergency power to the station.[42]

Figure 5: c1935 view of steel framing of power station (HEC collection).

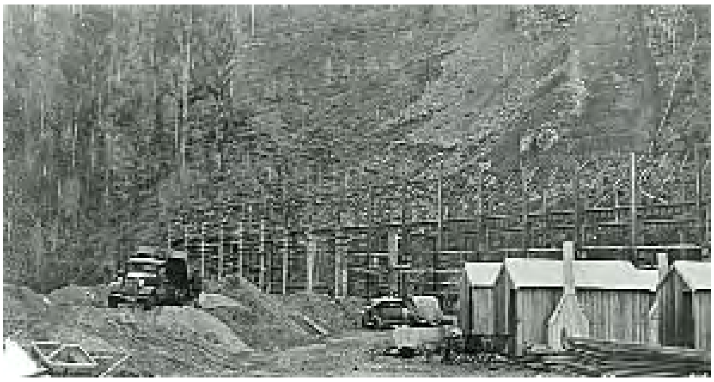

Figure 6: c1935 view of steel frame of power station erected with hillside behind cleared for penstock and temporary vertical board huts in foreground (HEC collection).

[39] Annual Report of the Hydro-Electric Commission for 1934-35, p. 27.
[40] Lupton, p. 135.
[41] Annual Report of the Hydro-Electric Commission for 1934-35, p. 24; see also *Tarraleah Power Development*, p. 25.
[42] HEC Information Data sheets for power developments; see HEC plan A5005.

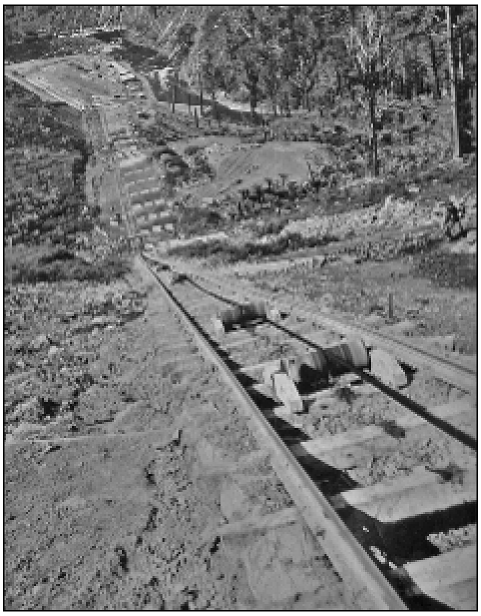

Figure 7: c1934/35 view of haulageway built to access power station site (Cyril Young Collection, AOT - NS1938/109).

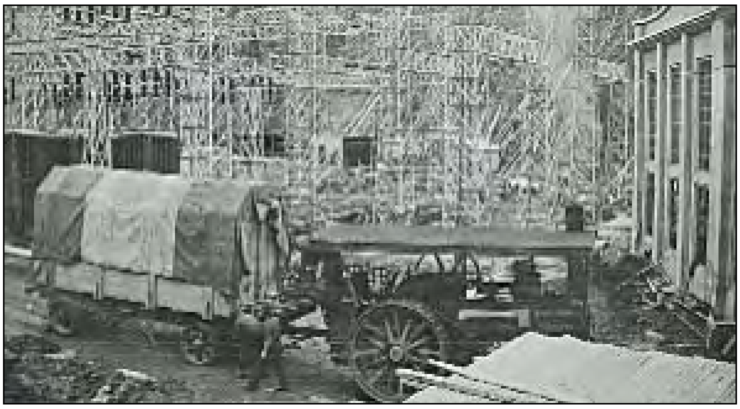

Figure 8: 1937 photograph of plant being delivered by traction engine to the Tarraleah Power Station in 1937 (Cyril Young Collection —AOT, NS19388/142).

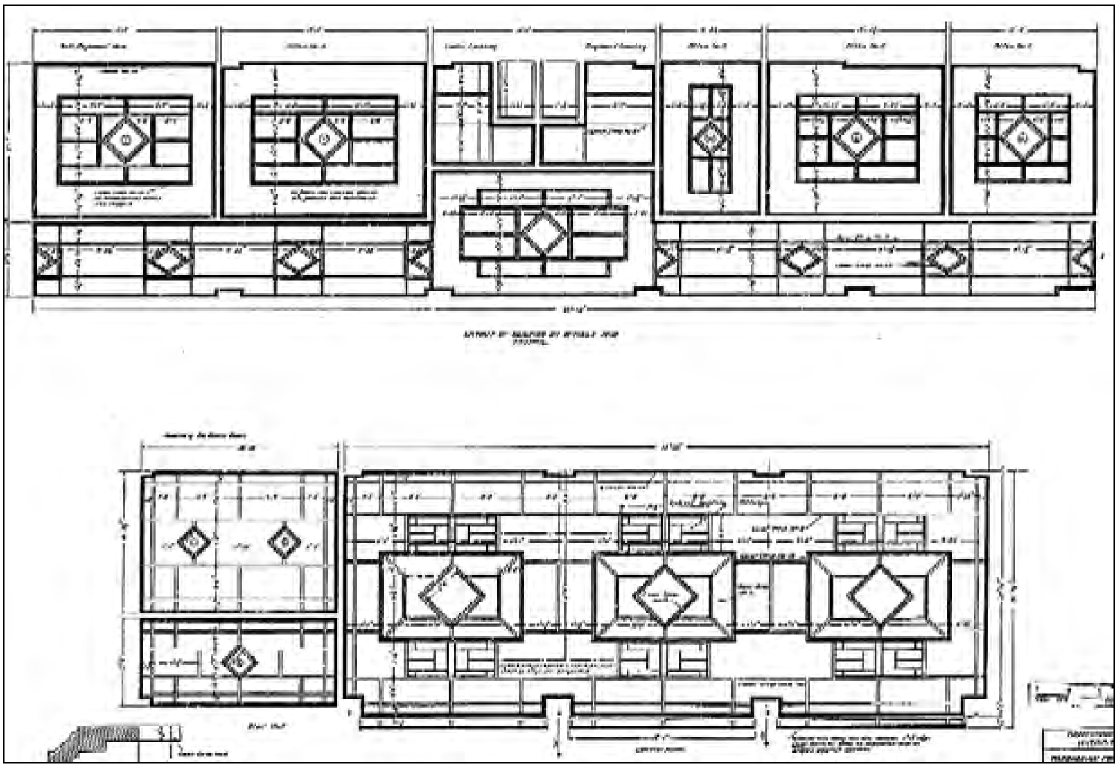

Figure 9: Plan of ceilings on the second floor of power station (HEC plans - A5488).

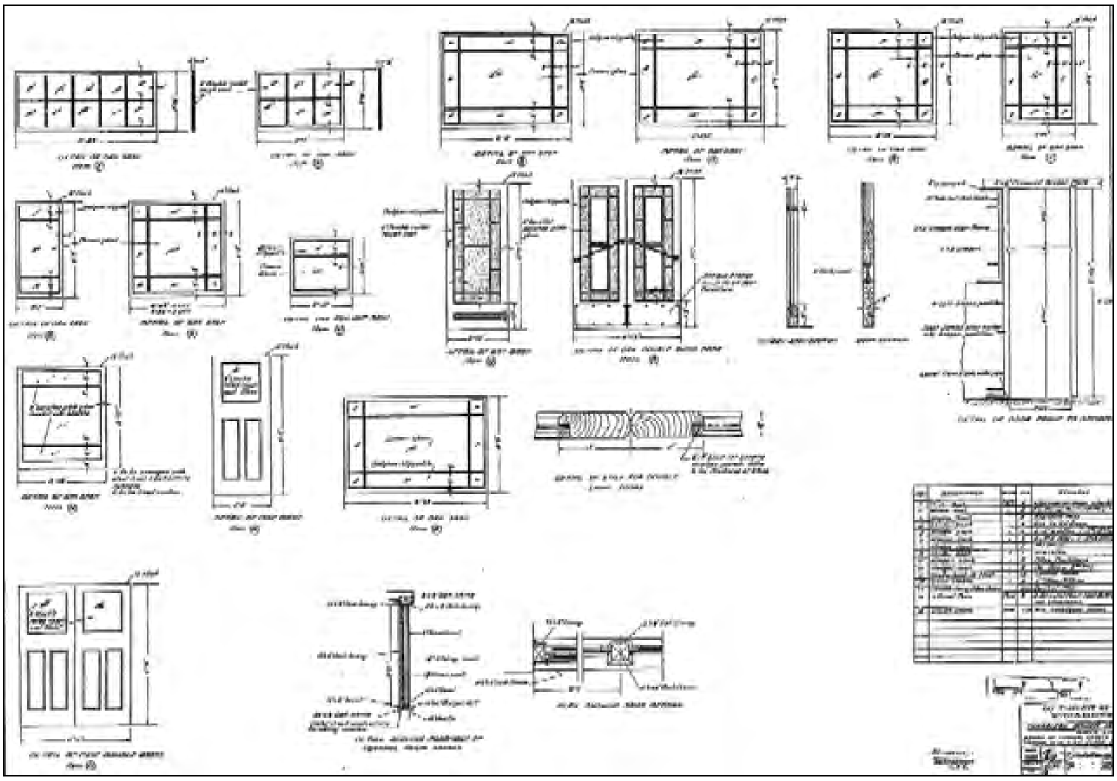

Figure 10: Details of doors and windows in second floor offices of power station (HEC plans - A5489).

Figure 11: Open passageway outside mezzanine floor offices. Note the railings and ceiling (HEC collection).

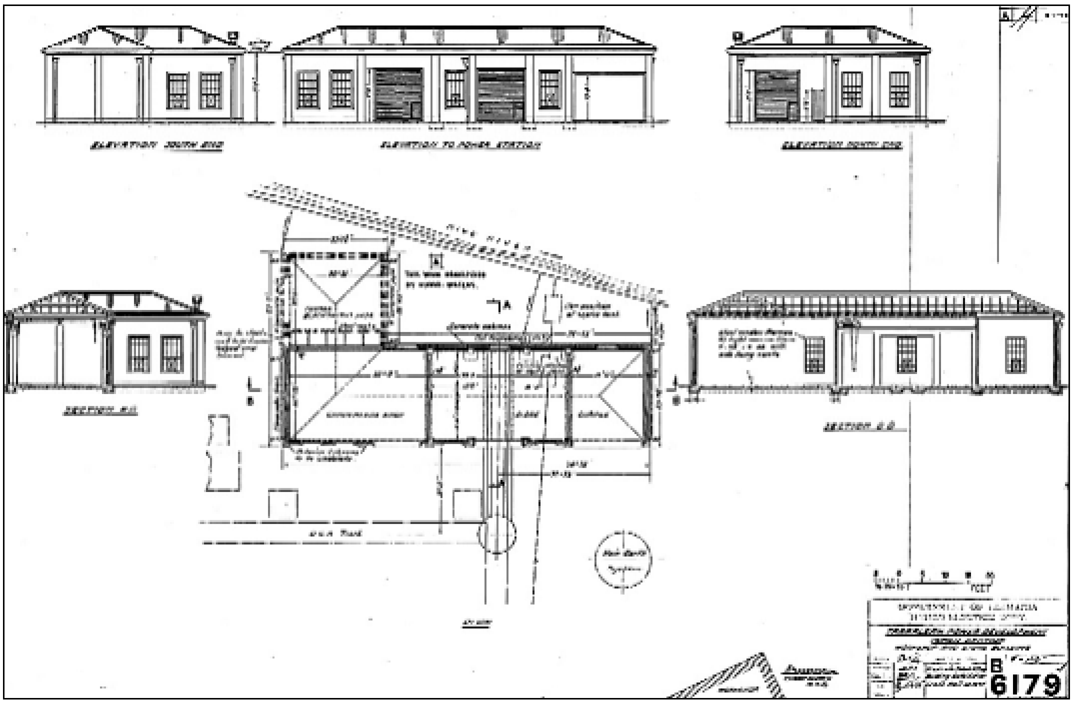

Figure 12: Plan and elevations of workshops and garage/store adjacent to the switchyard showing blacksmith's wing, which was washed away in the 1939 floods (HEC plans - B6179).

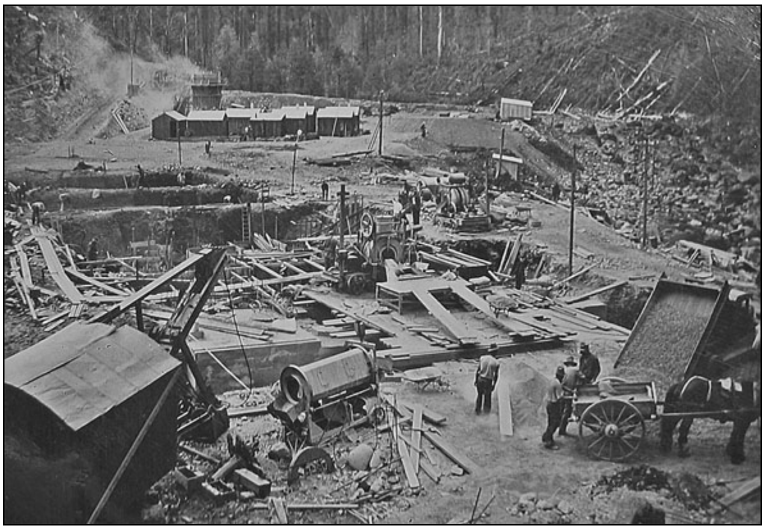

Figure 13: View of power station site in 1934/35 during earlier phase of construction showing the use of manual, horse driven and machine power (Cyril Young Collection, AOT - NS1938/138).

Figure 14: c1935-36 view of rear of power station under construction showing tramway (Cyril Young Collection, AOT-NS1938/145c).

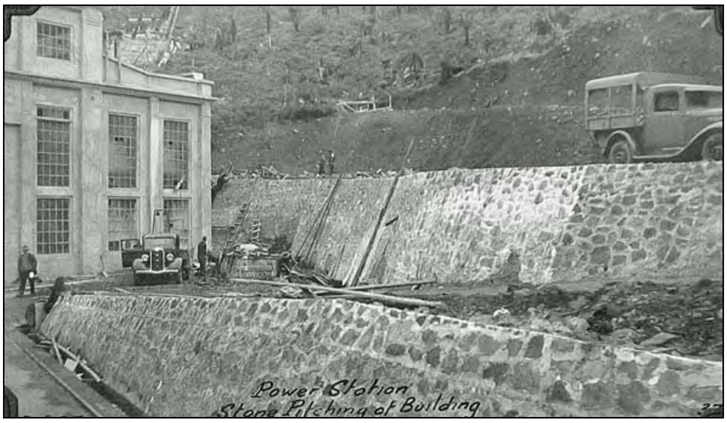

Figure 15: Stone retaining walls built at the front of the power station. Similar walls were built along the river bank (HEC collection).

Figure 16: View of power station soon after opening showing the entranceway (HEC collection).

Figure 17: View of power station and switchyard soon after opening showing penstock, excavations for three more penstocks and the workshop/store adjacent to the switchyard (HEC collection).

Figure 18: View of power station from down stream showing stone walling along the river bank (HEC collection).

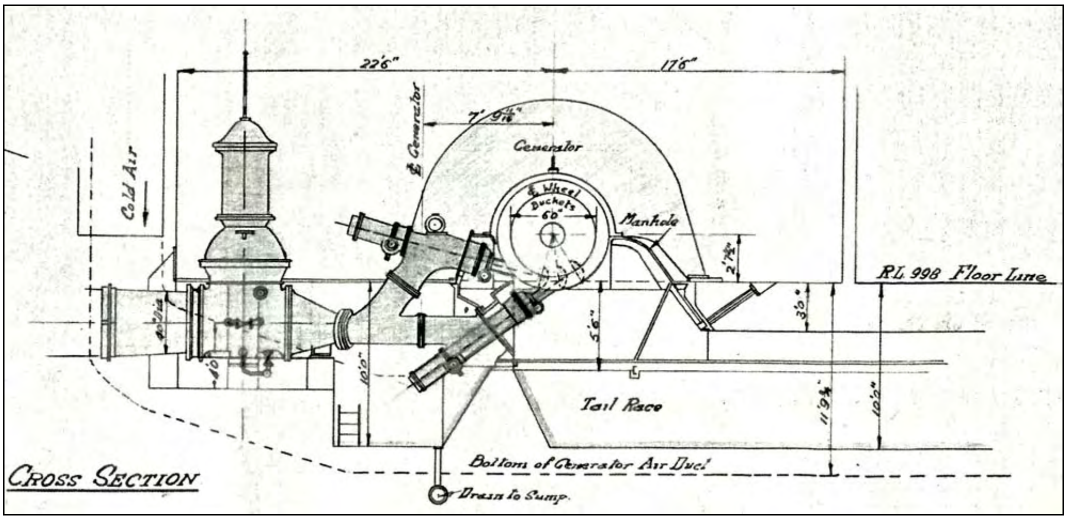

Figure 19: Cross section of Boving & Co. turbine in plans for Tarraleah Power Station (HEC - DW145 vol 1 Tarraleah Power Station 1935-37).

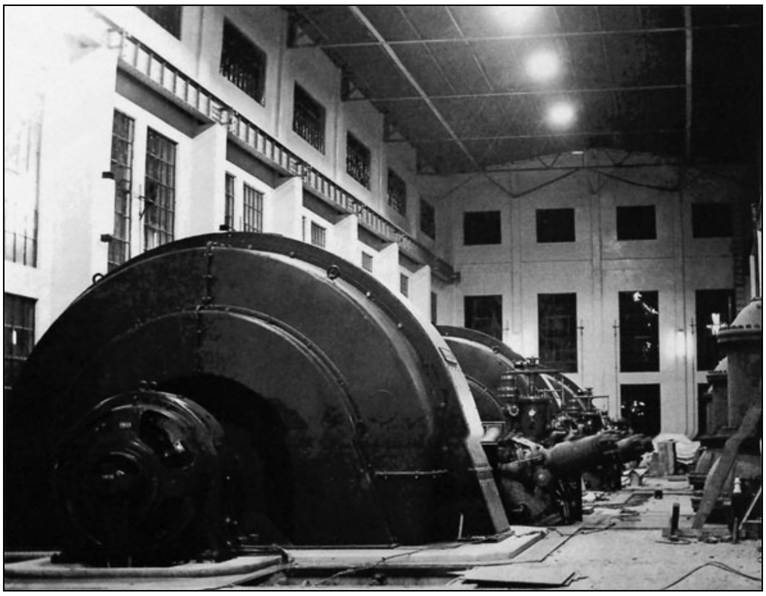

Figure 20: Three Boving & Co. machines installed at Tarraleah in 1937 (HEC photographic collection, reproduced in Lupton, p. 133).

Figure 21: Interior of power station in c1938. Note railings and stairs (HEC collection).

Switchyard

The switchyard included of three banks of transformers (one bank for each machine) having a capacity of 18,000 k.v.a. per bank. Each bank consisted of three single phase units, stepping up from 11,000 to 110,000 volts and were oil insulated self-cooled 'outdoor type' with lightning arrestors, operation counters, oil-breaker circuits and cylindrical air-break switchgear with post insulators.[43] An extra transformer was installed as a spare. They were manufactured by London firm ASEA Ltd (Figures 22 & 23).[44]

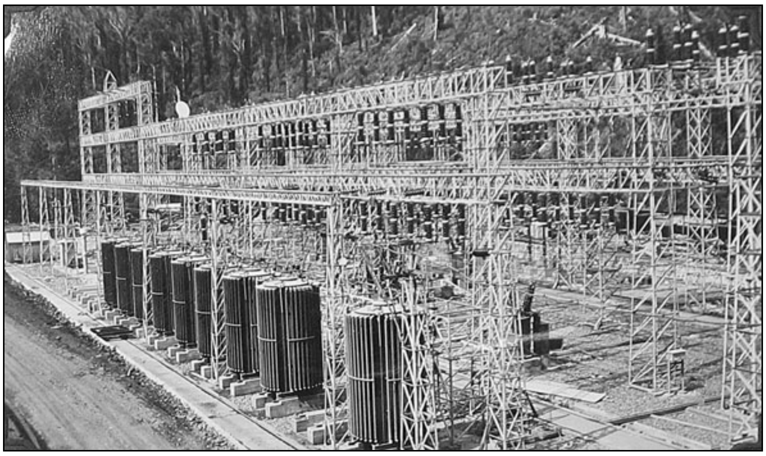

Figure 22: View of switchyard (HEC collection).

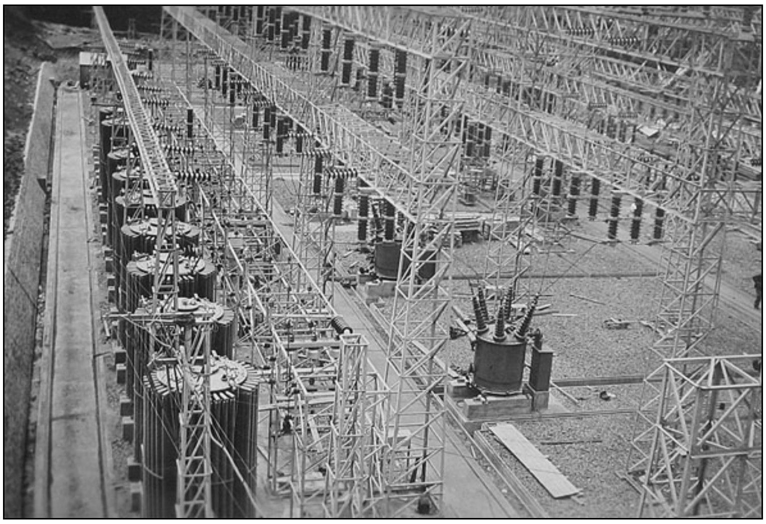

Figure 23. Switchyard at Tarraleah in 1937 (Cyril Young Collection - AOT, NS19388/140b).

Penstock, Surge Tank and Valve House

Concrete open canals and fluming conveyed the water from the storage pond to the forebay where it entered a steel pipeline, which was fabricated at Tarraleah by Hume Steel Company and electrically welded together in situ (Figures 24 & 25). This pipeline was 1.6 miles (2.5kms) long and 102 inches (2.6m) wide. A surge tank (145ft [44.2m] high and 18ft [5.5m] in diameter) was erected part way along the hilltop penstock (Figure 26). A valve house with three 5 foot (1.5m) valves erected at the top of the hillside penstocks regulated the flow of water from one pipeline to three

[43] Annual Report of the Hydro-Electric Commission for 1934-35, p. 24.
[44] *Tarraleah Power Development*, p. 25.

penstocks conveying water to the power station below. The valve house was timber framed with ‘insulasbestos’ cladding and fibrolite diagonal tile roof cladding (Figure 27). The hillside pipelines were 60 inches (1.5m) in diameter at the top, reducing to 49 inches (1.24m) at the bottom. The fall from the forebay to the power station was 967 feet (295m). Special rocker supports were adopted and electrically operated butterfly valves installed. The steel pipes were described as unique in Australia at the time.[45]

During construction, channels were excavated to seat all six hillside penstocks entering the power station (Figure 28). The pipeline, completed in 1937 with butterfly, air and scour valves installed, was filled with water in late December.[46]

Figure 24: Hume Steel Pty Ltd steel fabrication plant at Tarraleah in 1936-37 (Cyril Young Collection, AOT - NS1938/114).

Figure 25: Section of 102 inch pipe being transported to hilltop penstock (HEC collection, reproduced in Marwood, p. 48).

