Annex J

Mullumbimby Power Station - Heritage Impact Assessment
(ERM, 2008)

FINAL REPORT

Country Energy

Mullumbimby Power Station
Heritage Impact Assessment

October 2008

Environmental Resources Management Australia
Building C, 33 Saunders Street
Pyrmont, NSW 2009
Telephone +61 2 8584 8888
Facsimile +61 2 8584 8800
www.erm.com

FINAL REPORT

Country Energy

Mullumbimby Power Station
Heritage Impact Assessment

October 2008

Reference: 0051706_Mullumbimby Heritage_FINAL

For and on behalf of:
Environmental Resources Management Australia

Approved by: Christine Allen

Signed: 

Position: Senior Associate

Date: 16 October 2008

CONTENTS

CONTENTS

LIST OF TABLES

LIST OF PHOTOGRAPHS

LIST OF FIGURES

EXECUTIVE SUMMARY

Environmental Resources Management Pty Ltd Australia (ERM) was commissioned by Country Energy to prepare an assessment of the impact on the heritage values of the Mullumbimby Power Station arising from the upgrade of the Lismore region electricity network by Country Energy, which includes the construction of new infrastructure adjacent to the power station building.

The Mullumbimby Power Station, commissioned in 1926, is identified on the Country Energy Heritage and Conservation Register (S.170 Register), the North Coast Regional Environmental Plan 1988, Byron Local Environmental Plan 1988 and the National Trust of Australia (NSW) Register. The inclusion of the site on the Northern Coast REP and the S.170 Register requires Country Energy to inform the Heritage Council of any alterations to the power station. The original power station plant was decommissioned in 1989.

The Mullumbimby Power Station site includes an electricity substation and the original power station building. Predicted growth in population and electricity use requirements are such that the Mullumbimby substation needs to be upgraded. However, the limitations of the available space pose restrictions on any upgrade of the services provided by Country Energy within the current configuration of the site.

Country Energy has identified an option that accommodates the proposed substation upgrade including the installation of new transformer bays within the existing footprint that also allows for the retention of the heritage listed Mullumbimby Power Station. The proposed substation will result in some changes to the immediate setting of the heritage item, which could have a visual impact. Overall, the retention of the power station and its equipment in situ, and the commitment to its ongoing conservation, is a positive heritage outcome of the proposed upgrade project.

The potential impacts of the proposed new substation on the power station can be mitigated by Country Energy by the preparation of an archival recording of the power station building and its associated machinery and equipment prior to the commencement of any site construction works.

1 INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by Country Energy to prepare a heritage impact assessment of the Mullumbimby Power Station located at Lot 52 DP 778243 Wilsons Creek Road, Mullumbimby NSW (herein referred to as "the site") and assess the options for upgrading the site as part of the proposed Lismore to Mullumbimby electricity network upgrade.

1.1 BACKGROUND

The current and projected growth in population in the Lismore region is such that Country Energy needs to upgrade the capacity of the electricity grid to service this increase.

Available space for the proposed substation upgrade is limited due to the physical constraints of the site. The following two options were considered during this assessment:

- Permanent decommissioning and demolition of the Mullumbimby Power Station and relocation of internal plant to allow adequate room for the proposed upgrade; and
- Retain the Mullumbimby Power Station and configure the site to accommodate the proposed upgrade.

Country Energy identified a feasible option to locate the new electricity infrastructure associated with the substation upgrade adjacent to the power station. This option allows for the retention of the power station.

1.2 STUDY AREA

The Mullumbimby Power Station is located off Wilson's Creek Road, adjacent to the Mullumbimby Zone Substation, and is set in a rural environment approximately 5 kilometres (km) south-west of Mullumbimby in the Northern Rivers region (see *Figure 1.1*).

The site encompasses the power station, a substation constructed in the 1950s and recent installations of electrical equipment including two regulators currently used for the existing local 11kV power supply.

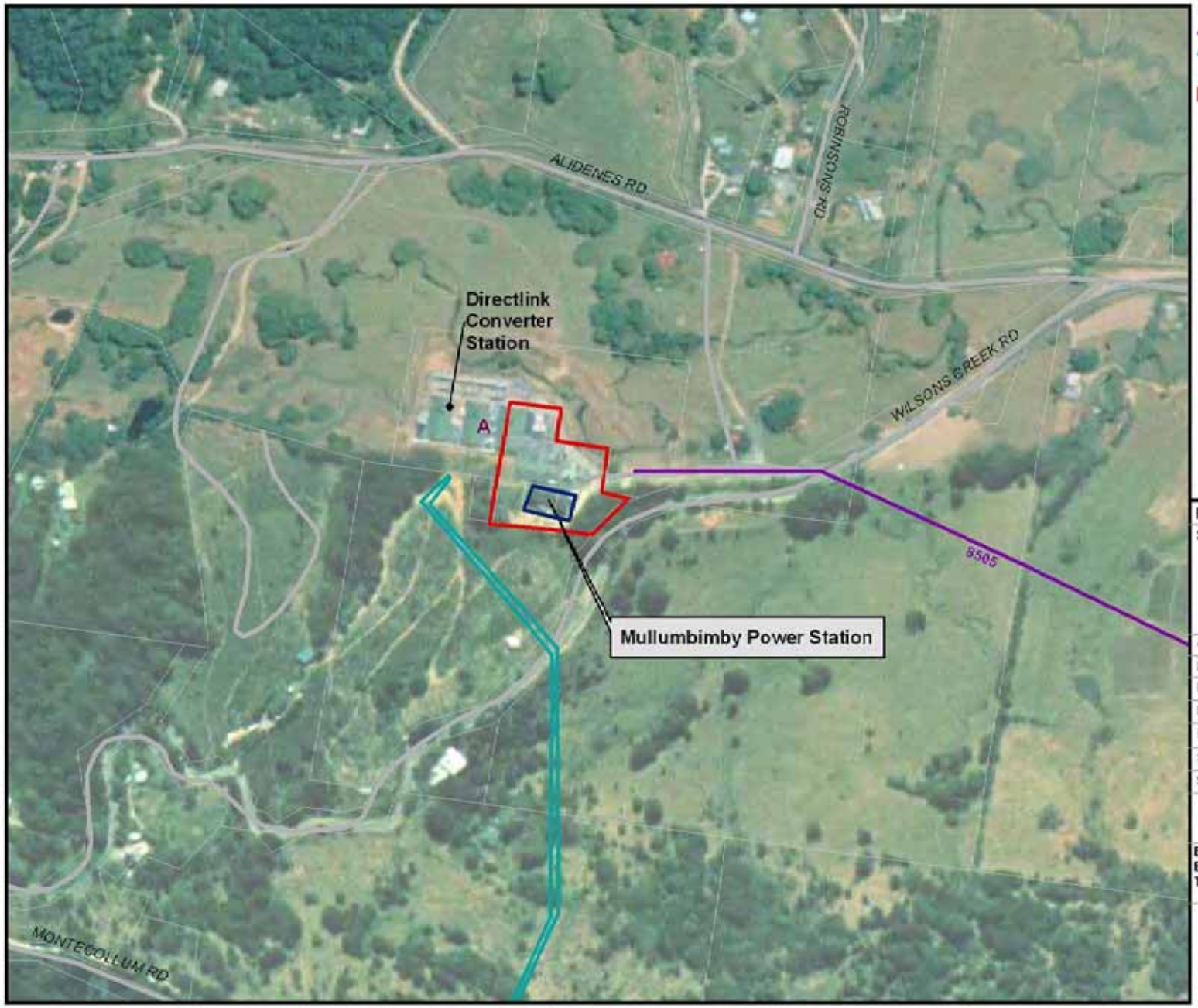


Figure 1.1

Site Location

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	MC
Source:	Department of Lands 2008		
Scale:	Refer Scale Bar		

N

0 25 50 100 150 200 m

Environmental Resources Management Australia Pty Ltd
Building C, 33 Saunders St, Pyrmont, NSW 2009
Telephone +61 2 8584 8888

1.3 CURRENT HERITAGE STATUS

The current heritage status of the Mullumbimby Power Station is provided in the summary table below.

Table 1.1 Current Heritage Status Summary

Heritage List/Schedule/Register/Inventory	Status
World Heritage List	• Mullumbimby Power Station is not included on the World Heritage List.
National Heritage List	• Mullumbimby Power Station is not included on the National Heritage List
Commonwealth Heritage List	• Mullumbimby Power Station is not included on the Commonwealth Heritage List.
State Heritage Register	• Mullumbimby Power Station is not included on the State Heritage Register.
Country Energy Section 170 Heritage Register	• Mullumbimby Power Station is included as a heritage item on Country Energy's s170 Heritage Register.
North Coast Regional Environmental Plan (REP)	• Mullumbimby Power Station is included on Schedule 2 (Heritage items of State and Regional environmental significance) of the REP. The listing states that the site is comprised of the power house containing two water turbines and four diesel generators, the sub-station and the weir, flume and tunnel), Wilson's Creek Road, near Laverty's Gap.
Byron Local Environmental Plan (LEP) 1988	• Power station and Race, Lots 1 and 2 DP 314096, Lot 1, DP 395638, Lot 2 DP 365195Wilsons Creek Road, Mullumbimby is included on the Heritage Schedule (Schedule 2) of the Byron LEP.
Register of the National Estate (non-statutory)	• Mullumbimby Power Station is not included on the Register of the National Estate. It is flagged as an Indicative Place on the Australian Heritage Database, which means that a nomination has been received for the site but an assessment has not been undertaken to date.
National Trust of Australia (NSW) Register (non-statutory)	• The Mullumbimby Power Station on Wilson's Creek Road near Laverty's Gap is included on the National Trust Register.

1.4 METHODOLOGY

This report has been prepared in accordance with the NSW Heritage Branch, Department of Planning guideline *Statements of Heritage Impact*. The report contains information and analysis gained from:

- site investigation and physical analysis;
- research into the history of the site; and
- review of existing heritage listings.

The identification of heritage impact mitigation measures considers the heritage values of the site, need for the proposed works as part of a broader electricity supply upgrade along with the potential for future interpretation of the Mullumbimby Power Station.

1.5 AUTHORSHIP

Jennie Lindbergh, former ERM Senior Heritage Consultant specialising in industrial heritage, prepared a preliminary draft of this report. Further research and report revision was undertaken by Shelley James, ERM Senior Heritage Consultant and Dr Diana Neuweger, ERM Archaeologist. The report has been QA reviewed by Christine Allen, ERM Principal Planner.

1.6 ACKNOWLEDGEMENTS

The assistance of the following people during the preparation of this report is gratefully acknowledged:

- Ian Fox and Robyn Gray, Brunswick Valley Historical Society;
- Ray Musgrave and Dick Creighton, former power station employees;
- Tony Brassil, National Trust of Australia (NSW) Industrial Archaeology Advisor and Industrial Archaeologist, Godden Mackay Logan; and
- Brian Glawson, Mike Hely, George Schofield, Peter Bale, Peter Nixon, Ross Kempnich and Terry Parr, Country Energy.

2 HISTORICAL CONTEXT

The following historical context of the Mullumbimby Power Station is taken from the *Northern Rivers Electricity Heritage and Conservation Register* and the Conservation Plan for Koolkhan Power Station, prepared by Howard Tanner & Associates in association with Godden Mackay Heritage Consultants & Industrial Archaeologists, in 1993. It is supplemented with information from the Australian Dictionary of Biography and articles and photographs kindly provided by the Brunswick Valley Historical Society.

2.1 HISTORY OF ELECTRICITY SUPPLY IN NSW 1870-1950

2.1.1 Background

The earliest uses of electricity in Australia were for lighting purposes as a direct current (DC) produced by a generator, usually driven by a steam engine. The development of the electric motor improved the efficiency and reduced costs so that new markets for power generation were introduced during the 1880s and 1890s. It was not long before individual businesses were installing a steam-driven generator in their basement and using the electricity to provide lighting and motive power throughout their building. From this, small private companies established local generating stations to sell electricity to local consumers at a cost cheaper than they could run their own system.