[45] *Tarraleah Power Development*, p. 23-24.
[46] Annual Report of the Hydro-Electric Commission for 1937-38, p. 14

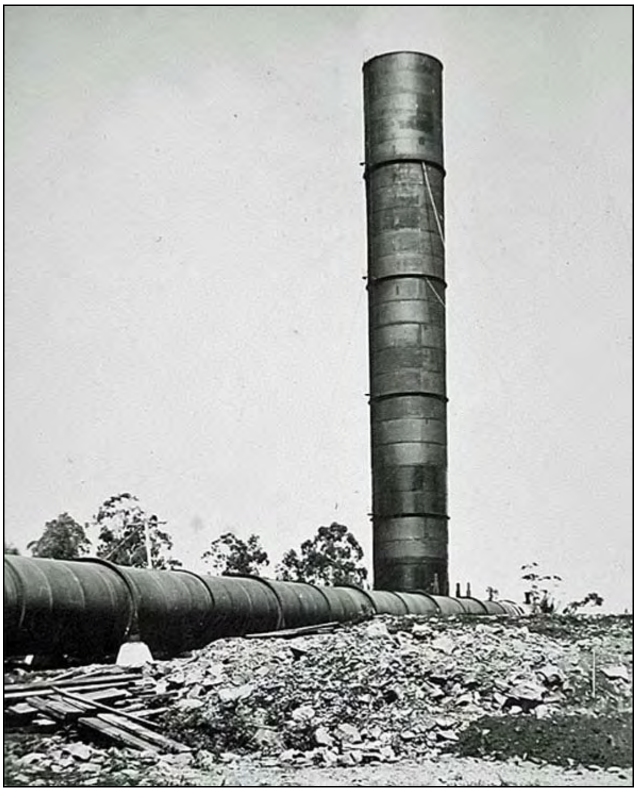

Figure 26: **Surge tank on pipeline in 1937 (Cyril Young Collection - AOT, NS1938/119).**

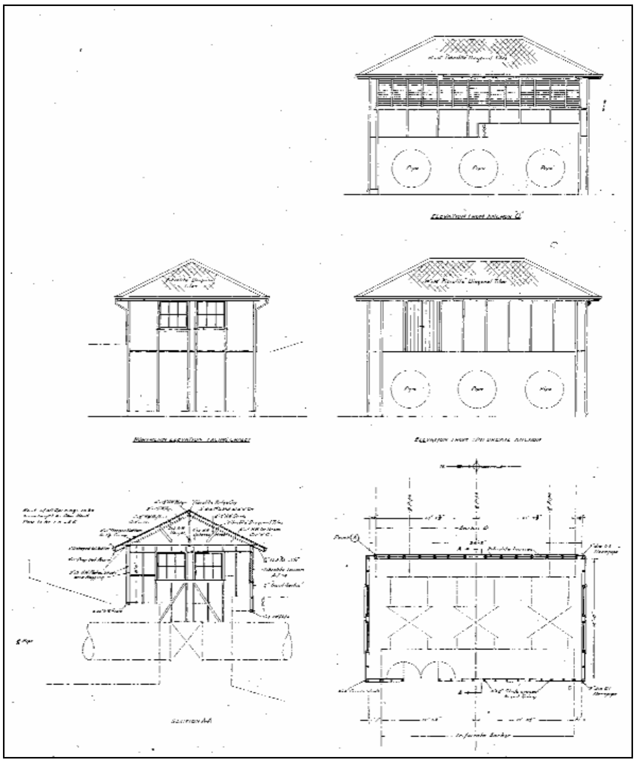

Figure 27: **1938 elevations and plan of hilltop valve house (HEC - A5710)**

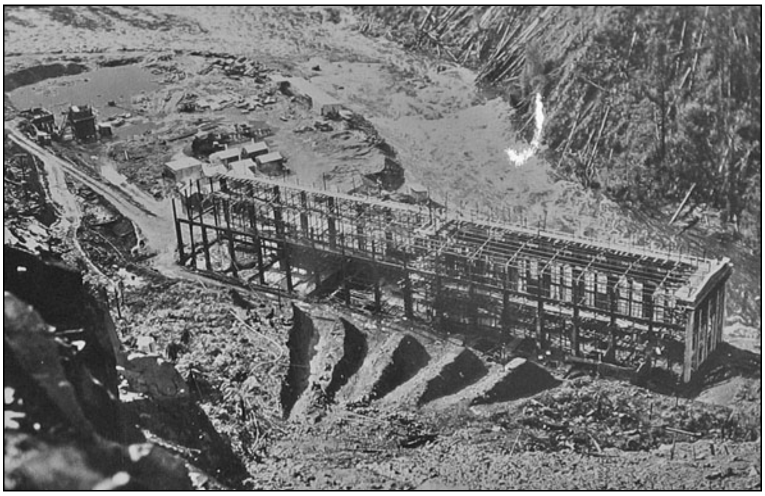

Figure 28: Power station under construction showing the excavations for the first five penstocks adjacent to the station The sixth trench was excavated soon afterwards (HEC collection).

Employment and Conditions

The project had a positive effect on unemployment in the state with Premier Ogilvie and his Cabinet anxious to get as many Tasmanians as possible into employment as soon as possible.[47] In 1936 the State Treasurer noted that 'a great effort has been made to speed up pubic works of a reproductive character' and that the 'Hydro-Electric works put into operation have been on a scale offering an appreciable contribution to an easing of this great problem of mass unemployment'.[48] The HEC attempted to employ 'men as evenly as possible from different parts of the State' and spent £68,427 on wages alone in the development's first year.[49]

There was expected to be a significant multiplier effect in the Tarraleah development, with men employed by contractors on road building and transport adding to the economic benefit by purchasing materials and stores in Hobart and Launceston.[50] Workers were initially accommodated in tents and provided their own meals, although a permanent workers camp, where the HEC could provide 'wholesome cooked meals' and sanitary conditions, was under construction.[51] Several camps were formed along the length of the power development works and these became a breeding ground for trade unionism in the State. Conflict between the Australian Workers' Union's Bill Nicol and the HEC's Fred Nicholl occurred during the peak construction year of 1935.[52]

While the scheme provided welcome employment relief, turnover of workers was high. Although 1,759 men had been engaged on the scheme, by 30 June 1935 there were just 1,043 still employed. Of these 524 had left of their own accord, 136 were dismissed, 56 left due to illness and one had died.[53] Many hopeful workers were unsuited to the physically demanding work and harsh conditions in the highland camps and construction sites. A road block was placed on the 14 mile road for both security and to try and discourage absconders.[54] It also proved difficult to recruit sufficient skilled workers for many of the tasks required for the development.[55]

[47] Lupton, p. 119.
[48] Financial Statement of the Treasure for 1935-36 in *JPPP* vol 113, paper 28, p. 9.
[49] Annual Report of the Hydro-Electric Commission for 1934-35, p. 5; see Lupton, p. 119.
[50] Annual Report of the Hydro-Electric Commission for 1934-35, p. 5.
[51] Annual Report of the Hydro-Electric Commission for 1934-35, p. 5.
[52] Garvie, p. 59; Lupton, pp. 121-5.
[53] Annual Report of the Hydro-Electric Commission for 1934-35, pp. 4-5.
[54] Rackham, pp. 54-56; Lupton, p. 120.
[55] See, for example Annual Report of the Hydro-Electric Commission for 1936-37, p. 14; Lupton, p. 129.

Although no provisions were initially made for wives and families at Tarraleah, the establishment of Camp No. 2 (called Ticklebelly Flats) slightly above the surge tower location, tacitly sanctioned their presence. A permanent village was also planned at Tarraleah with accommodation for engineers, supervisors and workers. The first permanent building erected in the village was the chalet in 1937.

2.3.3 Opening

The new scheme was opened by the Governor-General of Australia, Baron Gowrie, in the presence of the Premier, Albert Ogilvie, the Tasmanian Governor, Sir Ernest Clark and various other Ministers and Hydro-Electric Commission officials on 25 February 1938.[56] The station supplied power to the grid for the first time on March 8th.[57] At this stage only one machine had been installed although the turbine initially failed to meet the manufacturer's guarantees (see Section 2.8 for more discussion on this topic). The second two machines were installed and commissioned in July and met similar problems, so were eventually redesigned and rebuilt.[58]

In addition to opening sluice gates to allow water into the canal and turning on the first generator, the Governor-General also unveiled a commemorative window, a tribute to the engineers and workers who worked on the scheme, in the power station's entrance vestibule. The Governor then unveiled a second window commemorating the visit by the Governor-General.[59] A member of each trade represented the men who built the scheme at the opening, and the Premier and other Ministers subsequently addressed all the workers at the Tarraleah recreation hall.[60]

2.4 Second Stage Development (Generators 4 and 5)

2.4.1 Planning

By 1939 the Tarraleah power station was producing some 200 million kWh of electricity annually, dwarfing the Shannon's output and rivaling Waddamana's. Nonetheless additional output was considered to be essential to meet rising power demands from industrial, mining, domestic and rural users, especially as the third machine at Tarraleah could only be used during the wetter months of the year due to reduced summer water flow.[61] In May, Ogilvie announced the construction of a second power station at Waddamana and the addition of two more 21,000hp machines at Tarraleah that would be fed by a new pipeline from a dam to be constructed at Butlers Gorge.[62] A month later Ogilvie died following a massive heart attack, just before the HEC Commissioners confirmed that they would proceed with the extensions to the scheme.

2.4.2 Construction and Installation

The outbreak of war created major problems for the extensions to the scheme. These were because labour shortages delayed construction of the proposed dam at Butlers Gorge and generating machines became difficult to purchase from Britain. When the HEC began to seek machines in the USA, Britain became anxious to maintain its exports and undertook to supply the necessary hydraulic turbines, generators and transformers.[63] Consequently the HEC ordered two 21,000hp machines from the

[56] *Mercury*, 25 February 1938, p. 5.
[57] *Tarraleah Power Station*, p. 3.
[58] Lupton, p. 136; Annual Report of the Hydro-Electric Commission for 1937-38, p. 15.
[59] *Mercury*, 26 February 1938, p. 14.
[60] *Mercury*, 16 February, 1988, p. 28 & 26 February 1938, p. 14.
[61] Lupton, p. 135.
[62] Lupton, pp. 142-43.
[63] Annual Report of the Hydro-Electric Commission for 1939-40, p. 3.

English Electric Company in September 1939.[64] These generators were fabricated in difficult conditions in wartime England and in 1940-41 were damaged by German bombers while in port awaiting shipment to Tasmania. Replacement transformers were manufactured in Australia.[65]

The fourth and fifth generators at Tarraleah were eventually commissioned in 1943 and 1945 respectively, at a total cost of £392,862 (Figures 29, 31 & 32).[66] In recognition of the achievement of manufacturing the fourth and fifth machines, 'whilst fighting for her existence through air and sea warfare', the HEC fixed plates on the machines with the following inscription:

> *Built by the workers of Great Britain and carried by British seamen to Tasmania during the war years 1939 to 1944.*[67]

It was expected that these would 'remain as lasting symbols of the indomitable courage and solidarity of the empire at a time of great national stress'.[68]

Construction work began at Butlers Gorge in February 1940 and Hume Steel were contracted to provide a duplicate pipeline between the forebay and hilltop valve house with two pipelines down to the power station. A second surge tank was also installed on the second pipeline in 1942 (Figure 29). The hilltop pipe was 102 inches (2.6m) in diameter with each section some 42 feet (12.8m) long.[69] Hume Steel also fabricated steel pipes for the new Waddamana B power station at their Tarraleah plant.[70] However, wartime funds, materials and labour shortages slowed progress. The labour shortages were created by a combination of factors: many workers enlisted in the armed services whilst those who remained were either 'manpowered' to other sites in the Commonwealth or initially refused to work alongside German and Italian 'enemy aliens' and prisoners of war allocated to work on the project. Consequently, the site was closed down for some time and the Clark Dam was not completed until 1949.[71] Even this was only possible with the assistance of Polish and British immigrant workers following the war.

2.5 Third Stage Development (Generator 6)

2.5.1 Planning

Following WW2, and with the completion of the Clark Dam expected in the late 1940s, it was decided to add a sixth generating unit to the power station to maximise its capacity. The end of the war saw a substantial increase in the demand for power as industrial, commercial and domestic electricity needs grew rapidly and the HEC continued to extend power to many rural areas.[72] It was expected that the stored pondage on completion of the Clark Dam would 'greatly improve' the effective power output of the Tarraleah power station.[73]

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[64] Lupton, p. 144.
[65] Annual Report of the Hydro-Electric Commission for 1940-41, p. 3.
[66] Scanlon, 'The Derwent Catchment'; Memo dated 29 July 1946, HEC files—19/4b – Tarraleah Power Station General.
[67] Annual Report of the Hydro-Electric Commission for 1943-44, p. 3.
[68] Ibid.
[69] Lupton, p. 145.
[70] Annual Report of the Hydro-Electric Commission for 1940-41, p. 4.
[71] Lupton, pp. 157-8, 182; see also Annual Report of the Hydro-Electric Commission for 1943-44, p. 3.
[72] Annual Reports of the Hydro-Electric Commission, 1945-46, p. 3.
[73] Annual Reports of the Hydro-Electric Commission, 1947-48, p. 11; 1948-49, pp. 3-4.

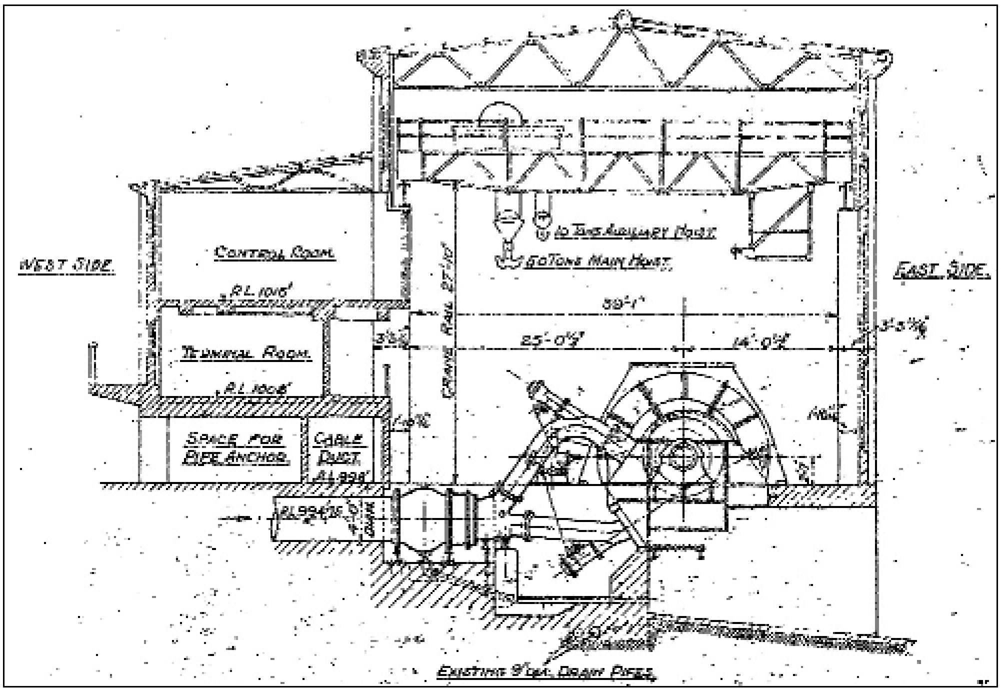

Figure 29: Section of building showing English Electric Co machine, crane and rooms to the west (HEC plan – O/6026).

Figure 30: Pipeline and twin surge tanks in the 1940s (Tasmaniana Library postcard collection).

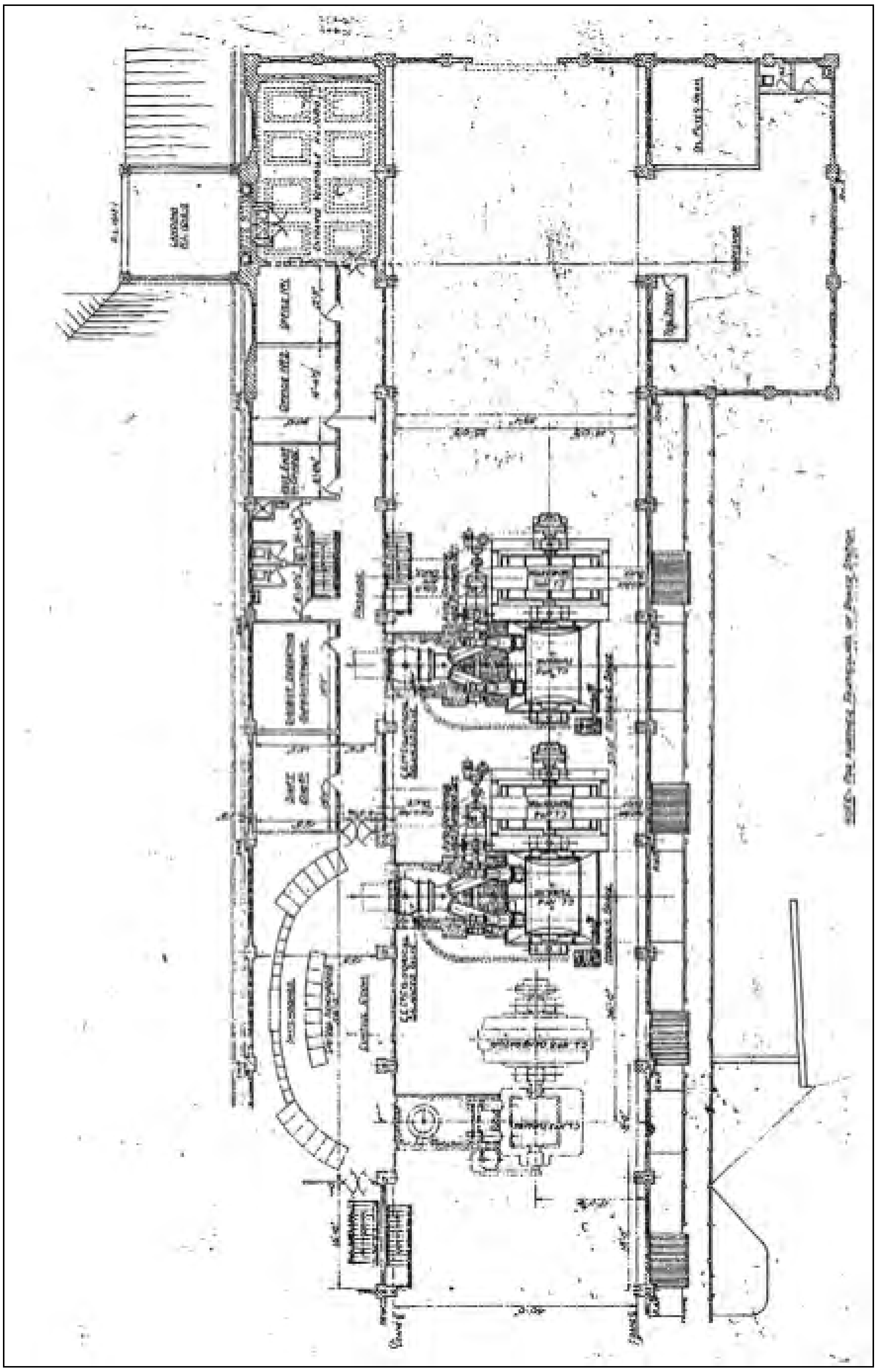

Figure 31: General arrangements showing machines 4 & 5 installed during World War 2. Note also the layout of offices and the control room (HEC plans—O-6026).

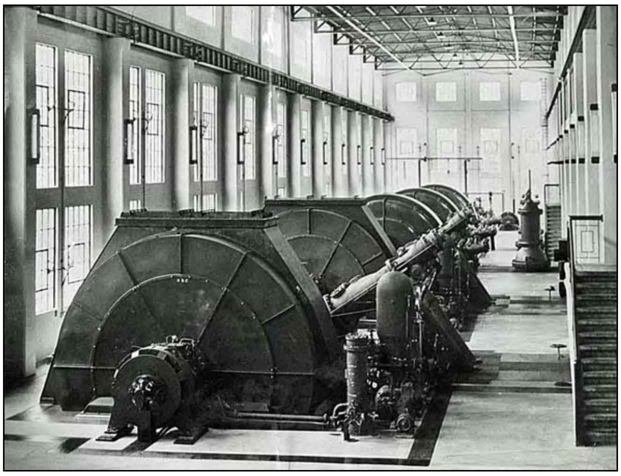

Figure 32: Interior of power station in 1940s showing the two newly installed English Electric Co machines in the foreground (HEC Collection).

2.5.2 Construction and Installation

Labour and material shortages, followed by re-armament with the advent of the Cold War, meant that it continued to be difficult to construct the Clark Dam and the extensions to the power station.[74] Although the load demand on Tasmania's power resources was reported to be twice that of other states, the shortages ensured that the original completion deadline of 1949 had to be extended to 1951.[75] Installation of the 21000hp English Electric Co machine began in 1949. The sixth pipeline from the hilltop valve house to the power station was not completed until February 1951 and the machine placed into operation in December of that year (Figures 33 & 34).[76] In 1952-53, a sum of £191,760 was spent to upgrade the switchyard for the power station.[77]

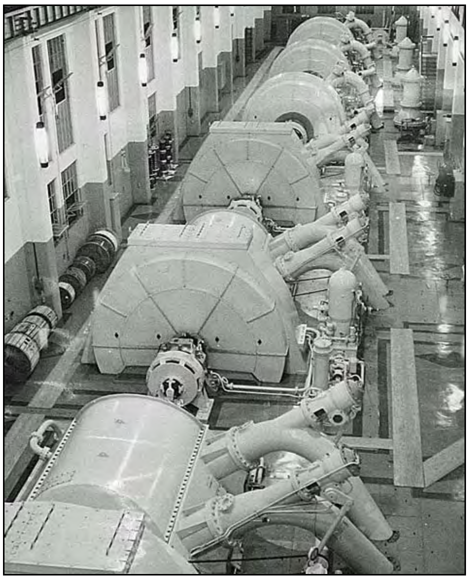

Figure 33: Interior of power station with six machines. The three original Boving Ltd machines are in the background with the three newer English Electric Co machines in the foreground. (HEC collection).

[74] Annual Reports of the Hydro-Electric Commission, 1950-51, p. 5.
[75] Annual Reports of the Hydro-Electric Commission, 1946-47, p. 3; 1947-48, p. 11.
[76] Annual Reports of the Hydro-Electric Commission, 1950-51, p. 10; 1951-52, p. 10.
[77] Annual Reports of the Hydro-Electric Commission, 1953-53, p. 6.

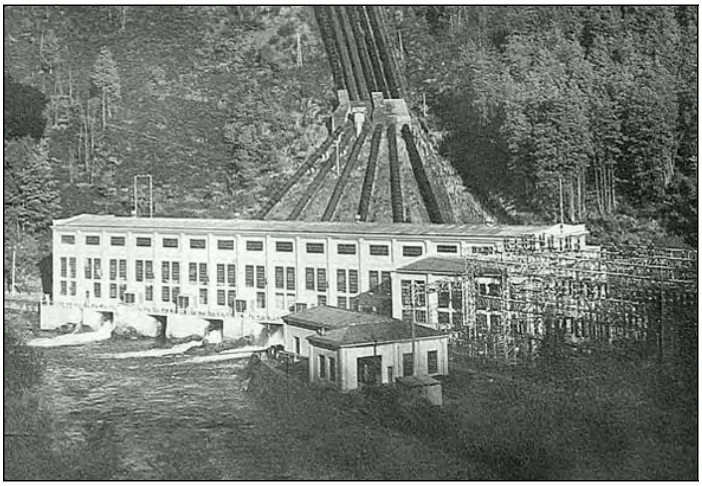

Figure 34: View of power station in 1950s showing the location and layout of the workshop adjacent to the switchyard and the six hillside penstocks - compare with figure 35 for changes to workshop (HEC collection).

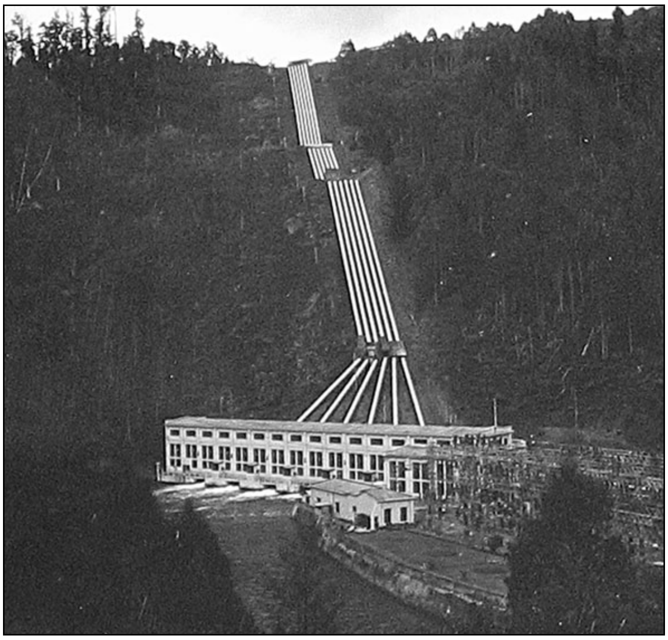

Figure 35: View of the power station in late 1950s. Note that the wing extending towards the river from the north-eastern end of the workshop has been removed (HEC collection).

2.6 War Time

Between 1940 and 1943 a garrison of one officer, eight NCOs and 35 men of other ranks were barracked opposite the Chalet. They were charged with patrolling the pipeline, canal and power station. The power station was blacked out and camouflaged and large blast mats strung between the generators.[78] There were trenches around the township and the power station and a bomb proof bunker is said to have been built alongside the power station then bricked up after the war.[79]

2.7 Operating the Power Station

Originally each Tasmanian power station had its own superintendent and daily operations were planned in consultation with other station superintendents. As Waddamana and Tarraleah had the greatest generating capacity, their

[78] Lupton, p. 155.
[79] Sandra Hogue, pers comm., 3 May 2005. The bricked up bunker is evident adjacent to the power station.

superintendents largely led these decisions. However, the commissioning of six other stations on the lower Derwent and the Trevallyn station in the 1950s made the system much more complex and led to a more centralised structure of information gathering, analysis and scheduling of output. In 1961, a centralised Command Centre was inaugurated at the Elizabeth Street head office.[80]

2.7.1 Control Room

The control room at Tarraleah had to be upgraded as new machines were installed and the operation of canals and pipelines became progressively automated (Figures 36-38). In particular, for safety and daily operational reasons, it became increasingly important to know what was happening at the various points along the canals and pipelines as well as at the power station. Consequently electronic gauges were installed at critical points and instrumentation added to the control panel in the control room.