The Sydney Electric Light Company Power Station, established in 1888, is a notable example of this trend with the construction of the power house building which still stands in Renwick Street, Redfern. In 1896, the NSW Parliament granted the Sydney Municipal Council permission to produce and reticulate energy for commercial and street lighting purposes. Construction was begun on the Pyrmont Power Station with power first being produced on the site in 1904. In 1909, the Balmain Power Station was commissioned and in 1912, construction began on the White Bay Power Station. These four power stations provided Sydney with all its electrical requirements until 1930 when the first stage of the Bunnerong Power Station was completed by the Sydney Municipal Council.

In 1904, the right to provide local electrical supplies was conferred upon the Councils and, in 1906, to the Shire Councils.

2.2 POWER GENERATION IN THE NORTHERN RIVERS DISTRICT

The Clarence River County Council was constituted in 1922, to supply electricity to the district centred on Grafton. Since early last century, the coastal area of the Dorrigo Plateau, where topography and rainfall were suitable, had been advocated by W. J. Mulligan, Sir Earle Page M.P. and others for the development of hydro power. In 1919, the NSW Parliament passed the Hydro-Development (Construction) Act which authorised the construction of hydro electric works at Burrinjuck on the Murrumbidgee River, in the Snowy Mountains on the Tumut River, and at Nymboida, south west of Grafton. However, due to a lack of funds only the Burrinjuck scheme was realised.

The 1920s was a period of economic development for the region with the railway linking Sydney and Brisbane, completed in 1924, improving access to these capitals from the region and, the development of more intensive farming practises, including dairying,

piggeries, small goods and banana plantations. This expansion of the local economy with the increase in agricultural enterprises and the improved rail access, led to a population increase in the area and, a greater demand for electricity supply. Development of power generation sites in the district was a response to this demand, and three small hydro schemes were completed at Dorrigo in 1922, Nymboida in 1923 and Mullumbimby in 1923.

A steam power station was constructed at Koolkhan, on the Clarence River near Grafton in 1953 to cope with the increasing demand for power in rural and urban areas in the post-War era. This station was an attempt to make the region self sufficient in power production by utilising local coal resources. The station was closed in 1977 due to a lack of quality coal from the nearby Nymboida mine and the expense of transporting better quality coal from the Hunter Valley.

The Clarence River County Council operated a network covering several municipalities on the North Coast, and remained a separate generation and distribution authority for its region. It did however; continue its connection to the State Grid. The Council was gradually merged with other similar enterprises, being renamed the Northern Rivers County Council in 1953, then Northern Rivers Electricity (NRE), then NorthPower, and is today known as Country Energy

2.2.1 The Development of the Local Power Generation System

The original Clarence River County Council established the Nymboida Hydro-Station on a tributary of the Nymboida River in 1924. The station was augmented over a period of some 12 years (4.5MW) and together with the Lismore Diesel Station (6MW) established in 1933, comprised the generation resources of the system. The essential purpose of the first of the 66kV lines to come into service was to interconnect these two power stations. The line was 160km in length.

During 1932, the Council acquired the Coffs Harbour Electricity system with its local power station. This system was connected into the county system with the construction of a 33kV line south of Nymboida. The line followed a route via Glenreagh and then on to Raleigh, the object being to establish 33/11kV substations in each locality and so reticulate the respective rural areas. The first large consumer to take supply from the Raleigh Substation was the local butter factory.

Late in 1935 the 11kV line, which had served the Lower Clarence District since 1929, was augmented by a 33kV line and 33/11kV substations at Ulmarra and Maclean. The reticulation of Terranora Shire to the north of Lismore was commenced in the same year with the building of 33kV line from Lismore and the construction of one 33/11kV substation at Dunoon.

Thus by 1936, the 33kV sub-transmission system served most of the communities of the Richmond, Clarence and Bellingen Rivers' basins, transforming the Council from a purely local supply authority to one of regional proportions. In 1938, the reticulation of the northern area was further enhanced when the Council entered into an agreement with the Municipality of Mullumbimby to provide a 33kV bulk supply by extending the line from Dunoon to the local power station. At the end of 1939 the system, which had been developing for nearly 15 years, reticulated power to 8,697 consumers compared with 250 in 1925. The area served involved most of the north and mid coastal plain and portions of the western high country.

Between 1948 and 1961, 33kV lines were constructed from Casino to Ubenville via Mallaganee and Bonalbo: from Casino to Kyogle (1953), Raleigh to Woolgoolga (1954)

and Maclean to Yamba via Red Cliff (1967). The rapid growth of the Council system during the decade of the 1960s was also indicative of the inadequacy of the 33kV to carry large blocks of load over long distances. As a consequence, it was first augmented then gradually displaced by 66kV and 132kV lines and substations.

At the end of World War II, the Council was faced with an increased demand for power in both rural and urban areas. As a result, it was decided to establish a stream station (29MW) at Koolkhan, 10km north of Grafton, and to interconnect the southern and northern systems by the construction of 66kV lines to Lismore via Nymboida (1953) and Casino (1954).

The first major augmentation of the 66kV system, since the 1933 northern line, took place in late 1944 and early 1945 when a line 196km in length was began operation between Nymboida and Kempsey. The significance of this line was that it connected the Council generation into the Railway/Public Works System and so gave access to the State Grid. In addition, the Raleigh Substation was established as a 66/33/11kV source to augment supply into the Nambucca and Coffs Harbour areas.

With the completion of the Koolkhan Power station in 1953, the Council embarked on a major expansion of its 66kV system in order to augment areas supplied at 33kV. Between 1954 and 1968 it constructed new lines and 66/11kV substations at Mullumbimby (1954), South Lismore (1954), Grafton (1956), Coffs Harbour (1957), Dorrigo (1957), Casino (1960), South Grafton (1961), Newee Creek (1962), East Lismore (1963), Maclean (1966), Ballina (1967) and Raleigh (1968).

The amalgamation of the County Council into that of the Northern Rivers in 1952 brought a unified distribution and transmission network into the system for 28,175 consumers with a peak demand of 20MW.

The growth of the northern load had occasioned the detailed planning and design of a 132kV line and substation to be established at Lismore. The line was commissioned in June 1962 to be operated initially at 66kV. This line, which was 100km in length, represented a basic departure in design practice for the Council and was significant in that it marked the end of the 66kV as the source of system interconnection.

During 1963, the Electricity Commission of NSW placed into service the first of its 132/66kV bulk supply points adjacent to the Koolkhan Power Station and effectively integrated the Council system into that of the Commission. The Kempsey 66kV interconnection was fully up-rated by the construction of a new 132/66/33kV substation in 1966 and in 1967 a third bulk 132kV substation was completed at Lismore. The 132kV line, constructed by Council in 1962, was sold to the Commission and became part of a ring system of 132kV lines which extends from Armidale via Tenterfield to Lismore and Grafton.

2.3 *WILLIAM CORIN*

Mr William Corin, Inst. C.E., M.I.E.E., M.I.E. (Aust), a consulting hydraulic, electrical, mechanical and civil engineer, is associated with the site selection and construction of the Mullumbimby Power Station. Corin was a pioneer of hydro electricity power generation in Australia. The following summary of his career is taken from Australian Dictionary of Biography online.

William Corin was born on 13 October 1867 at Forest Hill, Kent, England. Educated at King's College School and University College, London, he graduated in engineering

in 1885 with numerous prizes. He was employed in Glasgow by Dubs & Co., then by James Cleminson & Sons, civil engineers, until in 1891 he joined the London Metropolitan Electric Supply Co. Appointed as city electrician, he migrated to Launceston, Tasmania, on 26 November 1895.

Corin had begun work in Launceston just before the opening of the hydroelectric scheme, developed by C. St John David, and he controlled the Duck Reach Power Station; he later made preliminary surveys for the Great Lakes schemes. His safety standards in the installation of wiring in Launceston were exemplary; in 1904-07 his conversion of the wiring to the three-phase four-wire system was among the first in the British Empire.

In 1907 Corin entered private practice in Melbourne; he also acted as consulting engineer to the municipality of Launceston. On 1 July he was appointed chief electrical engineer to the New South Wales Department of Public Works and consulting electrical engineer to the Department of Mines. His major responsibility was the generation of thermal electricity for local distribution, but he foresaw the advantage of intrastate connections, with links to adjoining States. In 1913 he was sent abroad to study developments in electrical engineering. He returned with renewed enthusiasm for hydroelectricity and in 1915 began a series of reports on a Snowy River scheme. During his lifetime, however, the only schemes completed in New South Wales were comparatively small ones at Burrinjuck, Mullumbimby, Dorrigo and Nymboida. To continue the consulting work which he found more congenial he resigned in December 1923.

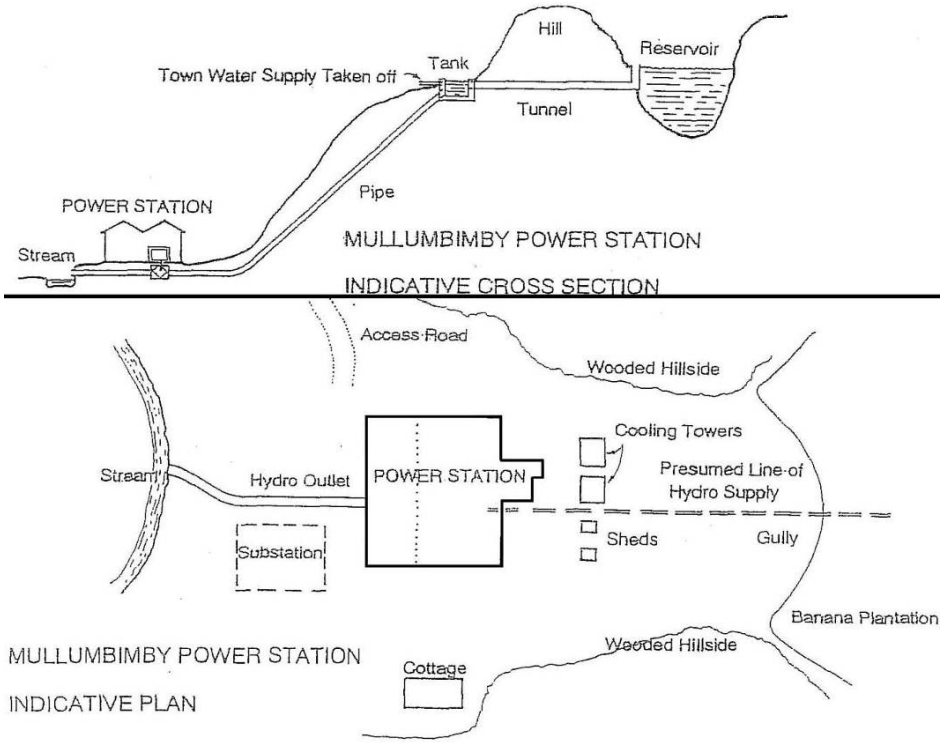
Corin advised the British and French governments respectively on hydroelectricity in Fiji (1906) and New Caledonia (1920), and also reported to the New Zealand government on the Lake Coleridge scheme. He was consulted on the Queensland Barron Falls project in 1906 and 1923-24. A member from 1909 and president in 1917 of the New South Wales section of the Electrical Association of Australia, he became a foundation member of the Institution of Engineers, Australia, in 1919. He was also a member of the American Institute of Electrical Engineers and of the institutions of Electrical Engineers and Civil Engineers, London; the latter body awarded him the Telford Premium in 1911 for a paper on the water power of Tasmania.

In 1920 Corin estimated the cost of the Snowy River scheme at £2 million, and in 1927-28 he suggested to local councillors that they might install a small hydroelectric plant to meet shire needs. In his writings Corin advocated afforestation and the arrest of soil erosion to conserve all rainfall for the development of the hydroelectric potential. A practical engineer who 'saw hydro-electricity in every running stream', Corin was of distinguished appearance, possessing a great sense of humour and much personal charm, but outspoken about dishonest practice. He died of cancer on 2 March 1929 at Chatswood, Sydney, and was buried in the general section of Northern Suburbs cemetery. His work is commemorated by the Corin Dam, near Canberra, and by street names in that city and in Launceston.