A major upgrade, costing $369,000, occurred in the mid 1970s when control for the Tungatinah Power Station was transferred to the Tarraleah station. At the same time the Chief Electrical Engineer advised the HEC Commissioner that poor working conditions in the Tarraleah control room needed to be remedied.[81] The control panel was to be extended by one bay to accommodate the Tungatinah controls. Plans made to soundproof the control room from the machine room included installing:

- double glazed windows and double bricked walls on the machine side of the room,
- an airlock at the northern entrance to the control room,
- an acoustic door at the southern end, and
- acoustic hoods on machines 4-6.[82]

The control room was air conditioned in 1982.[83] The last major alteration occurred in 1996 when the Tarraleah and Tungatinah Power Stations were automated centrally from Hobart with a duty fitter/operator in attendance at Tarraleah on an ‘as needed’ basis.[84]

2.8 Maintenance and Upgrading

Operating a large hydroelectric power station requires continual maintenance and refurbishment of both plant and other infrastructure. This often required taking one or more machines out of service for periods ranging from several hours to several months to carry out vital maintenance tasks and included cleaning or upgrade of penstocks, valves and machines.

At Tarraleah, the Boving Ltd machines were problematic from the start and did not perform to the manufacturer’s expectations. In 1939-40 it was decided to modify the buckets on the pelton wheels to improve their output. Although modified buckets, installed in 1940-41, substantially improved their output, the machines continued to perform below expectations and were again modified in 1956-8 when a third jet was added to the mechanism directing water into the buckets.[85] Major overhauls were made to machines 1 and 3 in 1971-72, to machines 2 and 4 in 1975-76, to machine 5

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[80] Lupton, p. 220.
[81] Memo dated 13 June 1974, HEC file - 19/4b - Tarraleah Power Station General, 1940-.
[82] Memos dated 14 February 1974 & 19 November 1975, HEC file-19/4 -Tarraleah Design, 1962-1981.
[83] Tender document for air conditioning dated 26 March 1982, HEC file—DR1038(1).
[84] Randal Coleman, pers comm., 3 May 2005.
[85] Annual Reports of the Hydro-Electric Commission for 1939-40, p. 8; 1940-41, p. 3; 1955-56, p. 12; 1957-58, p. 13.

in 1977-78 and machine 6 in 1978-79.[86] Machine 4 was taken out of service in January 1979 for turbine reconditioning and installation of new alternator windings (Figure 40).[87] Bucket and runner replacement was also common, as cracks and corrosion recurred on all machines. The installation of stainless steel cups in c1960 solved these problems. Similarly machines needed rewinding on occasion. New governors were installed on the Boving machines in c2000.[88]

A major overhaul of the switchyard was recommended in 1983 when the laminations of all 19 transformers were found to be in need of replacement.[89] The switchyard was altered in c1997-8 when some of the existing infrastructure was relocated to the Tungatinah switchyard and a new switchyard with two new transformers was installed adjacent to the Tarraleah Power Station.[90] The large workshop adjacent to the power station was refitted at the same time to house circuit breakers for the relocated and upgraded switchyard.[91]

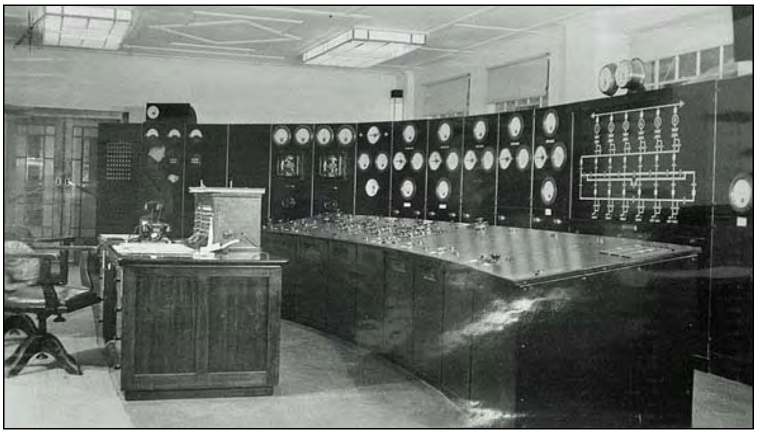

Figure 36: Control room at Tarraleah in c1950 (HEC collection).

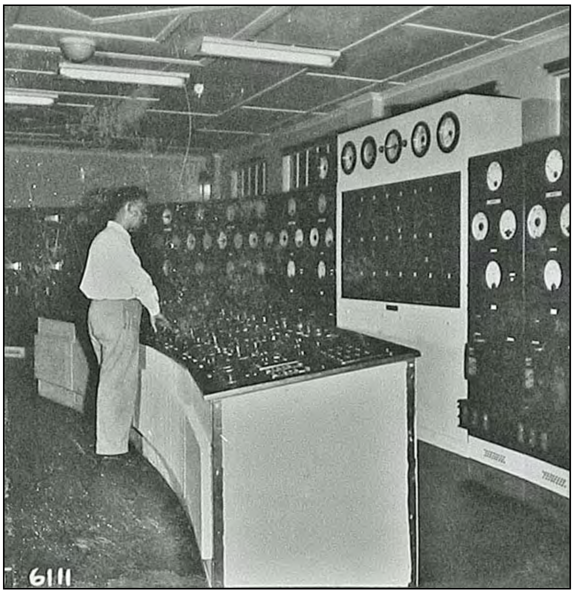

Figure 37: Control room in the 1960s. Note the additional dials and the change of lights from the original art deco style to fluorescent (HEC collection).

[86] Annual Report of the Hydro-Electric Commission, 1971-72, p. 10; 1975-76, p. 8; 1977-78, p. 11; 1978-79, p. 15
[87] Annual Report of the Hydro-Electric Commission, 1978-79, p. 15.
[88] Randal Coleman, pers comm., 3 May 2005.
[89] Memo dated 10 January 1983, HEC file - EG100D - Tarraleah General 1981.
[90] Randal Coleman, pers comm., 3 May 2005 & site visit, June 2005; Sandra Hogue, pers comm., 22 November 2005.
[91] HEC plan ENE-0239-04011/001:A and site visit on 20-22 June 2005.

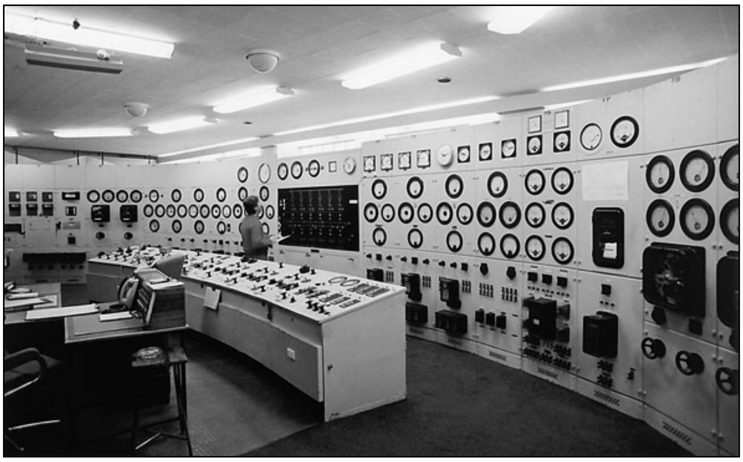

Figure 38: Control room in the late twentieth century. Note the altered ceiling (HEC collection).

Figure 39: Maintenance of turbine during the 1950s (Frank Hurley photograph held by NLA — http://nla.gov.au/nla.pic-an2396718).

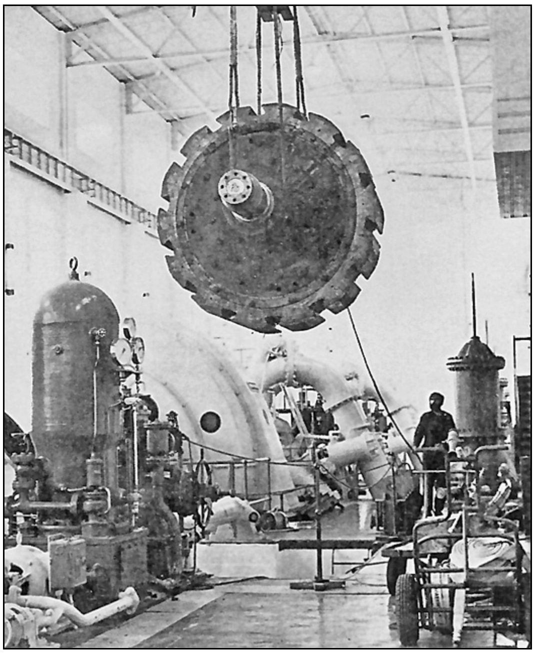

Figure 40: Number 4 rotor being lifted into position by the overhead crane following rewinding in 1979 (*Cross Currents*, December 1979, p. 9).

At regular intervals the penstocks have been internally cleaned and reconditioned to maintain the efficiency of what came to be regarded as a long and complex penstock system with a minimal head.[92] Initially workers crawling through the pipes did this manually. In more recent times it has been carried out by a robotic device that blasts the interior to remove corrosion. A new critical path maintenance regime was trialed at Tarraleah in 1965 when the number 4 hillside pipeline required internal relining. Using this method the HEC found that the time out of service was reduced.[93]

Other problems with the concrete penstock anchor blocks and rocker supports recurred intermittently and were of major concern due to the possibility of penstock failure and disastrous damage occurring to the power station. In 1971-72 significant slip movement was discovered on the hillside pipelines and four months were spent stabilising 2 anchors and resetting all rocker supports.[94] In 1975, two of the hillside penstocks underwent major refurbishment, costing some $1.2 million, in order to extend their life and improve performance. This involved grit blasting and painting the internal surfaces to prevent water corrosion. At the same time pipes were replaced around the machines, water needles were overhauled and a partial discharge analysis machine installed on No. 3 machine.[95] The inlet valves to Machines 1-3 were renewed from the late 1990s.[96]

Additional maintenance issues have included potential flooding of the power station. Floods caused substantial damage when the blacksmith's shop, located in the workshop built adjacent to the switchyard, was destroyed by floodwaters in 1939.[97] A substantial flood in June 1952 forced the temporary shutdown of the station, and inundated the switchyard, partially destroying its retaining wall and undermining 30% of the blacksmith's shop.[98] The shop was subsequently demolished (see figures 34 & 35). Following extensive testing on a hydraulic model constructed near the pumped pond, £35,000 was allocated in 1957 to undertake flood protection measures against a flood of 45,000 cusecs.[99] These measures included alterations to the river banks, removal of boulders on the river bed, the realignment and construction of new retaining walls and various alterations to the power station to make it more water tight.[100] Alterations to the power station included:

- water-proofing machines,
- installing standby dewatering pumps,
- installing jet pump, delivery pipe and valves, and
- raising machine air outlets, sealing riverside windows and making riverside door watertight

In the same year the Department of Labour and Industry informed the HEC of the need to install handrails in various locations around the power station.[101]

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[92] For comments concerning the impact of the low head at Tarraleah note, for example, memo from the Chief Electrical Engineer to the Chief Civil Engineer on 15 August 1984 - Hydro Tasmania file, 19/4B: Tarraleah Power Station General, December 1940-.
[93] Annual Report of the Hydro-Electric Commission, 1964-65, p. 9.
[94] Annual Report of the Hydro-Electric Commission, 1971-72, p. 10.
[95] *Cross Currents*, March 1995, p. 1.
[96] Randal Coleman, pers comm., 3 May 2005.
[97] See HEC plan B6179, dated 15 September 1939.
[98] See Memo from Resident Engineer (Tarraleah) to CCE, 30 June 1952; memo dated 6 February 1956, HEC files - DW 119/9 vol IV; Report of the Nive River Model dated 24 September 1954.
[99] Report of Power Committee dated 17 May 1956 and memo dated 21 November 1957 HEC files - DW 119/9 vol IV.
[100] For detailed discussion of flood protection works see the sub-committee report dated 28 June 1956, in HEC 70/10.
[101] Letter from Dept of Labour and Industry dated 10 may 1957, HEC files - DW 119/9 vol IV.

2.9 Late Twentieth Century Redevelopment

In the mid 1980s the HEC considered that the power station had a possible 60 years of useful life remaining.[102] It was felt that the machines were inefficient and worked off an insufficient head to maintain optimal output. Over the ensuing years several options were canvassed, including replacing the existing machines with one or two more modern and efficient Francis Turbine machines and building a new power station either up or downstream of the existing building. These options fell into abeyance until being reactivated in recent years. Once again it is felt that maintaining the existing power station is a more realistic financial option until the impacts of entering the national energy market (NEM) are known.[103]

[102] Memo dated 22 February 1985 in HEC file - EG100D.
[103] Randal Coleman, pers comm., 3 May 2005.

3.0 Physical Description

3.1 Introduction

This section provides a physical description of the Tarraleah Power Station system, including the switchyard, hillside penstocks and hilltop pipelines, hilltop valve house and forebay. It arises from a physical inspection of the building and associated infrastructure carried out by David Parham and Ian Terry in company with Stephen Kelly (Hydro Tasmania).

The physical description also provides an indication of the significance of various elements that make up the complex. A simple four tiered rating system is used.[104]

This is compatible with other assessments prepared for Hydro Tasmania and allows for comparative analysis across studies. It also recognises that most aspects of the Hydro Tasmania system have some significance in the overall development of the State's power supply and that features are either significant (at varying levels) or detract from the [heritage] value of the system. The scale used is:

very high significance

A feature of exceptional significance within the development of the Tarraleah Power System as a key site in the evolution of the hydro system in Tasmania. All features identified as original elements of the power station and associated sites have been accorded very high significance.

A feature identified as having very high significance should be retained in its planned or intact form where possible.

Changes should generally only be made to recover the significant form or to make the building or element safe for occupation.

medium significance

An assessment of medium significance applies to features that represent the typical, standard, often utilitarian elements of the power station system. They may be elements added following the original construction of the power station and associated sites. While individually these features are not of high significance they contribute to the understanding of the development of the complex and should be retained wherever possible.

Medium heritage significance indicates that these features are typical or standard features that make up the majority of the system and which demonstrate the principal characteristics of hydro technology and construction.

A much higher level of flexibility can be exercised on these features in relation to upgrade requirements, maintenance or in some cases replacement.

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[104] Readers will note that there is no 'high' significance rating. The Tarraleah Power Station complex has been assessed as being of 'very high' significance in an inventory of heritage assets comprising the Hydro system undertaken by Paul Davies Pty Ltd. Following this logic, elements of the complex that have the ability to demonstrate original layout or construction must, by definition, be afforded a rating of 'very high'signficance. On this basis, introduction of a 'high' significance rating was seen as unncessary. A numeral ranking system was eschewed on the grounds that it neither intuitive nor self explanatory.

low significance

These features contribute little to the overall understanding or appreciation of the Tarraleah Power Station system. Features of low heritage value are those that use technology or construction forms that are not unique to the Hydro system or this station. Modern features that have not been assessed as intrusive have frequently been accorded low significance. They may also be features that have been significantly altered, thus removing heritage value.

These features may be retained or removed to suit present or future operational requirements or to facilitate sympathetic adaptation of the place.

intrusive

Intrusive features are those that reduce the heritage significance of the Tarraleah Power Station system.

Where the opportunity arises these features should be removed from the building and/or wider complex to facilitate recovery of a more significant form.

3.2 Tarraleah Power Station – External incl Wider System Elements

The external parts of the Tarraleah Power Station contains a number of elements, spread over some three kilometres. From the terraced riverside setting of the power station with its dramatic backdrop of hillside penstocks over-looked by the hilltop valve house, to the sentinel like surge towers to the forebay, the system is intact, accessible and readily interpretable.

The following data sheets describe key elements in the system.

3.2.1 Forebay

Description

The forebay is located where water coursing down the canal, at this point divided, passes through trash racks (installed in the mid 1990s[105]) and enters a portal that houses the two hilltop pipelines that trend eastwards *en route* to the hilltop valve house. The trash racks are serviced by an automated weed cleaner that travels along an overhead gantry. The rakes formerly used to clear obstructions lie in close proximity.

A centrally situated gangway constitutes the original maintenance access to a pair of radial gates located approximately 20 metres south of the portal. The central gangway has been replaced by a new railed walkway which runs along the eastern side of the canal. A spillway is also located to the north-east of the radial gates. This is all part of the control mechanisms that enable the system to be incrementally shut down.

A stack and instrumentation affixed to the headwall of the forebay allows remote monitoring of water levels.

Adjacent to the forebay there is a vertical board building over-clad in colorbond™. The two roomed interior has a tent ceiling and is lined with ply wood. It currently houses forebay controls and has reportedly functioned as a weather station although its original purpose is unknown.[106]

Element	Significance rating
Setting	very high
Radial gates	medium
Forebay channel	very high
Spillway	very high
Trash rack	low
Weed-cleaner	low
Shed form and fitout	medium
Shed cladding	intrusive

[105] Stephen Kelly, pers. comm., 20 June 2005. The new trash racks replaced the original screen which was constructed of 3” railway sleepers.
[106] Stephen Kelly, pers. comm., 20 June 2005.

3.2.2 Hilltop Pipelines

Description

Two pipelines convey water from the forebay to the hilltop valve house. These are referred to as the hilltop pipelines. The pipes, fabricated at Tarraleah and electric welded ‘in situ’ are 2.6m in diameter and are supported on concrete cradles and/or steel anchors on smaller concrete bases.

For much of their extent the silver-grey painted penstocks are located parallel to the road into Tarraleah Village. Mature trees, including conifers, line the grassy verge. The southern-most penstock was part of the original 1937-38 construction whereas its counterpart closest to the road was installed in the early 1940s. Three pairs of “anti-vac” valves (manufactured by Glenfield & Kennedy Ltd, Kilmarnock) are located at high points along the penstocks route. These provide a safeguard against implosion. Valves are also present at points where water is drawn to supply the village, chalet and golf course.

A small timber bridge with a gate, timber railings and rubble abutments crosses the penstock below the forebay. The bridge is in poor condition. A second timber decked bridge with stone abutments and concrete and steel is located near the valve house.

Element	Significance rating
Setting	very high
Pipelines	very high
Concrete supports	very high
Anchors	very high
Valves	very high
Bridge	medium

3.2.3 Surge Towers

Description

The two steel surge towers, fabricated in Tarraleah and welded 'in situ', are outstanding features that impart a 'gateway' status on the approach to Tarraleah from the south-east.

The towers are 141 feet (43m) high, and 19.5 feet (5.94m) at the top tapering to 18 feet (5.49m) at the bottom. They are located on a rise adjacent to the hilltop penstocks and are seated on concrete slab foundations. There are valves and concrete supports on the adjacent pipes. Cable stays provide stability and steel ladders provide external access to their tops.

It is unusual to find two surge towers together and their form and height is of high visual and technical significance.

Element	Significance rating
Setting	very high
Surge Towers (including concrete bases, ladders, cables, etc)	very high
Valves	very high

3.2.4 Valve House

Description

A hip roofed colorbond™ clad building, originally of timber but reclad in recent years. The building is timber framed with a concrete base and pit containing the valves. There are three roof vents. The original valve house was built to accommodate the transition from the southernmost hilltop pipeline into three hillside penstocks which fed machines 1-3 in the power station below. The valve house was doubled in size in the 1940s when hilltop pipeline number 2 was constructed along with hillside penstocks 4 and 5. Evidence of the extension of the building can be seen in the interior of the building (see annotated photo). There are remnant timber louvres and laserlite panels on the eastern side of the building.

Both the hilltop pipelines and hillside penstocks are anchored at the building by large concrete supports. A railing has been installed at the edge of the concrete support overlooking the hillside penstock. This provides a spectacular overview of Tarraleah power station and a distant view of the hillside penstocks to Tungatinah power station. Interpretive panels are located on this platform.

The valve house contains six original butterfly valves installed to regulate the water passing into the six hillside penstocks. Other more recent equipment has also been installed.

A stone retaining wall in the cutting in which the valve house is situated shows various stages of construction with different levels of sophistication and workmanship.[107] An adjacent metal clad shed contains winches for the haulageway.

A concrete pad south of the valve house indicates the site of the former Tarraleah village switchyard.

Element	Significance rating
Setting	very high
Valve House	very high
Valve house cladding	low
Butterfly valves	very high
Recent equipment, gas cylinders, etc., in valve house	low
Stone retaining wall leading to valve house	very high
Observation deck	low
Switchyard concrete pad	medium

[107] Stephen Kelly, pers. comm., 20 June 2005. Stephen suggests that the more ornate and better quality stonework may have been carried out by post war immigrant workers used to building in stone.

3.2.5 Hillside Penstocks

Description

Six steel penstocks drop from the hilltop valve house to the power station. The pipes taper in diameter from 5 feet (1.52m) at the top to 4 feet (1.22m) at the power station. At each break in slope they pass through concrete thrust boxes. Steel and concrete anchors secure the pipes at intervals.

On approach to the power station the pipes are set within cuttings. They enter the building through inlet valves at the rear. The pipes were fabricated in Tarraleah and electric welded in situ. They were installed in three stages coinciding with the commissioning of machines (refer to s2.0 for a detailed explanation of the sequence of construction).

The penstocks are a highly visible feature of the immediate landscape with a viewing platform adjacent to the hilltop valve house providing a spectacular overview of their precarious position on the hillside above the power station. They are a key feature in the landscape and, with the Tungatinah penstocks across the valley, form an industrial landscape of very high significance.

Technically they were the largest penstocks fabricated in Tasmania to that time.

Element	Significance rating
Setting	very high
Pipes	very high
Concrete rocker supports and thrust boxes	very high
Anchors	very high
Cuttings above power station	very high

3.2.6 Haulageway

Description

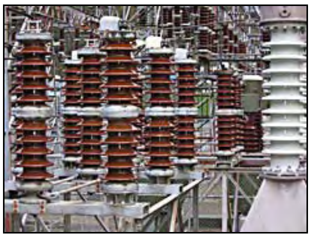
The haulageway runs downhill parallel to, and on the northern side of, the hillside penstocks.

The haulageway was one of the first pieces of infrastructure established at Tarraleah during the construction phase. It facilitated movement of materials between the various construction sites and has played a role in the subsequent maintenance of the hillside penstocks.

The haulageway consists of a light railway comprised of parallel iron rails and concrete sleepers. It was operated from a winch house (understood to originally have been a timber structure) now a metal clad shed set within the cutting at the top of the hill near the valve house. The existing shed contains a winch mechanism that was believed to have been used at Tungatinah power station.

Element	**Significance rating**
Setting	very high
Formation (including rails & sleepers)	very high
Winch house form and fitout	low
Winch house cladding	low
Mechanism - winch and cable drum	very high

3.2.7 Switchyard



Description

The original 1937-38 switchyard. A substantial portion of the original infrastructure was removed and a new switchyard installed adjacent to the power station in the 1990s.

The original switchyard is located on a levelled terrace north of the power station between the internal access road and the Nive River. It is contained within a locked enclosure surrounded by a wire mesh fence and a stone and concrete retaining wall with tree ferns growing out of it. This also retains the road above.

The switchyard is integral to the setting of the power station.

It contains original switching infrastructure, including some original transformers and circuit breakers, a remnant tramway with small bogey, two small concrete buildings (original function unknown) and a third concrete structure, which provides access to the underground cable tunnel. The latter is fitted with metal racks and carries cables from the generators in the power station machine room to the switchyard. In places the camouflage paint applied during World War 2 remains visible.

Element	Significance rating
Setting	very high
Original switching infrastructure (1937-1951)	very high
Modern switching equipment	low
Concrete buildings	very high
Tramway (including bogey)	very high
Camouflage paint finishes	very high
Cable tunnel (including entrance shed)	very high
Stone retaining walls	very high
Fence	low
Water tank remnant	very high

3.2.8 Power Station

Description

The Tarraleah Power Station is a concrete walled building with stripped classical design elements, banks of steel framed windows, and a formal entry for both visitors and to the loading dock. It has a gabled corrugated iron roof (which replaces the original corrugated asbestos cement roof). The pedestrian entry is marked by an Art Deco style projecting bay and bridge. Metal and glass Art Deco style ornamental lights are located around the entrances and the sides of the building. The power station's facades are divided into bays featuring pilasters and stepped parapets, corbelled ledges, concrete hoods, string courses, small paned windows, and circular entry columns. A redundant pelton wheel is displayed near the entrance bridge.

The offices occupy a wing at the rear of the building. The penstocks enter the building at the lower ground level while on the river frontage six tailraces provide an outlet for water which has driven the generators. Air vent shafts are located on the river side wall adjacent to the machines.

The station is situated on the bank of the Nive River in a spectacular and accessible position. There are stone retaining walls on the river, and above and below the carparking area. An air raid shelter excavated during World War 2 adjacent to the loading dock door has been filled in and the entrance blocked. Two rhododendrons are located opposite the main entrance bridge. A Stephenson screen is located on the grassy terrace south of the power station.

The power station is one of the most architecturally impressive and well designed in the hydro system with an attention to detail and ornamentation lacking in post war power stations. It forms part of perhaps the most impressive and significant grouping of hydro assets in Tasmania.

Element	Significance rating
Setting	very high
Power Station (incl tailraces, penstock inlets, riverside & hillside paths/railings etc)	very high
Tramway rails	very high
Stone retaining walls	very high
Infilled air raid shelter	very high
1990s Switchyard	low
Pelton wheel monument	medium
Communications infrastructure on station roof	low
Corrugated iron roof	low
Art Deco style external lights	very high
Stephenson screen	low
Carpark	medium

3.3 Power Station—Internal Spaces & Elements

The internal spaces, elements and fittings of the Tarraleah Power Station are remarkable for their integrity as a fine example of a largely intact 1930s-40s hydro-electric power station.

Many original elements survive to the present, ranging from the fine Art Deco style office fitout on the second floor to the turbines and generating machinery that, with regular maintenance and judicious upgrades, continue to produce power after almost seventy years in service.

The significance assessments in the following data sheets reflect the high integrity of the building.

3.3.1 Second Floor

Public and main staff access to the power station is via a short bridge to the second floor. The internal fitout of the public and staff areas are of a very high quality with fine joinery, decorative iron railings with turned handrails, terrazzo floors, Art Deco style plaster ceilings and a control room that, although largely (but not wholly) computerised, contains the original bench board and many original components.

In broad terms the fitout of the floor is intact, with most changes being reversible, and is distinguished by fine workmanship.

It has been identified as one of the most significant fitouts in the State hydro system reflecting the confidence of the HEC and the government of the day in the role of power generation in the state.

3.3.1.1 Entrance Vestibule – S1

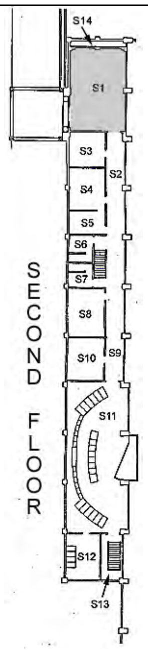


Figure 41: Entrance vestibule showing terrazzo floor, door, windows and modern wall cabinets.

Description

The entrance vestibule is a large formal space dominated by a fine terrazzo floor with a large circular motif featuring the Tasmanian heraldic lion above the station opening date, 1938, surrounded by a circle of text reading ‘Tarraleah Power Station, Light, Heat, Power’. The space also features two large memorial stained glass windows in the northern wall commemorating the opening of the power station in 1938 and the labour of the men who worked to design and construct the development. These windows are backlit with lights accessed via S14. A plaque on the eastern wall also commemorates the opening of the power station.

The internal walls are of rendered coke ‘breeze blocks’ divided into two bays on each wall. Walls are painted pale yellow/cream with a brown skirting. The plaster ceiling features Art Deco detailing and is divided into eight recessed rectangular bays, each with a fluorescent light behind an Art Deco light shade.

The internal door to the second floor passageway (S2), the external door, and their architraves, are of stained Tasmanian oak. The entrance features three panelled double doors with ply panels and modern door furniture. A six paned stained timber framed fanlight with clear glass surmounts the door. The double swing doors to S2 feature glass infill with central panes of clear 1/4inch bevelled polished plate glass and surrounding panes of *Belgian stippolite*. Antique bronze finished kick plates and diagonal aligned handles complete the doors. A window located on the western wall has a painted metal frame and eight large panes, the central four being a side-opening casement. Window furniture is original.

Modern wall cabinets, a mid-twentieth century maps cabinet, fire and security infrastructure and paintings and posters complete the room’s furnishings.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows	very high
Ceiling	very high
Floor	very high
Entrance door and fanlight	very high
Door to S2	very high
Original door and window furniture	very high
Modern door furniture	low
Memorial stained glass windows	very high
Bronze memorial plaque	very high
Modern wall cabinets, map cabinet, pot plant, posters and artworks	low

Figure 42: Bronze plaque on eastern wall commemorating the commissioning of the power station in February 1938.

Figure 43: View of vestibule from S2 showing door to S2, Art Deco ceiling, terrazzo floor and stained glass windows.

3.3.1.2 Second Floor Passage – S2

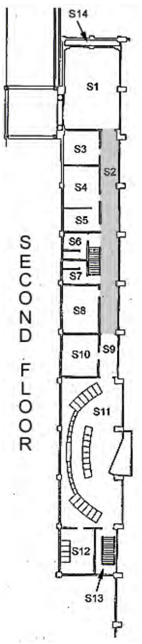


Figure 44: View of second floor passageway looking towards the control room, showing tiled floor, Art Deco style ceiling (consistent throughout most second floor offices and rooms), timber doors and windows to side rooms and offices, timber double doors to S9 and the late twentieth century glass partition to the machine floor.

Description

The second floor passageway is a long narrow corridor providing access between the entrance vestibule and the control room as well as the various offices, mess room, toilets and central stairwell. It also provides a gallery with views to the machine floor below. An original welded steel with varnished timber rail that runs along the length of the gallery has been retained although a floor to ceiling double glazed window with metal framing was installed along its length in the late twentieth century to reduce noise levels from the machine room. The passageway has been re-floored with tiles, but features original stained Tasmanian oak skirtings. Side doors with stained Tasmanian oak timber frames and glazing bars provide access to offices and other rooms whilst fanlights and high level windows with stained timber framing maximise light to these spaces. Although all doors and windows originally featured glass panes some of these were subsequently infilled. They will be discussed in more detail in the relevant space descriptions.

The passageway ceiling features the original Art Deco plasterwork with geometric motifs and modern round and fluorescent light fittings. In places (eg over the stairwell) the plasterwork is in a deteriorated condition with some sagging evident. A square section of ceiling has been roughly converted into a removable panel, probably to provide access to the roof space.

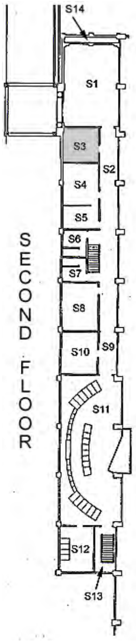
The space includes the main stairwell leading from the second floor to the first floor and machine floor. The stairwell features welded steel balusters and varnished timber railings. Walls are decorated with framed paintings and photographs relating to power developments, notices detailing evacuation procedures, and several bronze plaques. Several of the plaques appear to have been relocated from the machine room. Their significance is reduced due to this removal from their original context.

Element	Significance rating
Space configuration	very high
Walls	very high
Original windows & glass lights	very high
Glass barrier to machine room	low
Ceiling	very high
Lights	very high
Floor covering	intrusive
Doors to S1 and S9	very high
Doors to S3-8	very high
Infill on door to S8	intrusive
Door and window furniture	very high
Infilled fanlights and windows to rooms	intrusive
Brass plaques	very high,
Modern posters and artworks	low

Figure 45: Central stairwell to first and ground floors showing late twentieth century tiled flooring and Art Deco painted welded steel balusters and gate, and varnished timber railing.

Figure 46: View of door between S1 and S2 showing timber and brass detailing, and both the plain and stippolite glass panels. Apart from the No Smoking sticker this door is identical to the door between S2 and S9.

3.3.1.3 Tarraleah Team Leader's Office - S3

	 **Figure 47: Detail of team leader's office showing painted timberwork, linoleum floor covering, modern light switches and heating, chair rail, and original and additional door furniture.**

Description

A plain office with painted walls and internal timberwork, modern electrical conduits, light and power point fittings, furniture and heating. The original timber door to S2 is divided into central and perimeter glass panes with ¼ inch double rolled roughcast panes in the centre and *Belgian stippolite* on the surrounds. This pattern is typical of the office doors on the second floor unless otherwise described. There is both original and modern door furniture. There is a section missing in the lower left architrave. The fanlight to S2 is fixed and features a large lower drawn glass pane with a smaller *Belgian stippolite* upper pane. A timber plate on the external door frame reads 'D Eng in Charge'.

Timber framed internal windows to S2 and S4 have painted frames, drawn glass central panes *and Belgian stippolite* perimeter panes. External windows are metal framed 16 pane windows with the central four panes forming a side opening casement window with original furniture. A retro-fitted painted timber frame supports a fly screen on the opening section of the window.

Internal walls are rendered coke 'breeze blocks' and feature a painted timber chair rail. Floor covering is late twentieth century linoleum and is laid partially up the walls as a faux skirting board. The plaster ceiling features an ornate ceiling rose that is more elaborate than those elsewhere on the second floor, possibly to denote the status of the occupier of the office. The ceiling also features a more ornate cornice than other offices and rooms.

The room has modern electrical fittings, switches, power points and heaters. Intrusive fluorescent light fittings provide illumination.

Element	**Significance rating**
Space configuration	very high
Walls (including chair rail)	very high
External windows	very high
Internal windows to S2 & S4	very high
Fly screen	medium
Door to S2 & fanlight	very high
Timber name plate over door (external)	very high
Ceiling (including rose)	very high
Floor covering	intrusive
Modern furniture, smoke detectors, heater, electrical fittings, etc	low
Fluorescent lights	intrusive
Paintwork interior timber work	intrusive

Figure 48: Ornate ceiling rose in team leader's office. Compare with figure 9 showing the ceiling decorations throughout the rest of the second floor spaces.

Figure 49: External window in team leader's office showing the centrally located opening casement and retro fitted timber framed insect screen. This window arrangement, with variation to the numbers of panes, is typical throughout the building.

3.3.1.4 Shared Office – S4

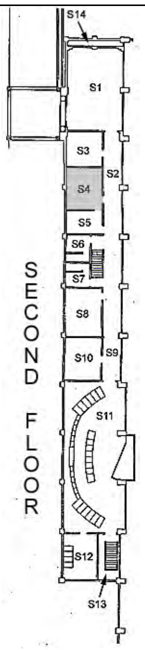


Figure 50: General view of S4 showing floor covering, internal doors and window to S5, modern furniture and fittings (including fluorescent light).

Description

A slightly larger office than S3 with similar fittings throughout. It features a modern square tiled linoleum floor, modern furnishings and electrical conduits, fittings and switches, painted skirtings, internal door and window frames and architraves. Internal windows are the same as for S3 and give onto S2, S3 and S5. The external window is a twelve paned metal-framed window with a centrally located four-pane side-opening casement.

The door and fanlight to S2 is the same as for S3 although the fan light is hinged at the bottom. There is a painted timber panelled door to S5 with a single upper panel and three lower vertical panels. This door does not appear on original plans of the building and may have been added subsequent to the building's completion.

The ceiling is as per the original plans and features the Art Deco geometric pattern present through much of the second floor. Intrusive fluorescent light fittings provide illumination.

The floor shows evidence of previous furniture locations with some sections of linoleum tiles missing. Together with S5 this room was previously used as a communications rooms for the Tarraleah district.

The room features remnant timber and bakelite light fittings on the ceiling. Although apparently not functional they indicate the style of original fittings.

Element	Significance rating
Space configuration	very high
Walls	very high
External window	very high
Windows to S2, S3 & S5	very high
Door to S2 & fanlight (including original furniture)	very high
Door to S5	medium
Ceiling	very high
Floor covering	intrusive
Remnant original bakelite light fittings	very high
Modern furniture, heater, electrical and light fittings, etc	low
Painted interior timber work	intrusive

Figure 51: Detail of original door furniture in S4. This typical of many door handles found in the internal room doors on the second floor of the building.

Figure 52: Original timber and bakelite light fitting on ceiling of S4. This type of fitting is now rare inside the building.

Figure 53: Internal window between S4 and passageway showing drawn glass central pane surrounded by *Belgian stippolite* perimeter panes. Note also the window to S3, the ceiling detail of the passageway and the smoke detector. The window arrangement is typical of the second floor internal windows throughout unless otherwise noted.

3.3.1.5 Communications Room – S5

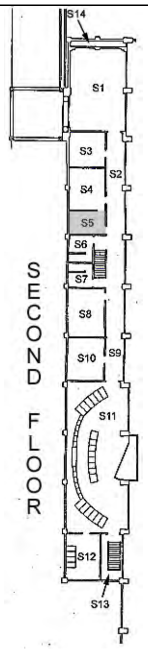


Figure 54: View of communications room showing floor covering, door, window and metal shelving.

Description

Originally planned as a small office this room was later converted to a communications room and used as such in conjunction with S4. The ceiling is of acoustic tiles (possibly laid over the original plaster ceiling) with modern fluorescent lights. There are painted timber skirtings, stained timber door and fanlight frame to S2 and window frames to S4. The external windows to S2 have been covered over with caneite. The windows to S4 retain the original drawn glass and *Belgian stippolite* panes. The external window is a metal-framed twelve paned window with a central four paned opening section.

Flooring is as for S4 with sections missing indicating the location of previous furniture/shelving. There are modern light and electrical switches and conduits and smoke detectors. The site of the original light switch on the internal door architrave is indicated by an unfilled circular hole. Internal walls are rendered coke 'breeze block'.

The room's furnishings largely consist of industrial metal shelving holding electrical equipment, lead acid batteries and some switch boxes. Intrusive fluorescent lights provide artificial illumination.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows	very high
Windows to S2 & S4	very high
Door to S2 & fanlight	very high
Door to S4	very high
Ceiling	very high
Floor covering	intrusive
Modern furniture, shelving, heater, electrical fittings, etc	low
Fluorescent lights	intrusive
Stained interior timber work	very high
Painted interior timber work	intrusive

3.3.1.6 Men’s and Women’s Toilets - S6 & 7

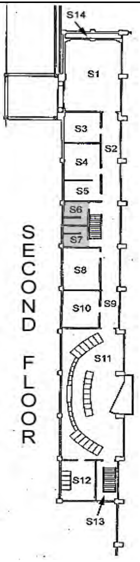


Figure 55: View of doors and glass bricks to second floor toilets, taken from the stairwell.

Description

Two small utilitarian spaces, each providing a single flush toilet and wash basin facilities for staff and visitors. They are located behind the S2 stairwell with $6^1/_2$ inch square glass bricks providing light from S2. Internal walls and partitions are clad in masonite and laminated wall panels. External windows are six paned metal framed with fixed frosted lower panes and louvred frosted upper panes. The WC cubicles have fan vents installed in lieu of one section of louvred windows. The floor is linoleum and the ceiling masonite or caneite with timber battens and fluorescent lights. Light fittings are modern.

Original timber doors with original and modern door furniture provide access to the rooms.

Element	Significance rating
Space configuration	low
Walls	medium
Windows	very high
Mechanical ventilators	low
Glass bricks in internal walls	very high
Doors to S2	very high
Ceilings	intrusive
Floor covering	intrusive
Modern wc pedestals, wash basins, electrical fittings, etc	low
Fluorescent lights	low
Paint on internal architraves, glazing bars & skirtings	intrusive

Figure 56: External window in S7. Note Arctic glass panes and louvres.

3.3.1.7 Staff Room – S8

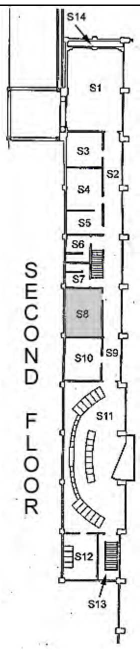


Figure 57: View to external wall of staff room showing windows with flyscreens, chair rail, linoleum floor and modern furnishings and fittings.

Description

This room was originally planned as an office but may never have functioned as such and became the station mess room. It is a large room with original door, fanlight and internal windows to S2 apparently covered over with masonite, plywood and asbestos cement sheets in an attempt to reduce noise from the machine room. It also has later twentieth century linoleum tiled floors as per S4 and S5, and acoustic tiles on the ceiling. It is unknown whether the original plaster ceiling remains 'in situ' above the acoustic tiles. An original/early timber name plaque over the external door frame reads 'Mess Room'.

There are two twelve pane metal-framed external windows to the west with the central four panes forming side opening casement windows. Boxed fly screens as per S3 have been retro fitted over these windows. There are also a painted timber chair rail, timber architraves and skirtings, and modern institutional kitchen furniture including table and chairs, sink, stove, urn, water cooler, refrigerator, fan heater and cupboards. Lights, conduits and other electrical fittings are all modern. Fluorescent lights provide illumination.

Element	Significance rating
Space configuration	very high
Walls (including chair rail)	very high
External Windows	very high
Flyscreens	medium
Windows to S2 (assumed to be under the fibro sheeting)	very high
Sheeting covering windows to S2 and door (including fanlight)	intrusive
Door to S2 & fanlight	very high
Timber name plaque over door (external)	very high
Ceiling — acoustic tiles	intrusive
Floor covering	intrusive
Modern furniture, heater, stove, sink, electrical and light fittings, etc	low
Fluorescent lights	low
Paint on internal timberwork	intrusive

Figure 58: View of staff room from door showing window and acoustic tiles. These are the same as the tiles in S5 (communications room) and S11 (control room).

Figure 59: Original timber "Mess Room" name plate. The style of this plate is the same as the "D. Eng in Charge" plate to S3.

3.3.1.8 Control Room Vestibule – S9

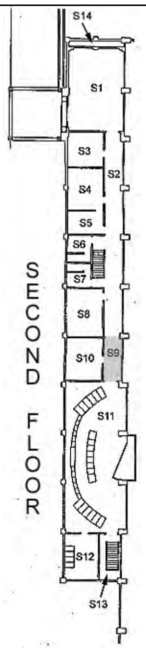


Figure 60: View of S9 showing ceiling, double doors to S11 (control room) and timber framed windows to S10.

Description

An airlock created in c1974-75 during an upgrade of the control room in an effort to reduce noise from the machine room. The space is a small section enclosed at the southern end of the second floor passageway. It has double swing doors, probably relocated from the southern entrance to the control room, which was then fitted with an acoustic door. While they were not originally located here, installation of the doors indicates a sympathetic solution to acoustic needs and fits in well with the doors to S11 and between S2 and S1. The doors have original brass furniture and modern Lockwood locks. The fanlights to both sets of swing doors (to S2 and S11) have been filled in with fibro cement sheeting. Glass panes in the swing doors are as per the door between S1 and S2. The space features stained glass timber work to doors and clear glass windows to the machine room and S10, Art Deco plaster work to the ceiling with a modern light (unshaded), a carpeted floor (as per the control room), and modern light switches and fittings. There is a coat and helmet rack on the eastern wall with chrome hooks. There are no skirtings.

Element	**Significance rating**
Space configuration	medium
Walls	very high
Windows to S10 and machine room	very high
Ceiling	very high
Door to control room	very high
Infill to fanlight to control room	intrusive
Door to S2	medium
Modern locks on swing doors	low
Floor covering	intrusive
Hat and coat rack	low
Modern electrical fittings, lights etc	low

3.3.1.9 Communications Room – S10

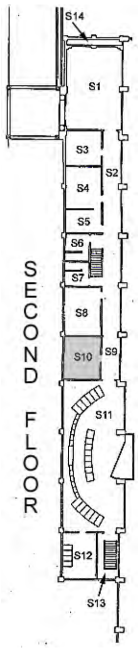


Figure 61: View of room showing door, windows and electronic equipment. Note also the Art Deco style ceiling details and intrusive fluorescent light.

Description

Originally designed as the shift engineers' mess, the room was used as a control room annex and later as a communications room. It has concrete walls and floor, Art Deco plasterwork to the ceiling with intrusive modern fluorescent lights and a floor covered in linoleum tiles. There are two groups of twelve paned metal framed external windows with the central four panes forming side opening casements with original furniture. There are also clear glass windows to S9 and infilled windows to S8. The timber door is as per S3, S4 and S5 and features a bottom-hinged fanlight. Interior timberwork (which includes skirtings on three walls) is painted. A rough hole has been cut into the floor at the south-western corner of the room to allow for passage of cabling. The room is furnished with shelving and electrical cabling and equipment, and has modern switches and power points.

Element	Significance rating
Space configuration	very high
Walls	very high
External windows	very high
Door	very high
Ceiling	very high
Fluorescent lighting	intrusive
Floor covering	intrusive
Hole cut into floor for cabling	medium
Painted internal timberwork	intrusive
Modern shelving, electrical equipment, cabling, electrical switches, fittings	low

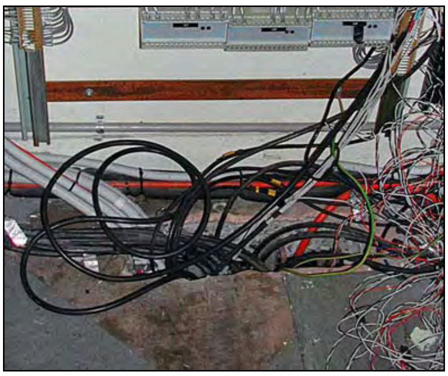


Figure 62: Hole cut in concrete in SW corner of floor of S10 to allow passage of cables after the room was converted to a communications room.

3.3.1.10 Control Room – S11

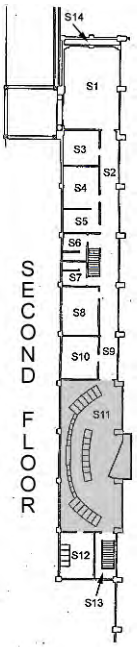


Figure 63: Main control panel in Tarraleah control room, with the original bench board in front and c1980s console to the left. Much of the instrumentation is now redundant.

Figure 64: Rear of control cabinet showing metal doors with original handles to access electronic circuitry in the board. Note the windows in the external wall.

Description

A large room that has been altered over time to adapt to changing work conditions and power station control requirements. The room has rendered coke breeze block interior walls, carpeted concrete floor and acoustic tile clad ceiling (possibly concealing original Art Deco plaster work). Modern lights are downlights and lights concealed in “eggcrate” fittings concealed in the ceiling.

Extensions in c1974-75 added a central cantilevered bay out over the machine room. This bay features three double glazed windows with stained timber framing in the main wall and single timber framed double glazed windows in each side wall. Four original timber framed windows at the northern and southern ends of the room flank the central bay. These overlook the machine room. The bay accommodates consoles providing upgraded control of the power station and the district. The bay has steel framing and is clad and lined with ‘Galvabond’ sheeting.

The concrete external (western) wall is divided into three bays, each with two sets of sixteen paned metal framed external windows. The central six panes of these are hopper style casements with intact original window furniture. Double swing doors to S9 feature glass infill with clear 1/4inch bevelled polished plate glass central panes and *Belgian stippolite* surrounding panes. Antique bronze finished diagonal handles and kick plates complete the doors. The original fanlight has been infilled. The doors to S12 and S13 are modern pine doors and are intrusive elements in the space.

A large curved control panel dominates the space. This is clad in metal and features numerous dials and instruments, many of which are now redundant although some remain in use. Metal doors, with original handles, at the rear of the control panel provide access to the electronic circuitry of the control panel. A desk height control bench board with various active and redundant instruments, meters, dials, etc., is located in front of the control panel. Redundant instrumentation in both the control board and the bench board has been disconnected and retained in situ. Modern timber desks and computer consoles are located on the eastern side of the control room.

Element	Significance rating
Space configuration	medium
Walls	very high
External windows	very high
Ceiling and lights	intrusive
Floor covering	low
Door to S2	very high
Infill to fanlight over door to S2	intrusive
Doors to S12 & S13	intrusive
Windows to machine room (adjacent to bay)	very high
Windows to machine room (in bay)	low
Original control panel	very high
Control bench board	very high
Modern control consoles (including desks, computers, chairs, etc)	low
Electrical switches, power points, conduits, etc	low

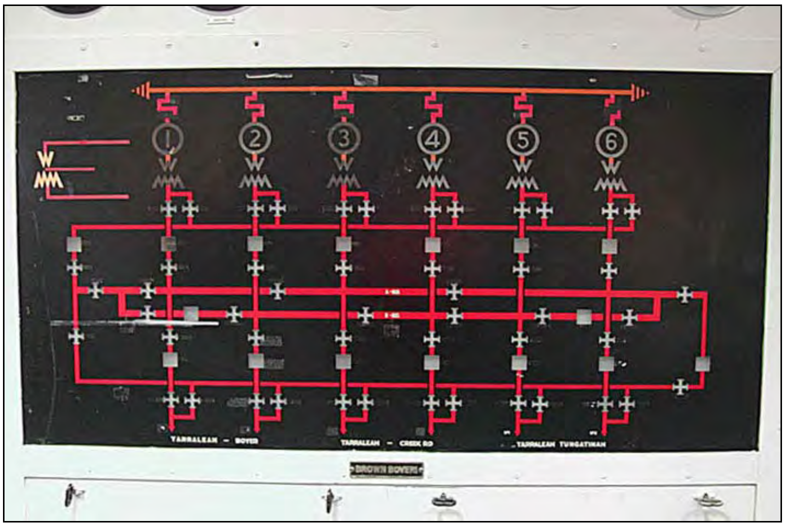


Figure 65: Redundant circuit diagram for the six generating machines, located on the main control panel.