2.4 THE MULLUMBIMBY POWER STATION

The first survey for suitable hydro electric power station sites was undertaken in 1915. The result of this survey located an area along the main arm of the Brunswick River as a favoured spot. In 1922 the proposition of a hydro electric station was put to council vote and was voted in favour 77 votes to 51 (Brokenshire 1988).

William Corin was commissioned in September 1923 to assist with the construction of the Mullumbimby station. He began surveys for the hydro electric station in 1924 and the current location for the Mullumbimby Power station was chosen. A loan of £ 25,500 was undertaken for the works. By December 1924, construction of the weir was already underway in preparation for the power station. An indicative plan and elevation of the Mullumbimby Power Station site is shown in *Figure 2.1*.



(Source: Northern Rivers Electricity Heritage and Conservation Register)

Figure 2.1 Mullumbimby Power Station Indicative Site Plan

(Source: Brunswick Valley Historical Society)

Figure 2.2 Wilson's Creek – minimum flow gauging in October 1915

Construction was undertaken by team of 9- 10 men, concrete was mixed by hand for the construction of the building, and, due to flash flooding of the site, the formwork was washed away and had to be rebuilt (August 17 1976 Northern Star Supplement).

On October 29, 1925 the men working on the tunnel works broke through and met under the mountain, after twelve months of manually excavating the 1.2 metre diameter tunnel. From the tunnel a race extended 45 metres to a water pipe over 600 metres long and with a vertical drop of 95 metres. That same day the first water was let loose to test the race and pipeline, and the project was deemed a success.

The weir at Laverty's Gap is 7.01 metres high with a crest of 45.72 metres. With a total storage of approximately 1.4 billion litres, the weir provided 2.5 billion litres storage to the hydro plant above the take-off level in addition to the river run. The hydraulic pipeline of 509 metres was originally in woodstave pipe, but has since been replaced with cast iron. The race, with a 106.7 metre tunnel through a saddle, was 442 metres in length and has been replaced with a concrete race.

The Mullumbimby Power Station, completed in 1925, was the third hydro power station to be installed on the Australian mainland. The original Station supplied 280 Kw of power and was augmented by a diesel engine of 130Kw. Electricity was first supplied to Mullumbimby on March 6 1926. By June 12th of that year Byron was connected and on July 3rd 1926 Bangalow was also supplied by the Mullumbimby hydro plant (Brokenshire 1988: 76).

(Source: Brunswick Valley Historical Society)

Figure 2.3 Pipe head reservoir, 300 feet above the Power Station c1930s

(Source: Brunswick Valley Historical Society)

Figure 2.4 Wilson's Creek Weir with reservoir empty

(Source: Brunswick Valley Historical Society)

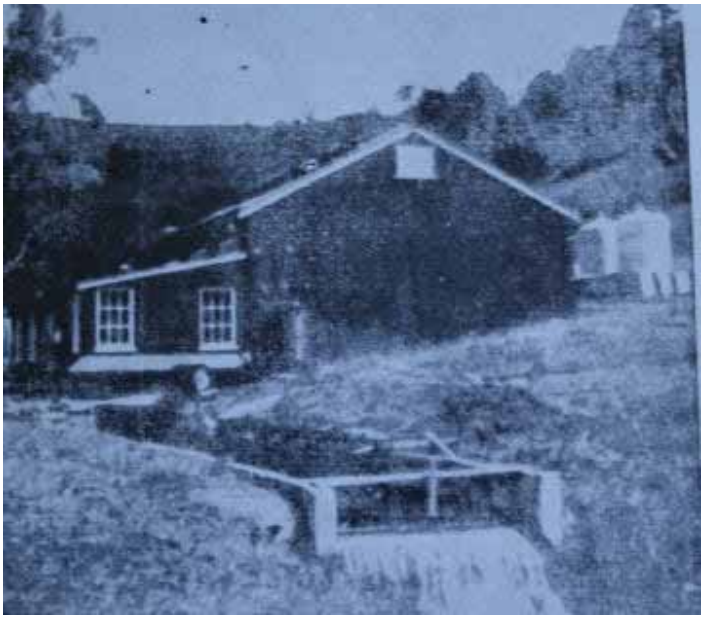
Figure 2.5 Wilson's Creek Weir with reservoir full

(Source: Brunswick Valley Historical Society)

Figure 2.6 Head Race approaching tunnel

(Source: Brunswick Valley Historical Society)

Figure 2.7 Power Station – The Measuring Weir



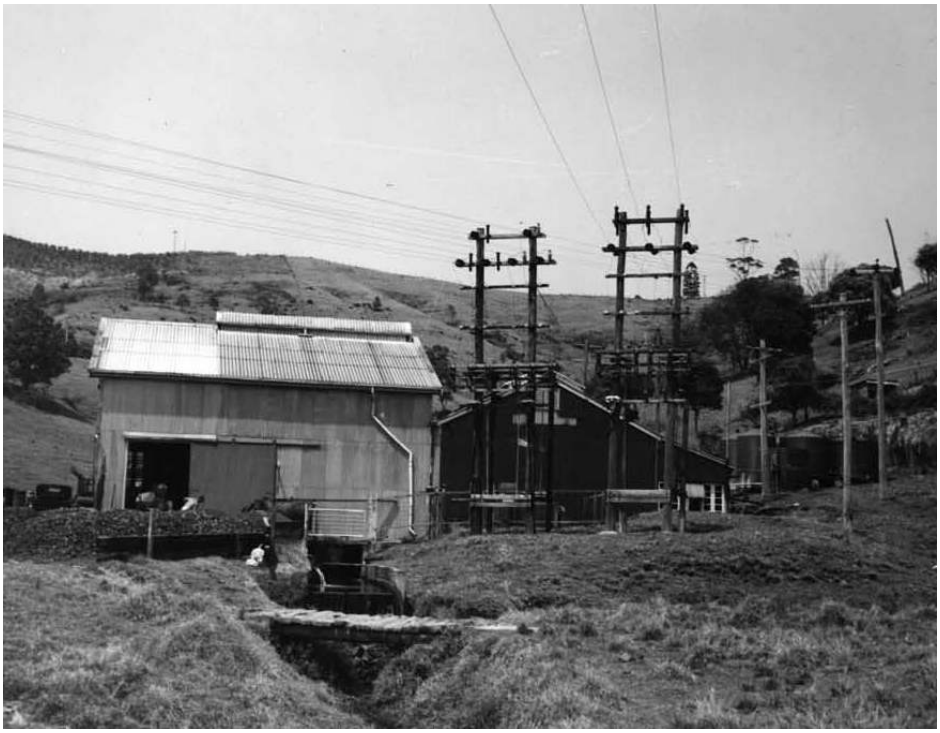
(Source: Mullumbimby 1908-1958, courtesy Brunswick Valley Historical Society)

Figure 2.8 The original power station, race in foreground

The small hydro electric plant was almost immediately augmented by a diesel installation as a standby, being a Ruston Hornsby 4-cylinder diesel installed in 1928. In due course the hydro turbines were supplemented by additional diesel powered engines. During the early 1930s the power station was able to supply electricity at low cost to businesses and residences alike. The town clerk during this period, Mr Miles, recalled:

> *"Prices were cheap then. After balancing the load we went for a power sales blitz and dropped our price to a penny a unit. … the common joke about electricity then was that it was provided from heaven because it was generated by hydro power"* (August 17 1976 Northern Star Supplement).

In 1934 they were augmented by a mirrlees engine high speed 8-cylinder unit of 330 horse power. In 1945 No.5 diesel unit was installed, in 1949 the No.7 diesel unit was added. The state contracted Mullumbimby to install an 8 cylinder mirrlees engine in 1945 to supply the North Coast of NSW. By 1959 the capacity was 3,154 Kw with an annual output of 14 million KWH (Brokenshire 1988: 77).



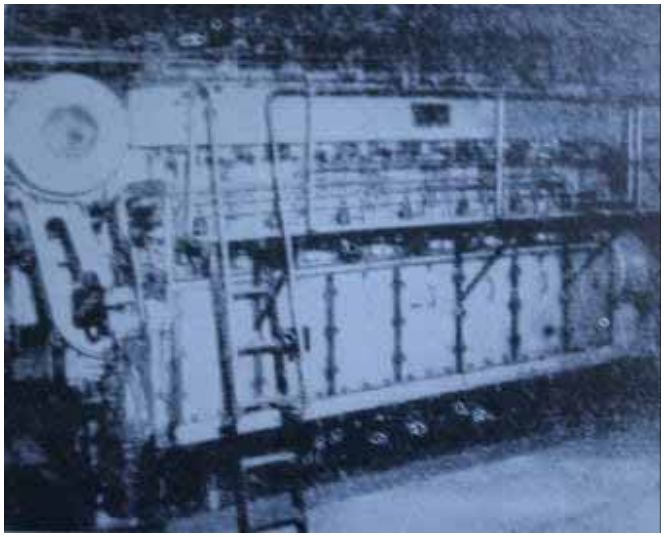
(Source: Stubbs 2006, courtesy Brunswick Historical Society)

Figure 2.9 Mullumbimby Power Station c1940s

During its years in operation there were only two times in it history that the Mullumbimby Power Station ever stopped. The first time was the most serious in 1938 when the pipeline burst during a flood and filled the station with mud. It took 3 days to dry out the alternators and a week to repair the pipe (August 17 1976 Northern Star Supplement).

In the latter 1940s the NSW State Government introduced a subsidy scheme to promote the extension of electricity supply to rural areas. The Mullumbimby Council utilised this scheme to expand reticulation into Byron Shire. Two construction teams were employed to simultaneously build the network extensions. Each year loan programmes of about £35,000 were adopted and facilitated the construction of electricity lines to all parts of Byron Shire (Mullumbimby 1908-1958, courtesy Brunswick Valley Historical Society). The extension of the electricity network continued to contribute to the economic growth of the region, and enabled larger industry to develop.

During the 1950s power generation in the State of New South Wales had reached a serious stage and Mullumbimby's Power Station, with its dependence upon the interconnected system, suffered severe restrictions. In an effort to overcome difficulties on the North Coast the NSW Electricity Commissioner contracted with Mullumbimby to install an 8 cylinder Mirrlees engine and after the emergency had passed, the plant was offered to the Council and was purchased in 1953.



(Source: Mullumbimby 1908-1958, courtesy Brunswick Valley Historical Society)

Figure 2.10 Eight-Cylinder 1553 horsepower Mirrlees diesel engine installed at the power station

During the early 1950s Clarence River County Council merged with other similar enterprises to become, in 1953, Northern Rivers County Council. This later became Northern Rivers Electricity and more recently part of Country Energy.

(Source: Mullumbimby 1908-1958, courtesy Brunswick Valley Historical Society)