Figure 66: Relays and controls for the auxiliary generators. This is part of the only fully intact original generator system in the power station.

Figure 67: View of control room showing various stages in control technology including the 1937 control panel, the control bench board and the modern and office desk and computers.

Figure 68: c1974-75 addition to the control room showing the bay cantilevered over the machine room, and its timber framed windows and computer console.

3.3.1.11 Auxiliary Switchboard Room – S12

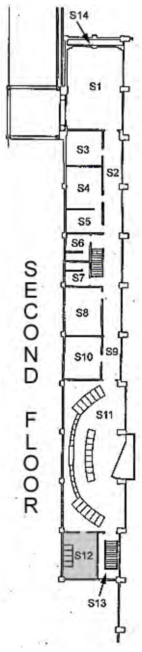


Figure 69: View of auxiliary switchboard room showing Art Deco ceiling details, windows, auxiliary switchboard, concrete flooring and shelving.

Description

The auxiliary switchboard room is a small space located off the main control room, in the SW corner of the building. It has a painted concrete floor, Art Deco detailing in the masonite ceiling, intrusive modern fluorescent lights, a metal cabinet containing an original auxiliary switchboard that is still in use, metal framed windows, modern electrical light switches, conduits and power points, two stained timber key cabinets mounted on the northern wall and several modern sets of shelves on the eastern and southern walls. Openings include a modern plywood door to S11 and a timber framed glass panelled door with original round door handle to S13 and with glass panels and fanlight covered with plywood. All internal timberwork is stained Tasmanian oak.

There are also two 20 paned metal framed windows on the western side with centrally located six paned opening sections, and two 16 paned metal framed windows on the southern side. The western window includes a masonite covered broken pane. There are two original timber framed windows to the southern stairwell (S13). These windows feature *Belgian stippolite* perimeter panes and clear drawn glass central panes.

Element	**Significance rating**
Space configuration	very high
Walls	very high
Windows	very high
Ceiling	very high
Floor	very high
Door to S11	intrusive
Door to S13 (including furniture and fanlight)	very high
Infill panelling to door and fanlight to S13	intrusive
Key cabinets	very high
Auxiliary switchboard	very high
Other furnishings	low
Modern electrical lights, switches, fittings, power points, etc	low
Fluorescent lights	intrusive

Figure 70: Stained timber key cabinets located in auxiliary switchboard room.

3.3.1.12 Southern Stairwell – S13

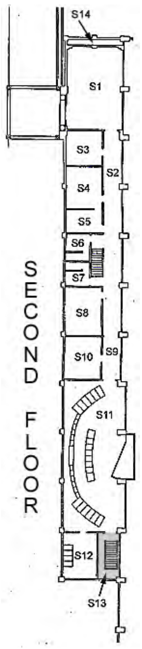


Figure 71: View of southern stairwell showing doors, timber railings, welded steel balustrades, windows to S12 and Art Deco style light in machine room.

Description

The southern stairwell provides access between the first and second floors. A further set of stairs leads from the first floor to the machine floor. They are concrete stairs with anti-slip paint, and feature welded steel balusters and varnished timber railings. A high painted timber door in the southern wall leads to the exterior of the building. Internal doors lead to S12 (original glass panelled timber door with glass panels filled in), S11 (modern soundproof door) and S15 (original double timber doors). Doors to S12 and S15 feature original door furniture.

Original windows to S12 feature stained timber frames and *Belgian stippolite* perimeter panes and clear drawn glass central panes. The second floor ceiling features geometric Art Deco plaster lining with intrusive fluorescent lights. The first floor ceiling is a more utilitarian concrete appropriate to the utilitarian character of the floor. Light switches and other fittings are modern.

Element	**Significance rating**
Space configuration	very high
Walls	very high
Windows to S12	very high
Second floor ceiling	very high
First floor ceiling	very high
Floors	very high
Door to S12	very high
Door to S11	intrusive
Double doors to S15	very high
Wrought iron and timber balustrades	very high
Modern light switches, electrical fittings, etc	low
Fluorescent lights	intrusive

3.3.1.13 Maintenance Space for Stained Glass Windows – S14

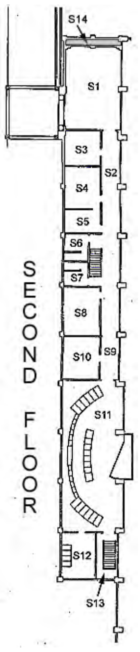


Figure 72: Walkway and timber screens behind the memorial stained glass windows located in the entrance vestibule. There is light graffiti (dating from the 1970s) on the screens and walls. Note also the external windows.

Description

A vertical, wall-mounted iron ladder provides access from the northern end of the first floor to this narrow space behind the memorial stained glass windows in the entrance vestibule. The space has a floor consisting of three planks along its length. There are two painted winged timber screens on one side behind which fluorescent lights provide back lighting for each of the memorial windows. Each screen is fixed to the wall by metal brackets. Wiring for the lights is contained in modern electrical conduits, and a galvanised iron downpipe drains water from the roof overhead.

The building's external windows dominate the northern side of the space. These are metal framed multi-paned windows with Arctic glass panes. The walls and timber screen have graffiti ranging from sexual references to more philosophical discourses. These appear to date from the 1970s to the recent past. The concrete walls show evidence of the formwork construction of the original building.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows	very high
Plank flooring	very high
Steel ladder	very high
Timber screens and fixings	very high
Fluorescent lights between screen and memorial windows	low
Graffiti	low

Figure 73: Detail of screen, fixings, graffiti and memorial stained glass windows. Note evidence of formwork used in the construction of the concrete walls.

Figure 74: Wall mounted iron ladder used to access maintenance space behind memorial stained glass windows. Note the downpipe, the timber plank flooring and the evidence of formwork erected when pouring concrete for the building.

3.3.2 First Floor

The first floor spaces are more utilitarian than the well detailed offices, entrance vestibule and control room of the second floor. The Art Deco elements which are key features of the second floor have been abandoned for walls, floor and ceilings of unadorned concrete, appropriate for such working industrial spaces.

3.3.2.1 Computer/Planning Room – S15

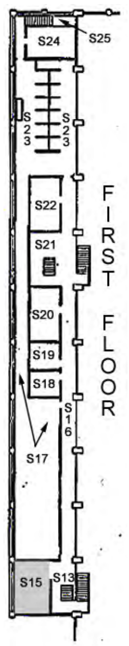


Figure 75: View of computer/planning room showing modern fitout.

Description

This room, originally used as an auxiliary transformer room, has recently been renovated and re-configured as a computer and meeting room. It retains the original concrete floor and four metal framed external windows. The corner windows are hopper style with rusted stays. These are the only window stays in the building. The room has new plaster walls and ceilings with plaster cornices, stained timber skirtings, architraves and window frames with deep reveals. The room is accessed from S13 via original double pine doors with two panels at the bottom and double rolled rough cast panes at the top. The doors retain their original paint inscription reading, “DANGER 2200 VOLTS”. The doors lead to a small vestibule with a modern timber door leading to the main space. The external doors also have dymo™ labels and felt tip pen signs on one pane.

Element	Significance rating
Space configuration	low
Walls	very high
Windows (including window furniture)	very high
Window frames	low
Original double pine entrance doors (including door furniture)	very high
Modern timber interior door	low
Ceiling	low
Floor	very high
Skirtings	low
Electrical switches, fittings, heaters, lights, etc	low
Modern furniture	low

Figure 76: Original doors to the former auxiliary transformer room showing warning sign, original furniture and double rolled rough cast window panes.

3.3.2.2 First Floor Passage – S16

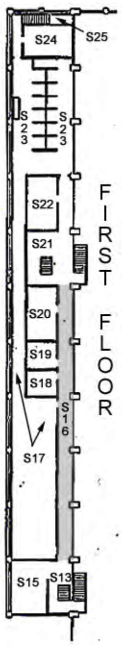


Figure 77: First floor passage showing concrete floor, balusters and railings, and machines to the right.

Description

A plain functional passage between the room of the first floor and the machine room with a timber railing and iron balusters as on the second floor. Three stairwells intersect the space. Concrete columns support the structure on the eastern side. The floor of the space is painted concrete. There are concrete walls, concrete ceiling, modern and original timber doors to the side rooms and some original windows into the side rooms.

Timber work to doors and windows is stained. Windows are multi-paned with double rolled rough cast glass panes. Original doors are pine with two timber panels at the bottom and an upper panel of double rolled rough cast glass. There are stained timber skirtings and one original bakelite power point. Fluorescent lights provide illumination. Modern cable trays are fixed to the walls above the railings to hold electrical cabling.

Element	**Significance rating**
Space configuration	very high
Walls	very high
Concrete columns	very high
Balusters and railings	very high
Ceiling	very high
Floor	very high
Skirting	very high
Electrical fittings, switches, power points, lights, fire extinguishers, etc	low
Original power point	very high
Cable trays	low

Figure 78: Detail of internal windows to S19 & S20 from the first floor passage. Note the concrete beams and electrical conduits.

3.3.2.3 Terminal Room and Control Cable Duct – S17

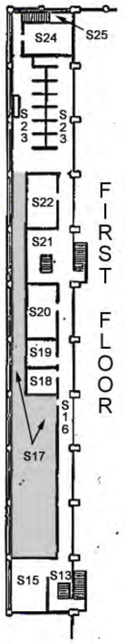


Figure 79: View of former terminal room showing shelves of cables leading to and along the length of the control cable duct.

Description

A utilitarian space with concrete walls, floor and ceiling and containing metal shelving with large quantities of cabling ranging from original to more recent. Concrete beams in the ceiling express the building's structure. The space is wide in the terminal room at the southern end and narrow through the control cable duct. The external wall features a row of metal framed vertically opening casement windows with original window furniture.

Access to the terminal room is via original stained timber doors with the original upper glass panel filled in with plywood. The damaged and original door handle is round. Original internal window openings to adjacent rooms have been infilled with brick. Openings have been cut in the concrete floor, walls and ceiling to allow cables to pass through. Some of these openings are original and smooth edged whilst others have rough edges indicating that they were cut later.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows	very high
Bricked in windows	low
Doors (including original furniture)	very high
Ply sheet covering door glass panel	intrusive
Ceiling	very high
Floor	very high
Original openings cut in floor, walls and ceiling	very high
Later openings cut in floor, walls and ceiling	medium
Metal shelving for cabling	medium
Original cabling	very high
Later cabling	low
Electrical switches, conduits, power points, fluorescent lights, etc	low

3.3.2.4 Storeroom (former Battery Room) – S18

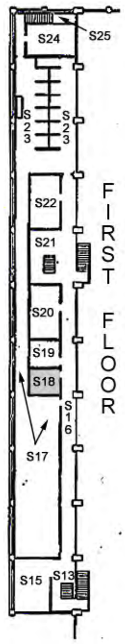


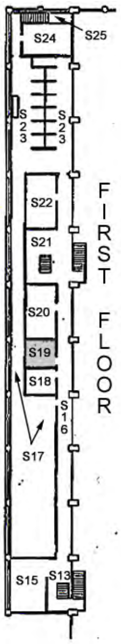
Figure 80: Former battery room showing furnishings, modern door and glass bricks to rear wall.

Description

The former battery room is now used as a general storeroom. It is a small room with painted concrete floor, walls and ceiling, a modern plywood panel door with a low vent and glass bricks to the control cable duct behind. There is a timber framed six pane window to the passage with double rolled rough cast panes. The window frames and glazing bars are stained. Timber skirtings are painted. Light switches, power points, electrical fittings and fluorescent lighting are modern. The room contains various furnishings including metal shelving and filing cabinets, modern desks, etc.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows to passage	very high
Glass bricks in rear wall	very high
Ceiling	very high
Floor	very high
Door	intrusive
Stained timber work	very high
Paint on timber work	intrusive
Electrical lights, power points, fittings and fluorescent lights	low
Furnishings	neutral

3.3.2.5 Motor Generator Sets Room – S19



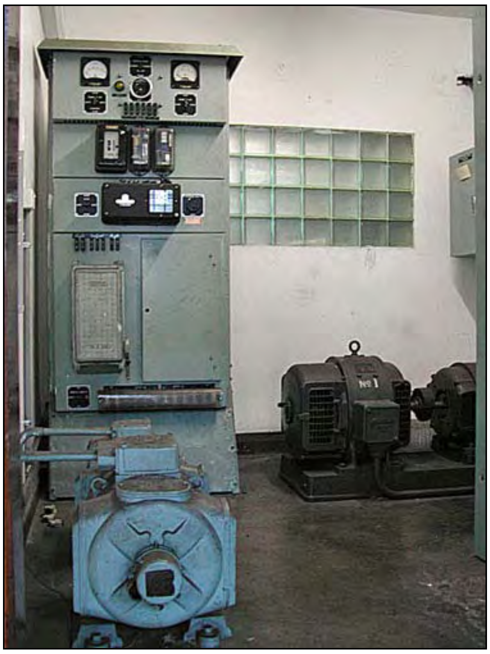


Figure 81: View of motor generator room showing original (at rear) and more recent motor generators (in foreground), switchboard and glass bricks to control cable duct.

Description

This room contains three types of backup diesel generators installed at various stages up to 1955. These are fixed to the concrete floor. The first two generators were manufactured by Noyes Bros, Melbourne with the second two (nearer the door) by the Lancashire Dynamo & Crypto Ltd, Manchester. John Morris Electrical Engineering Co manufactured the earlier of the two switchboard units. The walls and ceiling are painted concrete. There is evidence on the floor of the previous location of equipment.

There are glass bricks to the control cable duct, modern electrical lights, power points and fittings, and fluorescent lights. Timber skirtings are painted. A timber framed six pane window to the passage has double rolled rough cast glass panes, and stained frames and glazing bars. The original door has been altered from a side opening door to a sliding door to accommodate the generator installed closest to the door. It is made of stained timber with a double rolled rough cast glass upper panel.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows to passage	very high
Glass bricks in rear wall	very high
Ceiling	very high
Floor (including evidence of former equipment locations)	very high
Door	medium
Stained timber work	very high
Paint on timber work	intrusive
Original generator sets	very high
1955 generator sets	medium
Original switchboard	very high
Later switchboard	medium
Electrical lights, power points, fittings and fluorescent lights	low

3.3.2.6 Supervisory and Charger Room – S20

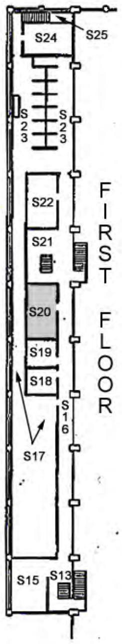


Figure 82: View of room showing painted internal timber work, standard first floor door, modern light switch and conduits and the building's structural framing expressed in the ceiling. This is typical of the utilitarian spaces of the first floor.

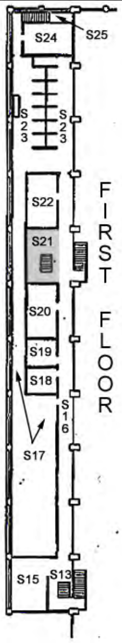
Description

A utilitarian room with painted concrete floors, ceiling and walls. There is an original timber pine door, painted internally with both original and added furniture. The door features a double rolled rough cast glass upper panel and two lower timber panels. There are two sets of windows with stained exterior timber frames and painted interior frames. One window features ten panes and the other has six panes of double rolled rough cast glass. Timber skirtings are also painted.

The room contains modern furniture, electrical switches, fittings and conduits and four fluorescent lights. A round hole in the door architrave indicates the location and pattern of the original bakelite light switch. There are switchboards with cabling.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows to passage	very high
Ceiling	very high
Floor	very high
Door (including original door furniture)	very high
Modern door furniture	low
Paint on interior timber work	intrusive
Switchboards	medium
Electrical lights, power points, fittings and fluorescent lights	low
Furnishings	low

3.3.2.7 Central Stairwell – S21



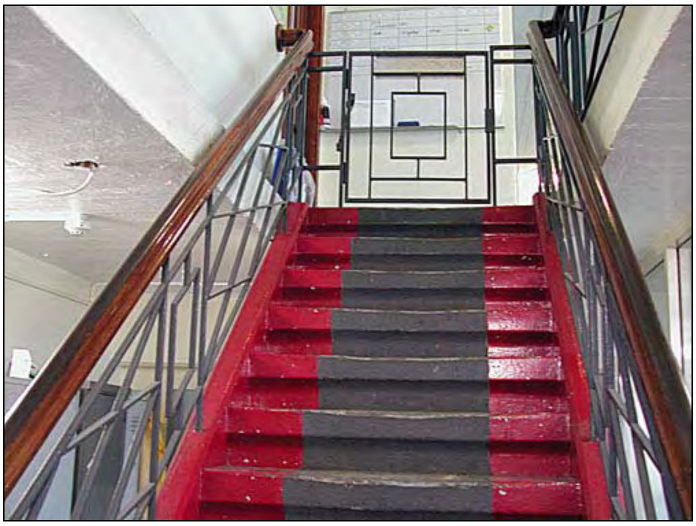


Figure 83: View of the main central stairwell between the first and second floors showing the timber railing, wrought iron balusters, painted concrete tread and risers. Note the worn treads.

Description

The main central stairwell provides access between the first and second floors. A further set of stairs leads from the first floor to the machine room. The stairs are of painted concrete with anti-slip paint and treads worn by the constant passage of feet over nearly 70 years. They feature welded steel balusters and varnished timber railings. The second floor ceiling features a geometric Art Deco plaster ceiling with intrusive fluorescent lights. The first floor ceiling is a more utilitarian concrete that is appropriate to the utilitarian character of the floor. Light switches and other fittings are modern. The stairwell is separated from the first floor passage by a late nineteenth century floor to ceiling clear glass wall with glass door that was installed to minimise machine room noise in the second floor spaces.

Element	Significance rating
Space configuration	very high
Walls	very high
Second floor ceiling	very high
First floor ceiling	very high
Floors, including worn treads	very high
Wrought iron and timber balusters and railings	very high
Modern light switches, electrical fittings, etc	low
Fluorescent lights	intrusive
Glass wall and door to first floor passage	low

3.3.2.8 Battery Room – S22

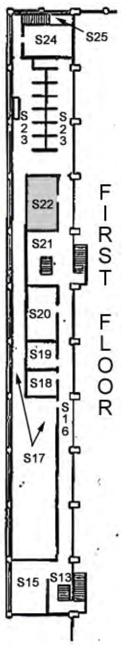


Figure 84: View of battery room showing structural elements in the ceiling, banks of batteries, windows with stained timber work, fluorescent light and modern conduits.

Description

Similar to the other first floor rooms. The battery room has a modern timber panel door with low vent and painted internal architraves. There are two sets of windows with stained interior and exterior timber frames — one set has ten panes and the other six panes of double rolled rough cast glass. Modern metal framed shelves contain batteries. The room has modern electrical switches, conduits and power points, fluorescent lights, and a stainless steel washbasin. Wall vents lead to the control cable duct.

Element	**Significance rating**
Space configuration	very high
Walls	very high
Windows to passage	very high
Ceiling	very high
Floor	very high
Door	intrusive
Stained interior timber work	very high
Paint on interior timber work	intrusive
Vents to control cable duct	medium/very high
Batteries	low
Electrical lights, power points, fittings and fluorescent lights	low
Furnishings	low

3.3.2.9 Transformer Cubicle Room - 23

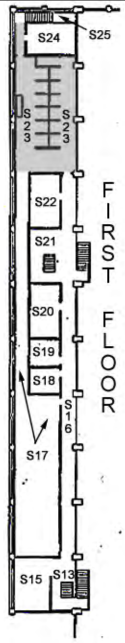


Figure 85: View of cubicles in the transformer cubicle room, looking towards S16.

Description

A room at the northern end of the control cable duct containing twelve transformer cubicles arranged back to back in two rows. The room has painted concrete floors, ceilings and walls and is accessed from the first floor passage via a stained pine door with two lower pine panels and an upper glass panel of double rolled rough cast glass. There is no door in the opening to the control cable duct.

The cubicles are centrally located and have upper and lower doors of stained timber frames and asbestos cement panels with the cubicle number painted in red. They have original door furniture. The cubicles contained metering and protection for the six generating machines. Although they are now obsolete the cubicles retain original metering and protection equipment and cabling. The room has a switchboard on the southern wall.

There is a small storage space in the north-eastern corner with painted original timber shelves and coat hooks. The cubicle room has modern electrical wiring, switches, etc and fluorescent lights. At its north-western end the space includes a narrow passage to a store room, and the northern end stairs.

Element	Significance rating
Space configuration	very high
Walls	very high
Ceiling	very high
Floor	very high
Door	very high
Storage space and fittings	very high
Transformer cubicles (including door furniture, remnant fittings, original metering protection equipment and cables, etc)	very high
Switchboard	medium
Electrical lights, power points, fittings and fluorescent lights	low

Figure 86: Remnant electrical equipment in transformer cubicle.

3.3.2.10 Store Room – S24

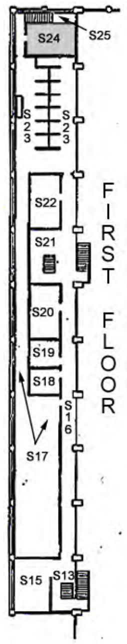


Figure 87: View of store showing metal shelves, electrical conduits, smoke detector on ceiling and end wall windows.

Description

A store room with concrete floor, ceiling and walls, and a number of metal shelving units. There are two sets of six paned metal framed windows at the northern end with centrally located side opening casements. One pane is missing in the eastern window. The windows open onto the stairwell at the northern end of the building. The room retains its original pine door with timber lower panels and clear glass upper panel, although the original handle has been removed. The door shows evidence of a range of previous door furniture. The stained timber architraves also retain round holes indicating the location of original light switches. Existing light switches, power points, conduits, etc are all modern. Lights are fluorescent.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows to end space	very high
Ceiling	very high
Floor	very high
Door	very high
Stained interior timber work	very high
Furniture, shelves, etc	low
Electrical lights, power points, fittings and fluorescent lights	low

3.3.2.11 Northern Stairwell to Machine Room – S25

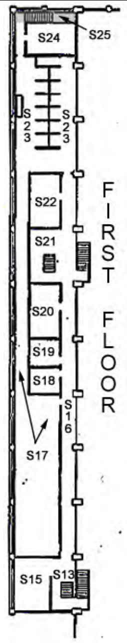


Figure 88: View of northern stairwell showing windows to store room and external windows as well as cabling along internal wall.

Description

A narrow utilitarian space with concrete stairs between the first floor and the machine floor. There are windows to the store room (S24) and metal-framed multi-paned windows on the building's northern external wall. Metal rod winders at stair level enable the upper windows to be opened and closed as needed. The windows are a dominant feature of the space. There is a steel modern fuse box and a large cluster of electrical cabling fixed to the space's south wall.

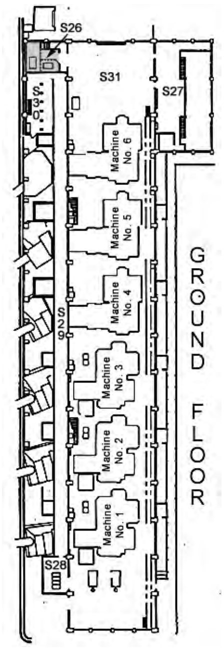
Element	**Significance rating**
Space configuration	very high
Walls	very high
Windows to S23 and outside	very high
Window furniture, including winders	very high
Stairs	very high
Fuse box and cabling	low
Electrical lights, fittings and fluorescent lights	low

Figure 89: View of stairs, fuse box, cabling and windows with original window furniture including high window winding mechanisms.

3.3.3 Ground Floor

The ground floor is the main working space of the power station and includes the generators and associated infrastructure.

3.3.3.1 Store Room – S26



No photograph of this space is available

Description

A utilitarian space reconfigured in recent years to accommodate new transformers. Concrete walls have been cut through to make the space fit its new needs. It has concrete walls, floor and ceiling and modern painted timber double doors, one of which has a low metal vent into the machine room. The room contains recently installed transformers.