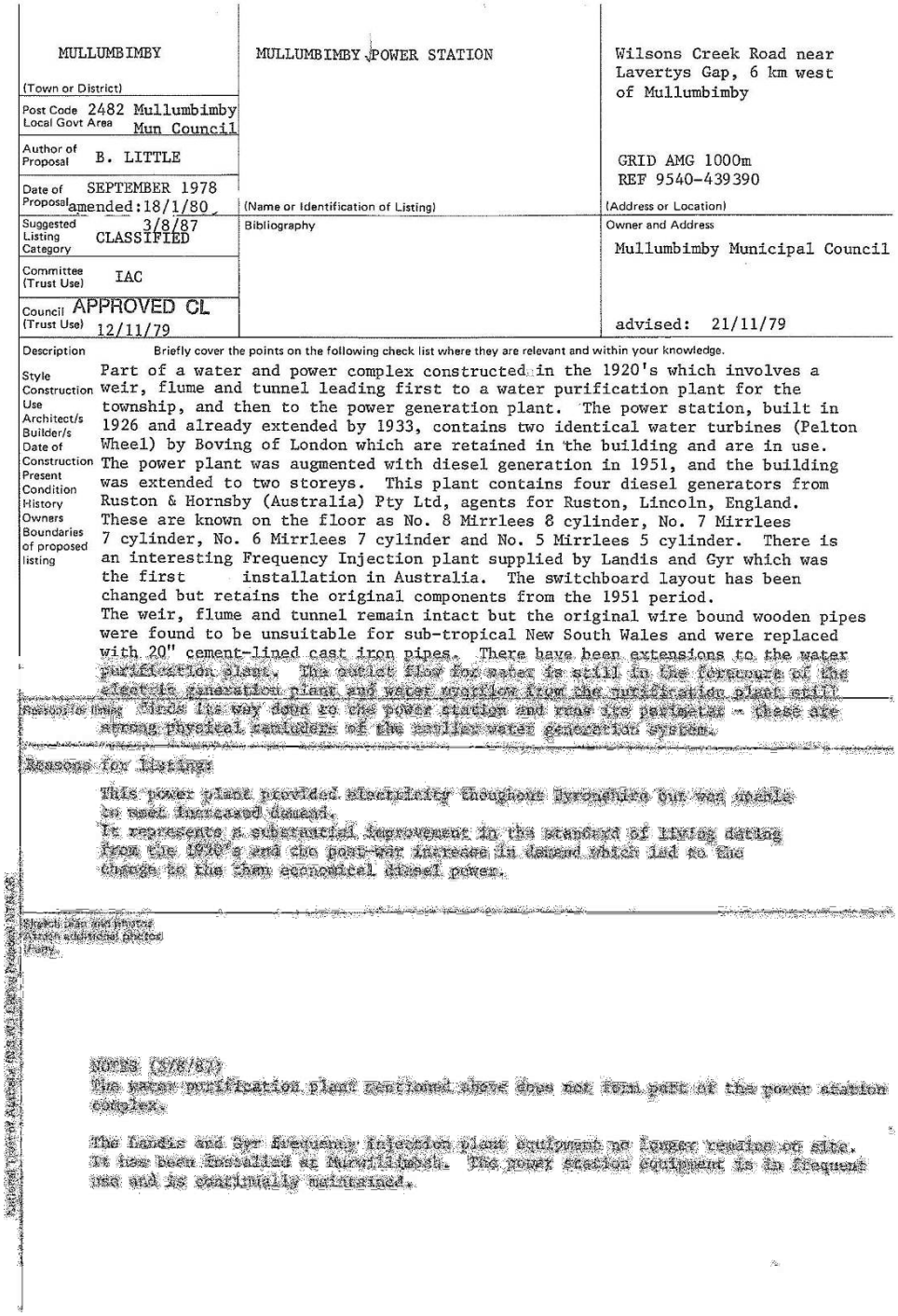
Figure 2.11 The Mullumbimby Power Station in 1958

The 50th anniversary of the establishment of the Shire of Mullumbimby was marked in 1958 with a publication on the achievements and changes in the region by the Council. This publication records the importance of the power station to the governance and economic growth of the area, stating that:

> *No other single move contributed more towards the continued existence of local government at Mullumbimby than the provision of an electricity supply (*Mullumbimby 1908-1958, courtesy Brunswick Valley Historical Society).

Brokenshire notes that the power station played a key role in the maintenance of continuous energy supply even as the region began to rely on bulk supply. The revenue from the power station was a significant factor in maintaining the economic viability of the Municipality until its amalgamation with the Byron Shire. The Council resisted State pressure to agree to a takeover by the then Northern Rivers County Council. However, the transfer occurred in 1980 by edict of the State Government (Brokenshire 1988: 78).

The power station including the weir and equipment was nominated for inclusion on the National Trust of Australian (NSW) Register in 1978. It was formally classified as a heritage item on the Register in 1987. It was subsequently included on the Byron Shire LEP 1988 Heritage Schedule and North Coast REP 1988 Heritage Schedule 2 as an item of environmental significance to the region or State.



MULLUMBIMBY (Town or District)

MULLUMBIMBY POWER STATION (Name or Identification of Listing)

Wilsons Creek Road near Lavertys Gap, 6 km west of Mullumbimby (Address or Location)

Post Code 2482 Local Govt Area Mullumbimby Mun Council

Author of Proposal B. LITTLE

Date of Proposal SEPTEMBER 1978 amended:18/1/80, 3/8/87

GRID AMG 1000m REF 9540-439390

Suggested Listing Category CLASSIFIED

Committee (Trust Use) IAC

Council (Trust Use) APPROVED CL 12/11/79

Bibliography

Owner and Address: Mullumbimby Municipal Council

advised: 21/11/79

Description — Briefly cover the points on the following check list where they are relevant and within your knowledge.

Style, Construction, Use, Architect/s, Builder/s, Date of Construction, Present Condition, History, Owners, Boundaries of proposed listing:

Part of a water and power complex constructed in the 1920's which involves a weir, flume and tunnel leading first to a water purification plant for the township, and then to the power generation plant. The power station, built in 1926 and already extended by 1933, contains two identical water turbines (Pelton Wheel) by Boving of London which are retained in the building and are in use. The power plant was augmented with diesel generation in 1951, and the building was extended to two storeys. This plant contains four diesel generators from Ruston & Hornsby (Australia) Pty Ltd, agents for Ruston, Lincoln, England. These are known on the floor as No. 8 Mirrlees 8 cylinder, No. 7 Mirrlees 7 cylinder, No. 6 Mirrlees 7 cylinder and No. 5 Mirrlees 5 cylinder. There is an interesting Frequency Injection plant supplied by Landis and Gyr which was the first installation in Australia. The switchboard layout has been changed but retains the original components from the 1951 period.
The weir, flume and tunnel remain intact but the original wire bound wooden pipes were found to be unsuitable for sub-tropical New South Wales and were replaced with 20" cement-lined cast iron pipes. There have been extensions to the water purification plant. The outlet flow for water is still in the forebay of the electric generation plant and water overflow from the purification plant still finds its way down to the power station and runs the perimeter - these are strong physical reminders of the earlier water generation system.