Element	Significance rating
Space configuration	low
Walls	very high
Ceiling	very high
Floor	very high
Door	low
Electrical lights, power points, fittings and fluorescent lights	low
Transformers	low

3.3.3.2 Circuit Breaker Room – S27

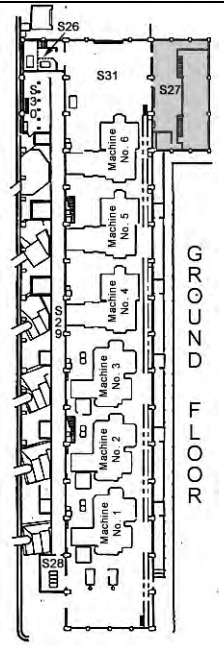


Figure 90: View of the circuit breaker room showing windows, sisolation and the auxiliary crane.

Description

Formerly the main power station workshop, this large high roofed room was refitted in the late 1990s to house circuit breakers for the relocated and upgraded switchyard. It has steel roof framing surmounted by sisolation that was installed when the roof was reclad in the late 1990s/early 2000s. There is a steel and aluminium mezzanine floor installed for the new use of the room, a 10 ton Babcock & Wilcox Ltd auxiliary crane (installed in 1937), concrete walls and floor (with tramlines). Five bowl lights (similar to those in the machine room) hang from the ceiling and provide artificial illumination.

The space has three bays of metal framed windows at the northern end. Each bay has an upper and lower group of windows. Upper windows have 35 panes with central opening six pane casements, and the lower windows have 25 panes. Window panes are a combination of both coarse and fine *Arctic* glass and clear glass. The coarse Arctic glass panes appear to be the earliest. Two panes have modern fan vents.

There are four 35 paned metal frame windows to the machine room. The southern end of the room has three 35 paned upper windows, mirroring the upper windows of the northern end, and a central 20 paned lower window. An identical window in the south-eastern corner has been bricked up. Similarly, the original vertically proportioned windows on the eastern wall were covered over in the late 1990s during the installation of the adjacent new switchyard.

The air outlet for machine no. 6 is located in the south-western corner of the space. Access to the machine room is via a metal roller door and a modern timber door. Electrical wiring, switches and power points are all new.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows	very high
Fan vents in northern windows	low
Bricked up window	intrusive
Covered over eastern windows	intrusive
Roof framing	very high
Sisolation	low
Floor	very high
Rails	very high
Crane	very high
Machine No. 6 air outlet	very high
Mezzanine	low
Timber door	low
Roller door	very high

3.3.3.3 Auxiliary Generator Switchgear Room – S28

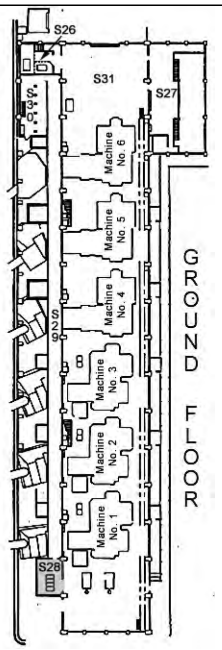


Figure 91: Auxiliary generator switchgear and tool panel. Note the door and fanlight to the machine room, on left, and the grooves in the floor between the switchgear and the external wall.

Description

A room containing switchgear for the auxiliary generators. It has concrete walls and a concrete floor with grooves cut into it between the switchgear to the external wall. There are two metal framed windows, each with twelve panes, in the external wall. The door to the cable tunnel is the original timber door, now painted. Double pine doors with *Arctic* glass top panel, original door furniture and a four pane fanlight with *Arctic* glass panes provide access to the machine room. All interior timber work is painted.

The roof is corrugated iron, the original corrugated asbestos roof having been replaced during the 1990s. A timber tool cabinet is located in the south western corner of the room. The green painted auxiliary generator switchgear dominates the room. This gear is highly significant as it is an integral element in the wholly original auxiliary generator equipment (including generators, cabling, switchgear and controls). This is the only complete original generating layout in the power station. The room's electrical switches, power points, conduits, lights, etc., are all modern.

Element	**Significance rating**
Space configuration	very high
Walls	very high
Windows	very high
Ceiling (roof)	low
Floor (including grooves cut into floor)	very high
Door to machine room (including fanlight and door furniture)	very high
Door to S29	very high
Auxiliary generator switchgear	very high
Wall mounted tool panel	very high
Paint on internal timber work	intrusive
Electrical switches, power points, conduits and lighting, etc	low

3.3.3.4 Cable Tunnel – S29

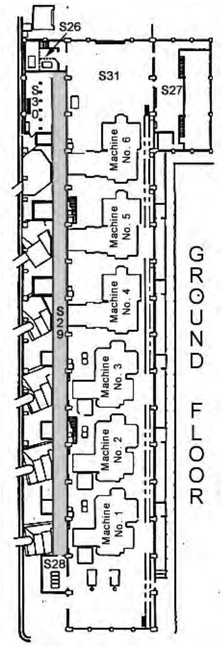


Figure 92: Cable tunnel showing metal shelving and cables running along the length of the tunnel.

Description

Narrow tunnel with painted concrete walls and ceiling and unpainted concrete floor. Metal shelves and brackets are fixed to the walls on either side to carry cabling along the back of the machine room. Light switches, power points etc are modern and the tunnel is illuminated by fluorescent lights. Access from S28 is via an original timber door that is painted on the S28 side and stained on the cable tunnel side. The tunnel is open at the northern end and there is a timber door to the machine room at the northern end. The room also carries pipes for fire fighting sprinklers etc.

Element	**Significance rating**
Space configuration	very high
Walls	very high
Ceiling	very high
Floor	very high
Doors	very high
Metal shelving	low
Cables	low to very high[108]
Electrical switches, power points, conduits and lighting, etc	low
Fire fighting infrastructure	low

[108] The cable tunnel contains a mixture of electrical infrastructure from a range of periods. Whilst, in general, original elements are considered to be of very high significance, aside from acknowledging this is the case, given the operational and safety imperatives it is accepted that this infrastructure will be upgraded on an 'as needs' basis.

3.3.3.5 Store – S30

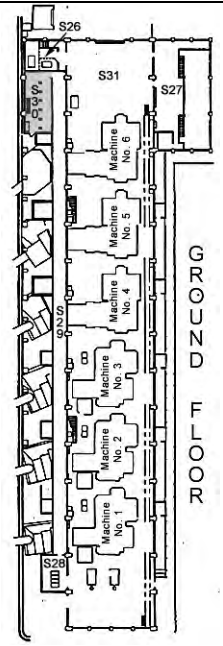


Figure 93: View of space 30 showing metal clad post and brackets, and the external timber door.

Description

Adjacent to the northern end of the cable tunnel, the room has concrete floor, walls and ceiling. There are six metal posts with metal brackets attached for former fixtures. Cables lie on the floor. Electrical lights, switches, power points and conduits are all modern. External access is through painted timber panel door, with original handle and an added padbolt.

Element	Significance rating
Space configuration	very high
Walls	very high
Ceiling	very high
Floor	very high
External door (including original furniture)	very high
Metal posts and brackets	low
Electrical switches, power points, conduits and lighting, etc	low

3.3.3.6 Machine Room – S31

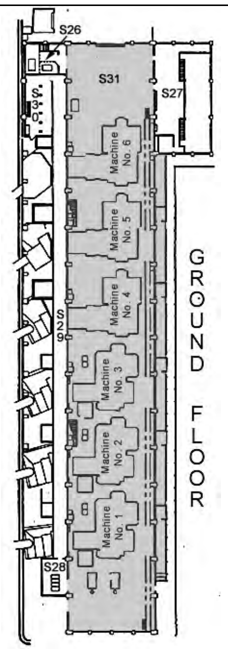


Figure 94: View of machine room from the hoist walkway, looking to the south. Machine number 6 is in the foreground.

Description

The main working space in the power station housing the six pelton turbines and generators and their related equipment, and two smaller auxiliary (or 'house supply') generators. There are three Boving & Co machines installed in 1938 (designated machines 1 – 3) and three English Electric Co. machines installed in 1943, 1945 and 1951 (designated Machines 4-6). A plaque affixed to # 5 machine commemorates the efforts of British workers and seamen in transporting the machines during war time. The machines have been modified in the interests of efficiency and otherwise continuously maintained over time. By comparison, the auxiliary generators are largely as built and retain their linkages to field switches in the control room.

The machine room is a very large high roofed space with steel roof framing and a corrugated iron roof. Fourteen bowl style lights hang from each of the fourteen central trusses to provide illumination.

The building is supported by fifteen concrete encased steel columns at each side. Most of these columns carry Art Deco style lights with chrome and white light shades. Some had extinguished globes at the time of inspection and some required replacement of missing shades. The northern, southern and eastern walls comprise large areas of vertically proportioned multi-paned metal framed windows. These have both fixed panes and opening panes, which are opened using metal winders. Panes in the southern and eastern walls are clear glass whilst the panes on the northern wall are a mixture of coarse *Arctic* glass, fine *Arctic* glass and clear glass. It appears that the coarse *Arctic* glass panes are original and have been replaced by different panes as they were broken.

The western wall is made up of the ground and first floor rooms and the second floor offices, passage and control room. These are surmounted by a row of horizontally proportioned metal framed windows. The floor is red painted concrete with numerous metal pit covers providing access to underfloor maintenance spaces for the machines. External access is via a large metal roller door at the northern end of the building, an adjacent metal personnel door (with modern and original handles and locks), and a timber door at the south-western corner of the building. Other doors provide access to various internal spaces. The space includes various timber cabinets, historically used to store a variety of tools and artefacts. A redundant metal lever on the eastern wall adjacent to machine no. 4 controlled the air outlet for that machine.

Steel ladders at both ends of the space provide access to a high steel walkway along the eastern wall and the original Babcock & Wilcox Ltd 50 ton hoist. Apart from the lights, most electrical fittings, switches, power points etc are modern. One original power point remains adjacent to the base of the southern stairwell.

Element	Significance rating
Space configuration	very high
Walls	very high
Windows (including winders, etc)	very high
Ceiling	very high
Floor	very high
External Doors	very high
Steel ladders and walkway	low
Babcock & Wilcox hoist	very high
Lights	very high
Original timber cupboards, tool cabinets, etc	very high
Electrical switches, power points etc	low
Original power point adjacent to southern stairwell	very high
Machines 1-3 (incl sub floor infrastructure eg, main inlet valves)	very high
Machines 4 - 6 (incl sub floor infrastructure eg, main inlet valves)	very high
Auxiliary (house supply) generators incl subfloor infrastructure & linkages	very high

Figure 95: View of auxiliary (or 'house supply') generators 1 & 2. Exciters and turbines pictured.

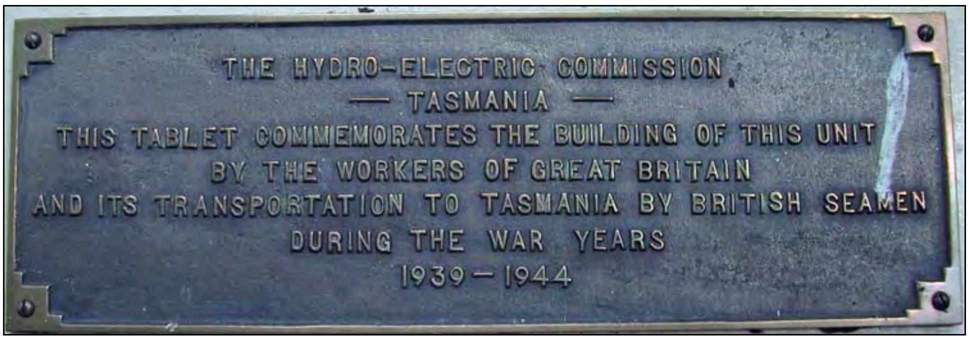


Figure 96: Commemorative plaque on English Electric Co. machine #5.

Figure 97: Overview of Boving & Co machine #2. Picture from L; Exciter, alternator, turbine & spears.

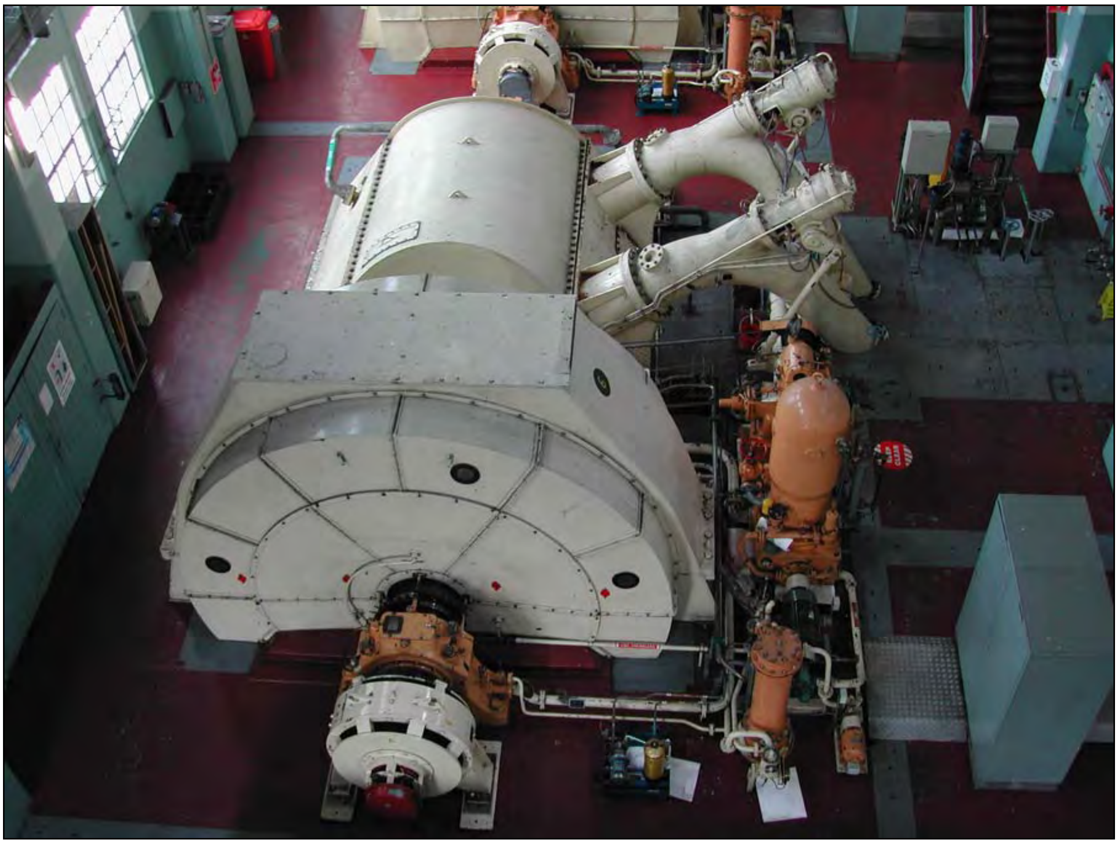


Figure 98: Overview of English Electric Co machine #6 showing, exciter, turbine & spears, governor & alternator.

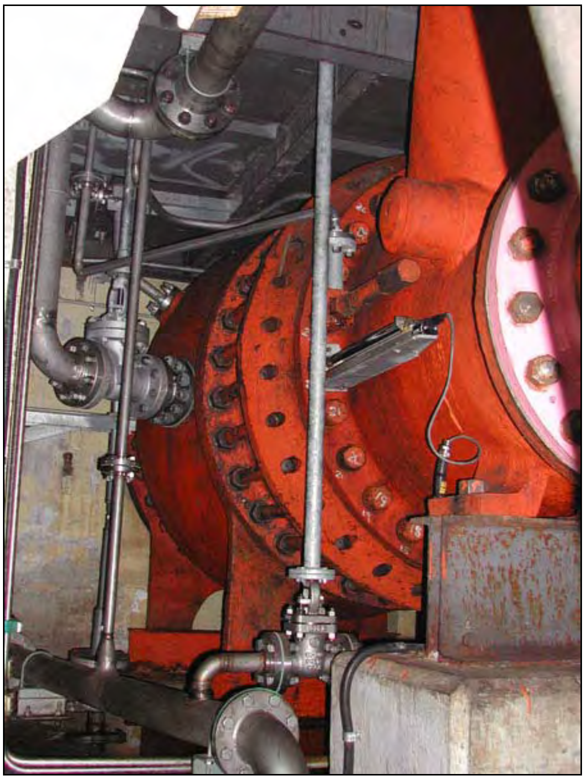


Figure 99: Sub-floor view showing main inlet valve to English Electric Co machine #5.

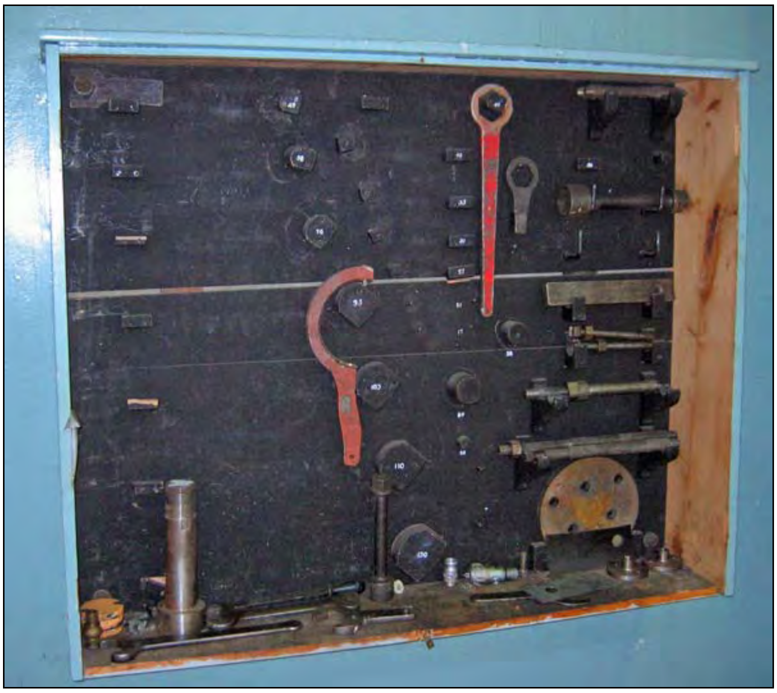


Figure 100: Tool cabinet on machine floor.

4.0 Cultural Significance

4.1 Introduction to the Significance Assessment Process

Cultural significance refers to a wide range of qualities that make some places especially important to the community. Understanding and articulating these qualities is the first step in the heritage management process.

4.2 Basis for Assessment

The project brief (refer to Appendix 1) calls for an assessment of cultural significance framed in terms of the criteria outlined in Section 16 of the *Historic Cultural Heritage Act 1995.* A place must satisfy one or more of the criteria to be considered for entry in the *Tasmanian Heritage Register*. Entry in the *Register* is the trigger for protection of a place under the terms and provisions of the *Act*. Individual rankings of significance at element level are contained in the data sheets comprising part 3.0 of this report.

Five out of a possible seven criteria are considered to apply in relation to the Tarraleah Power Station:

Criterion A: It is important in demonstrating the evolution or pattern of Tasmania's history.

Statement	Reason for Significance
Tarraleah Power Station complex is significant as it demonstrates the growing importance of hydro-electric power in the Tasmanian economy during the late Depression era. The complex was a key element in the transformation of the Tasmanian economy from one dependent on primary production to an industrial economy from the 1930s.	*Hydro development provided Tasmania with the capacity to attract major primary processing and manufacturing enterprises, traditionally heavy consumers of power. Among those to avail themselves of the opportunity were mining companies, zinc works, textile, and pulp & paper mills.*
The complex was a key element in economic policies adopted by the Ogilvie Labor Government to expand the economy and employment opportunities and pull Tasmania out of the devastating 1930s Depression.	*The development was an important element in the Labor Government's efforts to counter unemployment in Tasmania using large infrastructure projects.*
The complex heralded the intensification of a policy of hydro-industrialisation which underpinned the Tasmanian economy for around 50 years and which underpinned the re-election of a State Labor Government	*Hydro industrialisation policy influenced political and economic thought in Tasmania from 1934 until the 1980s. It is most closely, although not exclusively, allied to Labor governments who remained in power*

for 34 years.	*for 35 years.*
The three stage development of the complex demonstrates a method of hydro development of planning for power station extensions to cater for projected increased future power demands.	*The staged development of the Tarraleah complex demonstrated a planned approach to meet future power needs within current budgetary constraints.*
The complex demonstrates an evolution in construction techniques from a labour intensive first stage construction to more mechanised construction by the final stage of the development.	*The change in construction techniques reflects an increasing mechanisation of society and the increasing cost of labour.*
The addition of machines 4 and 5 demonstrate the importance placed on industrial development and wartime economy during World War 2 and the desire to assist Britain during wartime by purchasing industrial machinery from that country.	*The development of stage 2 of the Tarraleah complex became critical in a period of national wartime crisis. The purchase of British generating machinery despite initial fears of supply problems demonstrated the close political ties between Britain and commonwealth countries in the mid twentieth century.*
The power station development is significant as it catalysed major organisational change in the Hydro-Electric Commission which helped to make it an important player in both the Tasmanian economy and politics.	*The Tarraleah project cannot be seen in isolation. It required substantial organisational change with staff selection and training, additional head office accommodation, massively increased store and transport facilities, and a substantial statewide construction program. Consequently the HEC was restructured and quickly became a highly influential organisation in Tasmania with its commissioner described by some historians as Tasmania's most powerful public servant.*

Criterion B: It demonstrates rare, uncommon or endangered aspects of Tasmania's heritage.

Statement	***Reason for Significance***
Tarraleah Power Station complex is part of a suite of a wider collection of Hydro assets that exhibit fine stylistic characteristics, in this case, Art Deco detailing. This is rare in an industrial	*The Tarraleah Power Station complex is perhaps the most impressive and significant grouping of Hydro assets in Tasmania. To have power stations (ie Tarraleah &*

context.	*Tungatinah) from different, early, periods in such close proximity is unique within Tasmania.*

<u>Criterion D</u>: It is important as a representative in demonstrating the characteristics of a broader class of cultural places.

Statement	*Reason for Significance*
The Tarraleah Power Station complex is a very fine and largely intact example of an inter war industrial development with great attention to detail in design and construction. The power station is a fine example of an Art Deco style industrial building with both the external form and the internal fitout of the building attesting to the ability of the workmen who built it and to the ability of the style to reflect the modern progressive machine age sought by the HEC.	*The Art Deco style detailing of Tarraleah Power Station reflects the 'exciting, dynamic aspects of the machine age'.*[109] *Adoption of the style in an industrial setting in the remote Tasmanian mountains, where a more utilitarian treatment may have been favoured in the interests of cost saving, demonstrates the HECs optimism for the period and is indicative of the ability of the Art Deco style to reflect the aspirations of the era.*

<u>Criterion E:</u> It is important in demonstrating a high degree of creative or technical achievement.

Statement	*Reason for Significance*
The Tarraleah Power Station complex is significant as it was the most complex engineering project undertaken in Tasmania to that time and demonstrates a very high degree of technical and creative skill required to successfully design and construct the scheme in a very remote area.	*The design and construction of the first stage of the power station scheme was the most complex engineering project undertaken in Tasmania until that time. It required a wide range of design, organisational and construction skills which were then utilised to complete future HEC design and construction projects around Tasmania.*

<u>Criterion G:</u> It has a special association with the life or work of a person, a group or an organisation that was important in Tasmania's history.

Statement	*Reason for Significance*
The Tarraleah Power Station complex is of cultural heritage significance for its associations with the early history of the Hydro-Electric Commission (later Hydro-Electric Corporation and Hydro Tasmania) and the commission's rise to one of the most important institutions in Tasmania	*The Hydro-Electric Corporation became one of the most important institutions in Tasmania in the mid twentieth century. The construction of the Tarraleah Power Station in 1934-38 was a key to the development of an industrial economy based on the provision of cheap electric power*

[109] Apperley et al, p. 188.

	which underpinned the rise in the Commission's importance.
It is significant as an outstanding example of the fine and complex design work of Ted Rowntree, the HEC's chief hydraulic design engineer during much of the 1930s.	*Hobart born Ted Rowntree was a highly regarded engineer during the inter war period and was responsible for the design of both the Shannon and Tarraleah schemes.*
The third stage of the project was significant as large numbers of immigrant workers were employed in the construction of roads and the Clark Dam.	*The third stage of the project was one of Australia's first large scale construction projects employing workers from post war Europe which heralded major changes in Australia's population and cultural mix from the mid-twentieth century.*

5.0 Conservation Policy

The purpose of the conservation policies is to state how the conservation of the Tarraleah Power Station may best be achieved both in the long and short term, and is based on an understanding of the cultural significance of the place (refer to part 4.0).

The policies cover all aspects of the conservation of the place; these range from recognition of the significance of the power station, to its physical conservation needs and ongoing operational requirements. The policy statements are accompanied where necessary by a short explanatory paragraph or definitions. These are followed by the strategies and actions that should be carried out in order to implement the policy.

Terminology: Much of the terminology used in conservation practice is standardised. The meanings of key terms used in this document are summarised below. These are shown in **bold** where they appear in conservation policies or explanatory statements to indicate the specific terms of reference which apply. The definitions are taken (almost verbatim) from the *Australia ICOMOS Burra Charter, 1999*.

Place	means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.
Fabric	means all the physical material of the **place** including components, fixtures, contents and objects.
Related Place	means a **place** that contributes to the **cultural significance** of another **place**.
Associations	means the special connections that exist between people and a **place**.
Setting	means the area around a **place** which may include the visual catchment.
Conservation	means all the processes of looking after a place so as to retain its **cultural significance**.
Cultural Significance	means the aesthetic, historic, scientific, social or spiritual value for past, present and future generations**.**
Maintenance	means the continuous protective care of the fabric and setting of a place. It is not the same as repair which involves **restoration** or **reconstruction**.
Preservation	means retaining the **fabric** of a **place** in its existing state and retarding deterioration.
Restoration	means returning the existing **fabric** of a **place** to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.
Reconstruction	means returning a **place** to a known earlier state and is distinguished from **restoration** by the introduction of new material into the **fabric**.
Adaptation	means modifying a **place** to suit the existing use or a proposed use
Use	means the functions of a **place**, as well as the activities and practices that may occur at the place.

Compatible use means a use which respects the **cultural significance** of a **place**. Such a use involves no, or minimal, impact on **cultural significance**.

5.1 General Conservation Policies

Policy 1.1 *Tarraleah Power Station should be conserved as a **place** of high **cultural significance.***

Policy 1.2 *The facility should be retained in **use** and operated as a power station.*

Policy 1.3 *The site should be conserved and managed in accordance with the guidelines and philosophy of the Australia ICOMOS Burra Charter, 1999.*

Policy 1.4 *The introduction of new materials, plant or machinery into the existing buildings should be undertaken only where it is essential for the recovery or **conservation** of cultural significance or to maintain the functionality of the place.*

Policy 1.5 *The role of the Tarraleah Power Station as part of the wider Upper Derwent Valley Hydro-Electric Scheme, its association with Tarraleah Village and Tungatinah Power Station is especially important and should be recognised and acknowledged through interpretation.*

Policy 1.6 *The context and **setting** of the Station and wider hilltop elements should be conserved and maintained; this includes the landscaping, and visual catchment.*

Policy 1.7 *All identified significant superceded plant (eg, switchyard) and movable items should be stabilised and retained 'in situ' unless it is unavoidable for operational reasons.*

Policy 1.8 *Hydro Tasmania should develop and implement a policy for curation of items removed from operational contexts. This should include items that have already been removed and are stored off site.*

Reason for Policies

These policies apply to the key areas of the site including the power station, switchyard, hillside penstocks, valve house, hilltop pipelines and forebay, and the setting including the cultural landscape. It also includes any *in situ* superceded plant or equipment.

Tarraleah Power Station is one of the State's most significant architectural and industrial heritage assets.

*The main power station building and outbuildings are central to the **cultural significance** of the place and are largely in original or as-built form.*

Much of the plant is original and has been continually maintained, and judiciously upgraded, on an ongoing basis. Other parts of it (especially the instrumentation, control panels and the control room) have been upgraded as the need arose.

The station's significance is such that provision should be made for active and ongoing **conservation** of its physical attributes (ie, **fabric**) and **setting**. Functionality and continued operation of the power station is seen as a **compatibl use** and the key to the survival and maintenance of the station's heritage values into the future.

<u>Strategies & Actions</u>

Strategy/Action to be carried out	Period
• Endorse this conservation plan as the guiding document for future management and **conservation** of the place.	Within 12 months.
• Ensure that copies of this document are lodged with the Tasmanian Heritage Council (via Heritage Tasmania) and seek the Council's endorsement of the conservation policies and management guidelines.	Within 12 months.
• Ensure that the policies in this CMP are known and understood by relevant Hydro Tasmania staff, the relevant planning authority and any contractors or others engaged to undertake any works at the site.	Within 12 months.

5.2 Ongoing Use Policies

Policy 2.1 *Actions that enable the ongoing use of the power station are supported provided they are planned and implemented with a view to **conserving** (as functional items) as much of the significant **fabric**, spaces, fitout, machinery and components as practicable.*

Policy 2.2 *All proposed upgrades, changes or alterations other than emergency works will be subject to a Heritage Impact Assessment prior to implementation.*

<u>Reason for Policies</u>

In achieving the above it is noted that **preservation**, **maintenance** and **restoration** are the most appropriate actions as these will generally apply to the machinery and components. **Adaptation/s** should adhere to the philosophy of 'as much as necessary and as little as possible' and should be designed to be sympathetic to the identified heritage values (ie, they should be non-intrusive). Where there is no prudent and feasible alternative to redundancy of original machinery and/or components, these should be retained *in situ* and maintained (see also Policy 7 for further requirements with regard to management of movable heritage and/or redundant infrastructure). Preparation of a Heritage Impact Statement will ensure that any heritage values put at risk from proposed changes are identified early. This will allow either modification of the proposed change or development of another strategy to accommodate heritage requirements. A Heritage Impact Statement will generally not be required for routine and or cyclical maintenance activities (provided these are carried out in accordance with stated conservation policies). Note that a Heritage Impact Assessment may be prepared on its own or form part of an Environmental Impact Statement.

Strategies & Actions

Strategy/Action to be carried out	Period
• Maintain buildings, plant and equipment to a high standard to ensure they remain viable into the future.	Ongoing
• Where changes, alterations or upgrading is required, ensure that a Heritage Impact Assessment is prepared. Sufficient lead time should be built in to implementation schedules to enable heritage impact evaluations to take place and to avoid critical path complications.	As required (& as early as possible).
• Where it is essential (ie, no prudent and feasible alternative) to update plant or equipment to maintain viability or efficiency (especially control panels, meters and instruments), retain any redundant items *in situ*. Design and locate any new infrastructure sensitively and sympathetically (ie, in a non-intrusive fashion).	Ongoing.
• Ensure that upgrades of fire and/or alarm systems are of appropriate and sympathetic design and that installation is carried out sensitively (ie, with respect to the existing fabric and systems).	Ongoing.
• Endeavour to fit any required new functions into existing vacant spaces in the power station (ie, do not erect new buildings around the power station).	Ongoing.
• Consider the requirements of the BCA in undertaking any future works. Due to the very high heritage significance of the place it will be necessary to provide engineered or alternate solutions for some parts. Areas of the BCA that require compliance include egress for personnel, fire safety systems to provide early warning and fire separation between the offices and the machine floor.	As required with proposed future works

5.3 Buildings and Structures Policies

5.3.1 Interior

Policy 3.1 *All significant interior **fabric** (including fixtures and fittings) should be **conserved**, primarily through **preservation**, **maintenance**, skilled **restoration** and, in certain - specified - instances, through skilled **reconstruction**.*

Reason for Policy

All sound and intact fabric should be retained and actively maintained to preserve as much of the surviving integrity of the interior as possible. In selected instances recovery of significant elements through removal of accretions is advocated. Similarly, the replacement of intrusive items is recommended in some (but not all instances) to achieve a more sympathetic treatment. In all instances where this is advocated, sufficient evidence exists (in either physical or documentary form) to inform the process of **reconstruction** which should seek to replicate the original specification of the element in question. All work, particularly that which involves **restoration** and **reconstruction** should be undertaken by suitably skilled trades people experienced in heritage related work and to the satisfaction of the Environment and Sustainability Manager. Conjectural reconstruction (ie, introduction of new fabric and/or fittings based on guesswork) is not appropriate.

Strategies & Actions

Strategy/Action to be carried out	Period
• Thoroughly clean the interior of the building including the walls, windows, ceilings, timber work, lights etc.	Within 12 months
• Repaint interior throughout.	Within 3 years.
• S1 – Entrance Vestibule: Repair roof leak.	Immediately.
• Providing they meet BCA standards install electrical fittings on a like for like basis to match originals when the 2nd floor light switches, power points etc require replacement.	As opportunity arises.
• Replace T bulb fluorescent tubes on the 2nd floor with circuline fluorescent lights with appropriate shades.	Within 12 months.
• S2 - 2nd Floor Passage: Repair damaged ceiling panel and obtain specialist appraisal of the sagging sections of ceiling in stairwell with a view to stabilisation and/or rectification through skilled repair.	Within 6 months.
• S3 - Team Leaders Office: Replace missing section of architrave at base of door.	Within 3 years.
• S5 – Communications Room: Carefully remove infill panel covering window to S2, clean underlying surfaces and make good (through skilled repair). If desired (ie, for sound proofing purposes) replace infill panel with a clear perspex insert cut to size.	Within 3 years.
• S8 – Staff Room: Carefully remove infill panels covering door panes, fanlight and the window to S2, clean underlying surfaces and make good (through skilled repair). If desired (ie, for sound proofing purposes) replace infill panels with clear perspex inserts cut to size.	Within 3 years.
• S9 - Air Lock to Control Room: Replace missing light shade with round lights as per historic photographs. Carefully remove infill panels covering fanlights, clean underlying surfaces and make good (through skilled repair). If desired (ie, for sound proofing purposes) replace infill panels with clear perspex inserts cut to size.	Within 3 years.
• S10 - Communications Room: Carefully remove infill panel covering window to S8, clean underlying surfaces and make good (through skilled repair). If desired (ie, for sound proofing purposes) replace infill panel with a clear perspex insert cut to size.	Within 3 years.
• S11 - Control Room: Replace missing glazing bar at top of north window to exterior.	Immediately.
• S12 - Auxiliary Switchboard Room: Locate and repair roof leak. Remove masonite panel covering broken pane in west wall window and replace with new glass pane.	Immediately.
• S13 - Southern Stairwell: Clean timber handrails.	Ongoing.

• S13 - Southern Stairwell: Replace missing light shade with round lights as per historic photographs.	Within 12 months.
• S14 – Memorial Window Maintenance Space: Strip back and repaint timber shutters (taking special care not to damage the memorial windows – see comment below).	Within 12 months.
• S14 – Memorial Window Maintenance Space: Seek the advice of a recognised conservator (with experience in the maintenance & treatment of glass incl. stained glass) in preparation of a maintenance schedule for the memorial windows. The schedule should define materials and methods, and supply guidance on cyclical maintenance).	Within 12 months & ongoing.
• S16 – 1st Floor Passage: Clean timber handrails.	Ongoing.
• S19 - Motor Generator Sets Room: Retain evidence in floor of previous location of fixtures. Retain evidence in door and architraves of earlier hinges, handles etc.	Ongoing.
• S21 - Central Stairwell: Retain worn treads and clean timber handrails.	Ongoing.
• S22 - Battery Room: Replace modern door with reproduction of original.	Within 3 years.
• S24 – Replace missing pane in window.	Immediately.
• S24 – Install new door handle to match originals on first floor.	Within 3 years.
• S31 - Change 'blown' light bulbs.	Immediately.
• S31 - Ensure flood doors are functional (replace seals).	Immediately.
• S31 - Replace missing Art Deco style light shades.	Within 3 years.
• Re-glaze any damaged windows and glass doors using 'like' materials as appropriate (eg, plain, *Arctic* or *Belgian stippolite* glass types where applicable).	As required/ ongoing.
• Maintain timber architraves and joinery to all the offices in its varnished (ie, unpainted) state.	Ongoing.
• Retain any original light fittings in operational condition. If supplementary lighting is required ensure that it is of sympathetic design.	Ongoing.
• Do not introduce any new fabric or finishes unless it is required to maintain the functionality of the place or there is no prudent or	Ongoing.

feasible alternative and it has been approved as part of a heritage impact assessment.	

5.3.2 Power Station Exterior & River/Road Side Retaining Walls Policies

Policy 3.2 *All significant exterior* ***fabric*** *should be* ***conserved****, primarily through* ***preservation*** *and* ***maintenance****.*

Policy 3.3 *Damaged fabric should be replaced on a 'like-for-like' basis. New fabric or finishes should not be introduced unless required to maintain the functionality of the place or where no prudent and feasible alternative exists.*

Reason for Policies

Preservation and **maintenance** of the existing form and curtilage of the power station is central to the retention of cultural significance. A professionally prepared condition assessment, predicated on a clear appreciation of the heritage sensitivity of the place, will provide guidance on actions to preserve the existing fabric. Draft recommendations arising from any condition assessment should be reviewed through the Heritage Impact Assessment process and against the policies outlined in this CMP to ensure compatibility with heritage conservation aims and objectives.

Strategies & Actions

Strategy/Action to be carried out	Period
• A condition assessment of the power station, out buildings and river/road side retaining walls should be commissioned and carried out to ensure that long term conservation requirements (with the over-riding emphasis on **preservation** of concrete elements including architectural style markers and of the integrity of stone work to the retaining wall/s) can be determined and appropriate measures implemented (through the Heritage Impact Statement process).	Within 12 months.
• Thoroughly clean the exterior of the building including the walls and windows on a regular basis (ie,, annually for windows and five yearly for walls).	Within 12 months/ongoing.
• Maintain the existing external paint scheme scheme i.e. match existing colour scheme and maintain in good order	Ongoing.
• Re-glaze any damaged windows using 'like' materials as appropriate (eg, for the front of the building replacement panes should be of *Arctic* pattern glass to match the original as closely as possible).	As required/ ongoing.
• Ensure that gutters, downpipes and drains are in sound condition and good working order.	Annual assess't/ ongoing/ as required.
• Ensure that roof is clean, securely fixed in place and free of leaks.	Annual assess't/ ongoing/ as required.

5.4 Machinery and Components Policies

Policy 4.1 *All working machinery and functional infrastructure relating to either or all three stages of construction of the Tarraleah Power Station is of the highest cultural significance and should be* ***conserved*** *primarily through* ***preservation*** *and* ***maintenance****. Proposals involving* ***adaptation*** *of the six generators are permissable provided they are considered within the parameters of the Heritage Impact Assessment process set up within Hydro Tasmania's Environment and Sustainability Management System.*

Policy 4.2 *The high surviving integrity of the two 'house supply' generators and their attendant linkages to the control room (including field switches etc) should be* ***conserved*** *as functional items through* ***preservation*** *and* ***maintenance****. Any superceded plant and movable items should be retained 'in situ' unless this is unavoidable for operational reasons. Any items that must be removed from their original location should be retained and appropriately re-located to another part of the site.*

Reason for Policies

Much of the Tarraleah Power Station plant is original and has been continually maintained, and judiciously upgraded, on an ongoing basis. Other parts of it (especially the instrumentation, control panels and the control room) have been upgraded as the need arose. The intention of this policy is to allow sufficient flexibility for continued operation of the six main generators (where **adaptation** based on a philosophy of 'as much modification as necessary and as little as possible is advocated) whilst **preserving** and **maintaining** 'as is' the current configuration of the 'house supply' generators which retain, in service, original linkages to field switches in the control room. The policy for superceded plant and machinery should be read in conjunction with Policy No. 7.1.

Strategies & Actions

Strategy/Action to be carried out	Period
• Maintain plant and equipment to a high standard to ensure they remain viable into the future.	Ongoing.
• Make every effort to maintain the two 'house supply' generators in existing condition to retain their high surviving integrity, including manual linkages to the control room.	Ongoing.
• Where modification or upgrading is required, ensure that a Heritage Impact Assessment is prepared. Sufficient lead time should be built in to implementation schedules to enable heritage impact evaluations to take place and to avoid critical path complications.	As required (& as early as possible).
• Where it is essential (ie, it can be demonstrated that there is no prudent and feasible alternative) to update plant or equipment to maintain viability or efficiency, seek advice from the Cultural Heritage Program regarding applicable curatorial requirements/arrangements.	Ongoing.
• Design and locate any new infrastructure sensitively and sympathetically (ie, in a non-intrusive fashion).	Ongoing.

• Retain the bench board and all of the original control panels in the control room.	Ongoing.
• Retain all of the main features on the Machine Floor including the generators and any remnant associated fixtures.	Ongoing.

5.5 External Infrastructure Policies

Policy 5.1 — *All infrastructure external to the main power station building such as the functional parts of the original switchyard, concrete outbuildings, hillside penstocks and hilltop pipelines, valve house, winch, surge towers, forebay and associated plant should be retained in use and maintained in its existing form if possible.*

Policy 5.2 — *All remnant evidence of construction phase and/or decommissioned plant such as the haulageway, part of the switchyard and remnant tank (at the north end of the switchyard compound) should be retained in situ as visible elements.*

Reason for Policies

Tarraleah Power Station is a complex of interrelated elements that have been described as one of the most significant groupings of Hydro assets in the State. It is imperative that wider aspects of the system remain in evidence as these have the ability to demonstrate the means by which power is generated and the technical challenges involved in construction, maintenance and continued operation.

Strategies & Actions

Strategy/Action to be carried out	Period
• Maintain the forebay, hilltop pipelines (including surge towers), winch and hilltop valve house, and hillside penstocks to a high standard to ensure they remain viable into the future.	Ongoing.
• When designing a replacement bridging structure over the hilltop pipelines near the forebay, allow for retention and re-use of the existing rubble abutments. In the interests of a sympathetic treatment, the specifications should include provision for a white painted post and rail safety barrier (as opposed to Armco).	According to Hydro schedule.
• Retain evidence in the valve house of the two stages of construction.	Ongoing.
• Retain (and conserve) as visible evidence, the pelton wheel near the main landing entrance to the power station, the remains of the haulageway (incl rails and sleepers), the camouflage paint on the switchyard infrastructure and the rusting remains of the former water tank at the north end of the switchyard compound.	Ongoing.

5.6 Landscaping Policy

Policy 6.1 — *The terraced and landscaped area around the power station should be maintained and retained.*

Reason for Policy

While the site is predominantly industrial in nature, it is set in a rugged, heavily vegetated and verdant gorge on the banks of the Nive River. The terraced, manicured grassed areas retained by extensive stone walls represent an extension of order on the natural environment and provide a carefully controlled setting for the power station when viewed from the road.

Recommended Strategy & Action

Strategy/Action to be carried out	Period
• Maintain grassed areas and Rhododendrons.	Ongoing.

5.7 Movable Heritage &/or Redundant Infrastructure Policy

Policy 7.1 *Hydro Tasmania should develop and implement a strategy for curation of items removed from operational contexts or that are part of the fitout of the station (eg, artworks and plaques not 'in situ') This should include items that have already been removed and are stored off site. In the interim, items of movable heritage (including plant, equipment, furniture and fittings) should be retained at the site with due regard to their conservation requirements and security.*

Reason for Policy

Movable heritage is an important element of the place. Industrial buildings and sites that have been stripped of their movable heritage are often characterless and difficult to understand in terms of their original function. The presence of plant, equipment, furniture and fittings make the place whole and more easily understood. A strategy for dealing with movable heritage and/or redundant infrastructure that can not be retained 'in situ' is urgently required.

Strategies & Actions

Strategy/Action to be carried out	Period
• As a priority develop a strategy for assessing and dealing with movable and/or redundant heritage items.	Within 6 months.
• In the interim, retain all existing movable heritage at the site.	Ongoing until strategy in place & active.
• Endeavour to determine that movable heritage is located in its original or most valid location.	
• Do not move items around the site unless there is adequate justification to do so.	Ongoing.
• Maintain a register that documents any movement of items and the reason for their relocation.	Ongoing.
• Endeavour to relocate missing items and return them to the site.	Ongoing.

5.8 Interpretation

Policy 8.1 Tarraleah Power Station should be interpreted to the public.

Reason for policy

The power station is ideally situated for interpretation. Points at which this could be provided are at the existing location at the hilltop valve house and at the picnic area beside the Lyell Highway which has been previously recommended as an interpretation point for Tungatinah Power Station. Tarraleah Power Station is configured in such a way that, as in the past, small tour groups under strict supervision could, via entry to the second floor passageway, gain an appreciation of the fine architectural details adjacent to the offices and a protected overview of the machine floor. It is understood that, at this stage, Hydro Tasmania do not wish to provide any public access to the site. If in the future this changes an Interpretation Plan for the station should be prepared. Such a plan would provide specific guidelines for interpretive themes, content, actions and indicative costs of the strategy.

Strategies & Actions

Strategy/Action to be carried out	Period
• Review the existing interpretation of Tarraleah Power Station and prepare a cohesive strategy for high quality interpretation that takes cognisance of interpretation recommended to be prepared for Tungatinah Power Station at the existing picnic area beside the Lyell Highway as well as interpretation which has been installed in recent years.	Within 2 years.

5.9 Review Policy

Policy 9.1 This conservation management plan should be periodically reviewed 5 years after its endorsement.

Reason for Policy

Conservation Management Plans should not be static documents but be regularly reviewed to ensure they remain relevant. Reviews are generally undertaken between five and ten years after adoption.

Strategies & Actions

Strategy/Action to be carried out	Period
• This CMP should initially be reviewed after five years.	Five years.

6.0 Implementation

6.1 Heritage Status

The Cultural Heritage Program is primarily being undertaken in order to provide an effective management strategy for heritage assets owned or controlled by Hydro Tasmania. As a part of this, Hydro Tasmania may enter into agreements with the Tasmanian Heritage Council under the *Historic Cultural Heritage Act 1995*. One of the agreements should involve endorsement of this CMP and an understanding about its implementation.

Hydro Tasmania is aware that some of the actions and strategies recommended in this CMP will require further detailed planning within the Hydro Tasmania Heritage Impact Assessment process.

6.2 Co-ordinating Management Actions

It is essential that once this CMP has been endorsed and adopted by Hydro Tasmania, that it become a reference document for all Hydro Tasmania personnel who have management responsibilities at the Tarraleah Power Station. The conservation philosophy and actions prescribed in this CMP represent a starting point from which effective heritage management may occur. Proposals that may have a heritage impact should be notified to the Program Manager -Cultural Heritage and, in most cases, will require formal assessment and sign off as part of a Heritage Impact Assessment in accordance with the requirements of Hydro Tasmania's Environment and Sustainability Management Procedure EP14 - Cultural Heritage. The responsibility for notification of proposals that may result in a heritage impact and should, therefore, be considered within the Heritage Impact Assessment rests with the Team Leader at Tarraleah Power Station.

It is also imperative that all on-site Hydro Tasmania employees and contractors are aware of the heritage significance of the place and the requirements of the CMP or relevant Heritage Impact Assessment, and, where applicable, are conversant with any attendant statutory obligations.

The onus will be on Hydro Tasmania, as site owners, to ensure that any upgrading works that take place at the site are approved and authorised and comply with the CMP. In terms of day to day management, the issues are likely to be such things as repairs or alterations to existing fabric or plant (mainly maintenance), upgrading works required for NEM compliance or to improve efficiency, or removal of fabric or plant ('cleaning up').

The following activities, recommended in the general conservation policy section of Part 5, are to be carried out within 12 months of the final conservation management plan being submitted:

- Endorse this conservation plan as the guiding document for future management and conservation of the place.
- Ensure that copies of this document are lodged with Heritage Tasmania and seek the Tasmanian Heritage Council's endorsement of the conservation policies and management guidelines contained herein.

- Ensure that the policies in this CMP are known and understood by relevant Hydro Tasmania staff, the relevant planning authorities and any contractors or others engaged to undertake any works at the site.
- As a priority develop a strategy for assessing and dealing with movable and/or redundant heritage items.

The following activity is recommended to be carried out within 2 years:

- Review the existing interpretation of Tarraleah Power Station and prepare a cohesive strategy for high quality interpretation that takes cognisance of interpretation recommended to be prepared for Tungatinah Power Station at the existing picnic area beside the Lyell Highway.

7.0 Bibliography

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Mercury

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8.0 Appendices

1 Extracts from the Project Brief

2 Construction Chronology

3 Australia ICOMOS Burra Charter, 1999

Appendix 1 Extracts from the Project Brief

HYDRO ELECTRIC CORPORATION
ARBN 072 377 158
ABN 48 072 377 158
4 Elizabeth Street, Hobart
Tasmania, Australia

Sub-consultant's Brief

Hydro Tasmania Consulting
Hobart

Hydro Tasmania No 120423
17 March 2005

Contact: Sandra Hogue…. 6230 5248
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Tarraleah Conservation Plan

INTRODUCTION

Purpose

The primary objective of this project is the preparation of a report which analyses the cultural significance of the Tarraleah Power Station, its surrounding site area, switchyard and headworks, and provides guidelines for the future management of the place, including a framework for future conservation (including maintenance) works.

Background

Along with Lake Margaret, Waddamana and Tungatinah, Tarraleah is important in telling the story of Hydro Power Generation Tasmania.

Tarraleah power station has impressive interwar Art Deco forms and is larger in scale than earlier stations. It is also part of a complete and complex upstream infrastructure. The station building demonstrates excellence in construction and design, is highly visible to the public and with Tungatinah power station forms part of perhaps the most outstanding and significant grouping of Hydro assets in the state.

The power station itself has been identified in Hydro Tasmania's asset inventory as having a very high level of significance when assessed against the criteria of the *Historic Cultural Heritage Act 1995*. Hydro Tasmania acknowledges the significance of the place and wishes to ensure that future work is consistent with its cultural heritage value.

Study Area

The boundary study area includes:

- the Power Station building;
- the switchyard; and;
- headworks including the penstocks, surge towers, control gates, haulage way, fore bay, radial gates and intake.

SCOPE

General

The consultant is required to prepare a Conservation Plan for the Tarraleah Power Station, including its associated setting.

The Conservation Plan should be generally structured in the format developed by JS Kerr in *The Conservation Plan* and *The Illustrated Burra Charter* (Australia ICOMOS) (including the Guidelines to the Burra Charter, pp. 72-81).

A definition of a Conservation Plan provided by Kerr is:

At its simplest, a conservation plan is a document setting out what is significant in a place and, therefore, what policies are appropriate to enable that significance to be retained in its future uses and development.

Outputs

A thorough, comprehensive and accurate report - particularly in its assessment of documentary and physical evidence. While the Conservation Plan should conform to accepted conservation methodology and terminology, it is to avoid excessive use of conservation jargon which cannot be understood by non-professionals.

The Conservation Plan should include:

a. presentation of documentary, physical and oral evidence; this should include an analysis of the place's evolution and growth, alterations, past uses etc. particularly in relation to surviving fabric; copies of relevant archival plans, drawings, photos and illustrations should be included;

b. analysis of evidence; it is important that the historical analysis is accurate and based on primary research (where necessary) – note that Hydro Tasmania has suitable information available;

c. a statement of cultural significance, based on criteria contained in the *Historic Cultural Heritage Act 1995*;

d. a statement of conservation policy - for the site, for the building, including spaces and elements within the building, the headworks, penstocks and switchyard; the conservation policy should be based on an understanding of the place's significance, together with an appreciation of Hydro Tasmania's intentions for the place; it should be prescriptive, clear and easily understood by those responsible for long-term and day-to-day management, including the HT Board, HT General Management Team, facilities managers, upgrade planners, maintenance staff and trades people; and

e. a strategy plan for implementation, identifying required conservation and maintenance works and providing priorities for works.

Key Outcomes

The key outcomes include:

a. a definitive statement of cultural significance for the place, based on thorough historical research and intellectual analysis; and

b. a formal conservation policy, which should prescribe clear, concise and logical recommendations for all aspects of future conservation and management of the place.

METHODOLOGY

Management and Consultation

General

The project will be managed for Hydro Tasmania by the Cultural Heritage Program Manager, Sandra Hogue. Direct contact should be maintained with Sandra throughout the project.

There will be regular meetings between the Cultural Heritage Program Manager (and other HT staff) and members of the consultant team. These will be arranged as necessary to ensure the relevant information is made available to the consultants, and to monitor and review general progress.

Client liaison / HT officer Consultation

The main consultation will be through the Cultural Heritage Program Manager. Other officers may also provide relevant information to the consultant.

The following Hydro Tasmania employees, should be consulted in the process of the study:-

- Sandra Hogue, Cultural Heritage Program Manager
  Phone: 6230 5248
  email: sandra.hogue@hydro.com.au

- Margot Graeme-Evans, Librarian
  Phone: 6230 5241

- David Thomas, Facilities Manager
  Phone: 6230 2882

- Peter Kapeller, Southern Delivery Manager
  Phone: 6261 6863

- Tony Hills, Team Leader (Power Station)
  Phone: 6271 3696

Site Inspection

The consultant is required to visit the power station and surrounding area and pay particular attention to the following specific matters:

- on-going maintenance strategy and protocols;
- the site in relation to the Tungatinah Power Station for which a Conservation Plan has recently been prepared.

Documentation

Layout

The format of the report is to follow the structure adopted for the Tungatinah Conservation Plan prepared by Austral Archaeology which is currently in draft form.

A location plan, site plan and floor plans (as existing) must be included. These should be to appropriate scales, and must include a north point (with a logical and consistent orientation throughout the report), a graphic scale (such as a bar scale) and actual scale (at A4 size). The site plan and floor plans should indicate all structures and elements referred to in the text.

Number of copies (at each stage)

- Draft Conservation Plan: one unbound single-sided; three bound, one electronic version compatible with Microsoft Word for Windows.
- Final Conservation Plan: one unbound single-sided copy; six bound; one electronic PDF copy.

Reference documents / bibliography

The examination of relevant documentary sources is a key element of the project, and the Conservation Plan should include a comprehensive bibliography.

Comment and review

The draft Conservation Plan will be submitted for comment and review. The consultant will be expected to assess any relevant submissions and incorporate amendments within the final Conservation Plan.

Appendix 2 Construction Chronology

Year	Month	Events			
		General	Penstocks and Hilltop Works	Power Station and Generators	Switchyard
1934	July	Road construction began			
	October	Clearing of the site began.			
1938	February	Power station opened		No. 1 machine commissioned	
	July			No. 2 and 3 machines commissioned	
1939		Blacksmith's shop washed away and rebuilt			
1940-41				Machines altered to improve efficiency	
1942			Second hilltop pipeline and surge tank added		
1943	August			No. 4 machine commissioned	
1945	May			No. 5 machine commissioned	
1949		Clark Dam completed			
1951	February		No. 6 hillside pipeline completed		
	December			No. 6 machine commissioned	
1952-53					Switchyard upgraded
1955				Spears of No. 4 to 6 machines closed for eight minutes to protect forebay spillway	
1956-58				Additional spears (jets) fitted to	

Year	Month	Events			
		General	**Penstocks and Hilltop Works**	**Power Station and Generators**	**Switchyard**
				Boving machines to improve efficiency	
			No. 3 hillside pipeline internal relining		
1950s		Workshop wing extension closest to river removed.			
1957				Flood proofing measures undertaken	
				Handrails installed at various locations around power station	
1958			No. 1 hillside pipeline internal relining		
	January			Fire in No. 5 machine requiring installation of new stator winding	
1958-59				New shafts and stainless steel runners installed in Boving machines	
1959			No. 5 hillside pipeline internal relining		
			No. 2 hillside pipeline internal relining		
1962	November			No. 1 machine stator winding fault	
				New stainless steel runners installed in No. 4 to 6 machines to replace cracked carbon steel units	
1963	August			No. 1 machine stator winding fault	

Year	Month	Events			
		General	Penstocks and Hilltop Works	Power Station and Generators	Switchyard
			No. 6 hillside pipeline internal relining		
1964	September			No. 4 machine stator winding fault	
1965			No. 4 hillside pipeline internal relining		
	Feb & April			No. 3 machine stator winding fault	
	December			Realignment of bearings of No. 4 to 6 machines to eliminate fatigue failure of coupling bolts	
1966	August			No. 1 machine stator winding fault	
	September			No. 3 machine stator winding fault	
1968	January			No. 3 machine stator winding fault	
	February			Neutral earthing resistors added to alternators to limit stator fault current and core damage	
1969	September			No.3 machine stator winding fault	
1971	January			No.1 machine stator winding fault	
	August			New stator winding inserted in No.3 machine	

Year	Month	Events			
		General	Penstocks and Hilltop Works	Power Station and Generators	Switchyard
	December			New stator winding inserted in No.1 machine	
1971-72			Stabilising anchors and rocker supports on hillside pipelines		
1972	November			No.4 machine stator winding fault	
1972-75				Hydraulically operated turbine brake jet added to all machines	
1973	October			No.2 machine stator winding fault	
1974			No.2 hilltop pipeline internal relining		
1975			No.1 hilltop pipeline internal relining		
				Pipes replaced around machines, water needles overhauled and partial discharge analysis machine installed on machine	
1975-76				Major overhaul of machines 2 and 4	
1976	May			New stator winding inserted in No.2 machine	
1977	March	Remote control of Tungatinah from Tarraleah		Upgrade of control room to facilitate control of Tungatinah	

Year	Month	Events			
		General	**Penstocks and Hilltop Works**	**Power Station and Generators**	**Switchyard**
	May			No.4 machine stator winding fault	
1977-78				Overhaul of machine No.5	
1978-79				Overhaul of machine No.6	
1979	September			New stator winding inserted in No.4 machine	
1982				Control room air conditioned	
1984				New core laminations and low voltage winding installed in No.4 machine's R phase transformer unit	
1983					Major overhaul of switchyard recommended
				New shafts installed in No.4, 5 and 6 machines following discovery of cracking of original shafts under runner bores	
1993-96			Refurbishment of all six hillside pipelines		
c1996		Automation of Tarraleah controls from Hobart office			
late 1990s					Part of existing switchyard infrastructure removed and new switchyard installed adjacent to power station
				Inlet valves at power station	

Year	Month	Events			
		General	Penstocks and Hilltop Works	Power Station and Generators	Switchyard
				replaced	
c2000				New governors installed on Boving machines	

Appendix 3 The Burra Charter (November 1999)

(The Australia ICOMOS Charter for Places of Cultural Significance)

Preamble

Considering the International Charter for the Conservation and Restoration of Monuments and Sites (Venice 1964), and the Resolutions of the 5th General Assembly of the International Council on Monuments and Sites (ICOMOS) (Moscow 1978), the Burra Charter was adopted by Australia ICOMOS (the Australian National Committee of ICOMOS) on 19 August 1979 at Burra, South Australia. Revisions were adopted on 23 February 1981, 23 April 1988 and 26 November 1999.

The Burra Charter provides guidance for the conservation and management of places of cultural significance (cultural heritage places), and is based on the knowledge and experience of Australia ICOMOS members.

Conservation is an integral part of the management of places of cultural significance and is an ongoing responsibility.

Who is the Charter for?

The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians.

Using the Charter

The Charter should be read as a whole. Many articles are interdependent. Articles in the Conservation Principles section are often further developed in the Conservation Processes and Conservation Practice sections. Headings have been included for ease of reading but do not form part of the Charter.

The Charter is self-contained, but aspects of its use and application are further explained in the following Australia ICOMOS documents:

- Guidelines to the Burra Charter: Cultural Significance;
- Guidelines to the Burra Charter: Conservation Policy;
- Guidelines to the Burra Charter: Procedures for Undertaking Studies and Reports;
- Code on the Ethics of Coexistence in Conserving Significant Places.

What places does the Charter apply to?

The Charter can be applied to all types of places of cultural significance including natural, indigenous and historic places with cultural values.

The standards of other organisations may also be relevant. These include the Australian Natural Heritage Charter and the Draft Guidelines for the Protection, Management and Use of Aboriginal and Torres Strait Islander Cultural Heritage Places.

Why conserve?

Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences. They are historical records, that are important as tangible expressions of Australian identity and experience. Places of cultural significance reflect the diversity of our communities, telling us about who we are and the past that has formed us and the Australian landscape. They are irreplaceable and precious.

These places of cultural significance must be conserved for present and future generations*.*

The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained.

Articles	Explanatory Notes
Article 1. Definitions For the purposes of this Charter:	
1.1 *Place* means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.	The concept of place should be broadly interpreted. The elements described in Article 1.1 may include memorials, trees, gardens, parks, places of historical events, urban areas, towns, industrial places, archaeological sites and spiritual and religious places.
1.2 *Cultural significance* means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the *place* itself, its *fabric*, *setting*, *use*, *associations*, *meanings*, records, *related places* and *related objects*. Places may have a range of values for different individuals or groups.	The term cultural significance is synonymous with heritage significance and cultural heritage value. Cultural significance may change as a result of the continuing history of the place. Understanding of cultural significance may change as a result of new information.
1.3 *Fabric* means all the physical material of the *place* including components, fixtures, contents, and objects.	Fabric includes building interiors and sub-surface remains, as well as excavated material. Fabric may define spaces and these may be important elements of the significance of the place.
1.4 *Conservation* means all the processes of looking after a *place* so as to retain its *cultural significance*.	
1.5 *Maintenance* means the continuous protective care of the *fabric* and *setting* of a *place*, and is to be distinguished from repair. Repair involves *restoration* or *reconstruction*.	The distinctions referred to, for example in relation to roof gutters, are: • maintenance — regular inspection and cleaning of gutters; • repair involving restoration — returning of dislodged gutters;

	• repair involving reconstruction — replacing decayed gutters.
1.6 *Preservation* means maintaining the *fabric* of a *place* in its existing state and retarding deterioration.	It is recognised that all places and their components change over time at varying rates.
1.7 *Restoration* means returning the existing *fabric* of a *place* to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.	
1.8 *Reconstruction* means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material into the *fabric*.	New material may include recycled material salvaged from other places. This should not be to the detriment of any place of cultural significance.
1.9 *Adaptation* means modifying a *place* to suit the existing *use* or a proposed use.	
1.10 *Use* means the functions of a place, as well as the activities and practices that may occur at the place.	
1.11 *Compatible use* means a *use* which respects the *cultural significance* of a *place*. Such a use involves no, or minimal, impact on cultural significance.	
1.12 *Setting* means the area around a *place*, which may include the visual catchment.	
1.13 *Related place* means a *place* that contributes to the *cultural significance* of another place.	
1.14 *Related object* means an object that contributes to the *cultural significance* of a *place* but is not at the place.	
1.15 *Associations* mean the special connections that exist between people and a *place*.	Associations may include social or spiritual values and cultural responsibilities for a place.
1.16 *Meanings* denote what a *place* signifies, indicates, evokes or expresses.	Meanings generally relate to intangible aspects such as symbolic qualities and memories.
1.17 *Interpretation* means all the ways of presenting the *cultural significance* of a *place*.	Interpretation may be a combination of the treatment of the fabric (e.g. maintenance**,** restoration, reconstruction); the use of and activities at the place; and the use of introduced explanatory material.
Conservation Principles	
Article 2. Conservation and management **2.1** *Places* of *cultural significance* should be conserved.	
2.2 The aim of *conservation* is to retain the *cultural significance* of a *place*.	
2.3 *Conservation* is an integral part of good	

management of *places* of *cultural significance*.	
2.4 *Places* of *cultural significance* should be safeguarded and not put at risk or left in a vulnerable state.	
Article 3. Cautious approach **3.1** *Conservation* is based on a respect for the existing *fabric*, *use*, *associations* and *meanings*. It requires a cautious approach of changing as much as necessary but as little as possible.	The traces of additions, alterations and earlier treatments to the fabric of a place are evidence of its history and uses which may be part of its significance. Conservation action should assist and not impede their understanding.
3.2 Changes to a *place* should not distort the physical or other evidence it provides, nor be based on conjecture.	
Article 4. Knowledge, skills and techniques **4.1** *Conservation* should make use of all the knowledge, skills and disciplines which can contribute to the study and care of the *place*.	
4.2 Traditional techniques and materials are preferred for the *conservation* of significant *fabric*. In some circumstances modern techniques and materials which offer substantial conservation benefits may be appropriate.	The use of modern materials and techniques must be supported by firm scientific evidence or by a body of experience.
Article 5. Values **5.1** *Conservation* of a *place* should identify and take into consideration all aspects of cultural and natural significance without unwarranted emphasis on any one value at the expense of others.	Conservation of places with natural significance is explained in the Australian Natural Heritage Charter. This Charter defines natural significance to mean the importance of ecosystems, biological diversity and geodiversity for their existence value, or for present or future generations in terms of their scientific, social, aesthetic and life-support value.
5.2 Relative degrees of *cultural significance* may lead to different *conservation* actions at a place.	A cautious approach is needed, as understanding of cultural significance may change. This article should not be used to justify actions which do not retain cultural significance.
Article 6. Burra Charter Process **6.1** The *cultural significance* of a *place* and other issues affecting its future are best understood by a sequence of collecting and analysing information before making decisions. Understanding cultural significance comes first, then development of policy and finally management of the place in accordance with the policy.	The Burra Charter process, or sequence of investigations, decisions and actions, is illustrated in the accompanying flowchart.
6.2 The policy for managing a *place* must be based on an understanding of its *cultural significance*.	
6.3 Policy development should also include	

consideration of other factors affecting the future of a *place* such as the owner's needs, resources, external constraints and its physical condition.	
Article 7. Use **7.1** Where the *use* of a *place* is of *cultural significance* it should be retained.	
7.2 A *place* should have a *compatible use*.	The policy should identify a use or combination of uses or constraints on uses that retain the cultural significance of the place. New use of a place should involve minimal change, to significant fabric and use; should respect associations and meanings; and where appropriate should provide for continuation of practices which contribute to the cultural significance of the place.
Article 8. Setting *Conservation* requires the retention of an appropriate visual *setting* and other relationships that contribute to the *cultural significance* of the *place*. New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.	Aspects of the visual setting may include use, siting, bulk, form, scale, character, colour, texture and materials. Other relationships, such as historical connections, may contribute to interpretation, appreciation, enjoyment or experience of the place.
Article 9. Location **9.1** The physical location of a *place* is part of its *cultural significance.* A building, work or other component of a place should remain in its historical location. Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival.	
9.2 Some buildings, works or other components of *places* were designed to be readily removable or already have a history of relocation. Provided such buildings, works or other components do not have significant links with their present location, removal may be appropriate.	
9.3 If any building, work or other component is moved, it should be moved to an appropriate location and given an appropriate *use*. Such action should not be to the detriment of any *place* of *cultural significance*.	
Article 10. Contents Contents, fixtures and objects which contribute to the *cultural significance* of a *place* should be retained at that place. Their removal is unacceptable unless it is: the sole means of ensuring their security and *preservation*; on a temporary basis for treatment or exhibition; for cultural reasons; for health and safety; or to protect the place. Such contents, fixtures and objects should be returned where circumstances permit and it is culturally appropriate.	

Article 11. Related places and objects The contribution which *related places* and *related objects* make to the *cultural significance* of the *place* should be retained.	
Article 12. Participation *Conservation, interpretation* and management of a *place* should provide for the participation of people for whom the place has special *associations* and *meanings*, or who have social, spiritual or other cultural responsibilities for the place.	
Article 13. Co-existence of cultural values Co-existence of cultural values should be recognised, respected and encouraged, especially in cases where they conflict.	For some places, conflicting cultural values may affect policy development and management decisions. In this article, the term cultural values refers to those beliefs which are important to a cultural group, including but not limited to political, religious, spiritual and moral beliefs. This is broader than values associated with cultural significance.
Conservation Processes	
Article 14. Conservation processes *Conservation* may, according to circumstance, include the processes of: retention or reintroduction of a *use*; retention of *associations* and *meanings*; *maintenance, preservation*, *restoration*, *reconstruction, adaptation* and *interpretation*; and will commonly include a combination of more than one of these.	There may be circumstances where no action is required to achieve conservation.
Article 15. Change **15.1** Change may be necessary to retain *cultural significance*, but is undesirable where it reduces cultural significance. The amount of change to a *place* should be guided by the *cultural significance* of the place and its appropriate *interpretation*.	When change is being considered, a range of options should be explored to seek the option which minimises the reduction of cultural significance.
15.2 Changes which reduce *cultural significance* should be reversible, and be reversed when circumstances permit.	Reversible changes should be considered temporary. Non-reversible change should only be used as a last resort and should not prevent future conservation action.
15.3 Demolition of significant *fabric* of a *place* is generally not acceptable. However, in some cases minor demolition may be appropriate as part of *conservation*. Removed significant fabric should be reinstated when circumstances permit.	
15.4 The contributions of all aspects of *cultural significance* of a *place* should be respected. If a place includes *fabric*, *uses*, *associations* or *meanings* of different periods, or different aspects of cultural significance, emphasising or interpreting one period or aspect at the expense of another can only be justified when what is left out, removed or diminished	

is of slight cultural significance and that which is emphasised or interpreted is of much greater cultural significance.	
Article 16. Maintenance *Maintenance* is fundamental to *conservation* and should be undertaken where *fabric* is of *cultural significance* and its *maintenance* is necessary to retain that *cultural significance*.	
Article 17. Preservation *Preservation* is appropriate where the existing *fabric* or its condition constitutes evidence of *cultural significance,* or where insufficient evidence is available to allow other *conservation* processes to be carried out.	Preservation protects fabric without obscuring the evidence of its construction and use. The process should always be applied: • where the evidence of the fabric is of such significance that it should not be altered; • where insufficient investigation has been carried out to permit policy decisions to be taken in accord with Articles 26 to 28. New work (e.g. stabilisation) may be carried out in association with preservation when its purpose is the physical protection of the fabric and when it is consistent with Article 22.
Article 18. Restoration and reconstruction *Restoration* and *reconstruction* should reveal culturally significant aspects of the *place*.	
Article 19. Restoration *Restoration* is appropriate only if there is sufficient evidence of an earlier state of the *fabric*.	
Article 20. Reconstruction **20.1** *Reconstruction* is appropriate only where a *place* is incomplete through damage or alteration, and only where there is sufficient evidence to reproduce an earlier state of the *fabric*. In rare cases, reconstruction may also be appropriate as part of a *use* or practice that retains the *cultural significance* of the place.	
20.2 *Reconstruction* should be identifiable on close inspection or through additional *interpretation*.	
Article 21. Adaptation **21.1** *Adaptation* is acceptable only where the adaptation has minimal impact on the *cultural significance* of the *place*.	Adaptation may involve the introduction of new services, or a new use, or changes to safeguard the place.
21.2 *Adaptation* should involve minimal change to significant fabric, achieved only after considering alternatives.	
Article 22. New work **22.1** New work such as additions to the *place* may be acceptable where it does not distort or obscure the *cultural significance* of the place, or detract from its *interpretation* and appreciation.	New work may be sympathetic if its siting, bulk, form, scale, character, colour, texture and material are similar to the existing fabric, but imitation

	should be avoided.
22.2 New work should be readily identifiable as such.	
Article 23. Conserving use Continuing, modifying or reinstating a significant *use* may be appropriate and preferred forms of *conservation*.	These may require changes to significant *fabric* but they should be minimised. In some cases, continuing a significant use or practice may involve substantial new work.
Article 24. Retaining associations and meanings **24.1** Significant *associations* between people and a *place* should be respected, retained and not obscured. Opportunities for the *interpretation*, commemoration and celebration of these associations should be investigated and implemented.	For many places associations will be linked to use.
24.2 Significant *meanings*, including spiritual values, of a *place* should be respected. Opportunities for the continuation or revival of these meanings should be investigated and implemented.	
Article 25. Interpretation The *cultural significance* of many *places* is not readily apparent, and should be explained by *interpretation*. Interpretation should enhance understanding and enjoyment, and be culturally appropriate.	
Conservation Practice	
Article 26. Applying the Burra Charter process **26.1** Work on a *place* should be preceded by studies to understand the place which should include analysis of physical, documentary, oral and other evidence, drawing on appropriate knowledge, skills and disciplines.	The results of studies should be up to date, regularly reviewed and revised as necessary.
26.2 Written statements of *cultural significance* and policy for the *place* should be prepared, justified and accompanied by supporting evidence. The statements of significance and policy should be incorporated into a management plan for the place.	Statements of significance and policy should be kept up to date by regular review and revision as necessary. The management plan may deal with other matters related to the management of the place.
26.3 Groups and individuals with *associations* with a *place* as well as those involved in its management should be provided with opportunities to contribute to and participate in understanding the *cultural significance* of the place. Where appropriate they should also have opportunities to participate in its *conservation* and management.	
Article 27. Managing change **27.1** The impact of proposed changes on the *cultural significance* of a *place* should be analysed with reference to the statement of significance and the policy for managing the place. It may be necessary to modify proposed changes following analysis to better retain cultural significance.	
27.2 Existing *fabric, use, associations* and *meanings* should be adequately recorded before any changes are made to the *place*.	

Article 28. Disturbance of fabric **28.1** Disturbance of significant *fabric* for study, or to obtain evidence, should be minimised. Study of a *place* by any disturbance of the fabric, including archaeological excavation, should only be undertaken to provide data essential for decisions on the *conservation* of the place, or to obtain important evidence about to be lost or made inaccessible.	
28.2 Investigation of a *place* which requires disturbance of the *fabric*, apart from that necessary to make decisions, may be appropriate provided that it is consistent with the policy for the place. Such investigation should be based on important research questions which have potential to substantially add to knowledge, which cannot be answered in other ways and which minimises disturbance of significant fabric.	
Article 29. Responsibility for decisions The organisations and individuals responsible for management decisions should be named and specific responsibility taken for each such decision.	
Article 30. Direction, supervision and implementation Competent direction and supervision should be maintained at all stages, and any changes should be implemented by people with appropriate knowledge and skills.	
Article 31. Documenting evidence and decisions A log of new evidence and additional decisions should be kept.	
Article 32. Records **32.1** The records associated with the *conservation* of a *place* should be placed in a permanent archive and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.	
32.2 Records about the history of a *place* should be protected and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.	
Article 33. Removed fabric Significant *fabric* which has been removed from a *place* including contents, fixtures and objects, should be catalogued, and protected in accordance with its *cultural significance*. Where possible and culturally appropriate, removed significant fabric including contents, fixtures and objects, should be kept at the place.	
Article 34. Resources Adequate resources should be provided for *conservation*.	The best conservation often involves the least work and can be inexpensive.
Words in italics are defined in Article 1.	