Reasons for listing:

This power plant provided electricity throughout Byron shire but was unable to meet increased demand.
It represents a substantial improvement in the standard of living dating from the 1920's and the post-war increase in demand which led to the change to the then economical diesel power.

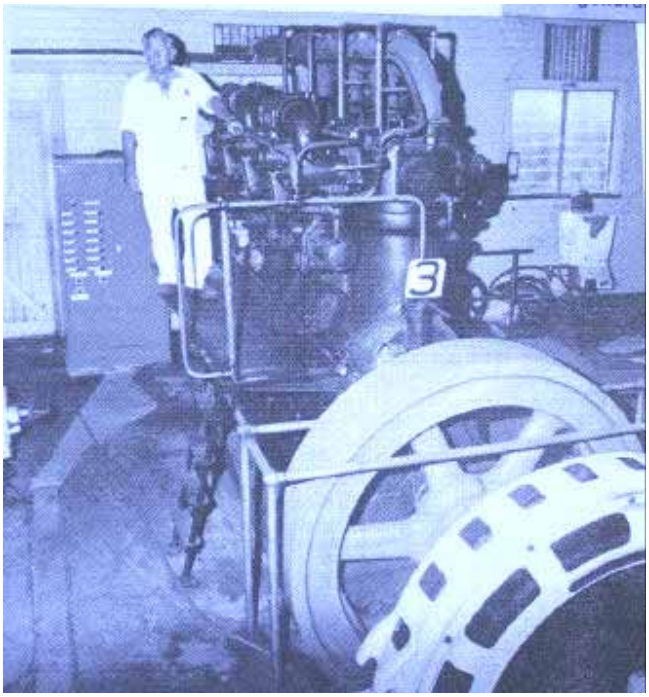
NOTES (3/8/87)
The water purification plant mentioned above does not form part of the power station complex.

The Landis and Gyr frequency injection plant equipment no longer resides on site. It has been installed at Murwillumbah. The power station equipment is in frequent use and is continually maintained.

(Source: National Trust of Australia [NSW] Industrial Archaeology Committee)

Figure 2.12 National Trust of Australia (NSW) Classification Card for Mullumbimby Power Station

With changes in technology and demand beyond capacity, the original power station ceased full-time operation in 1988 (Brunswick Valley Historical Society records).



(Source: Brunswick Valley Historical Society Records)

Figure 2.13 Mr Dick Crichton, former power station supervisor, with one of the first four diesel engines installed in 1926. Photograph taken in March 1988 at the decision to wind down the use of the power station was made.

The last significant upgrade at the Mullumbimby Power Station site occurred in 1999 when three convertor stations, to convert 132kV AC (alternating current) power supplied via existing transmission lines from Lismore to DC (direct current) power for transmission to the Bungalora Converter Station, were installed and a culvert was constructed over the power station exit race to protect it from damage. The Mullumbimby substation provides 66kV and 11kV to existing local transmission networks.

3 PHYSICAL ASSESSMENT

The following discussion concerns the results of an inspection of the Mullumbimby Power Station and its immediate environment. The site was inspected on 19 January 2006 by Jennie Lindbergh. Another visit was undertaken in April 2008. The following discussion addresses the physical fabric of Mullumbimby Power Station.

3.1 THE LOCAL ENVIRONMENT

The Mullumbimby Power Station is located within a relatively remote gully within a confined area adjacent to a hillside.

The site is secured behind a high chain wire safety fence. The power station building is located to the rear (north) of the site. The weir and race were not inspected as they are outside the property boundaries.

Figure 3.1 Current aerial view of Mullumbimby Power Station

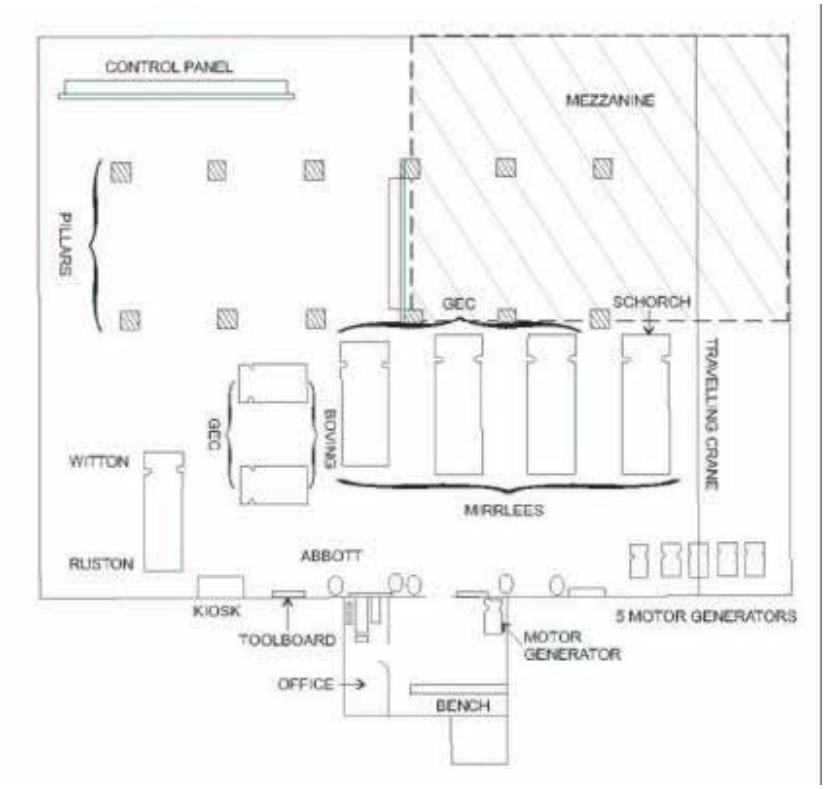
3.1.1 The Power Station Building

Photograph 3.1 View to south of the power station building

The power station is a large double gable shed aligned east-west along its long axis. It is two storeys high with two entries in the north elevation. The maintenance entry is a large roller door in the east end of the north elevation, while the main entry is via centrally placed double timber doors. The framing for the building are steel 'I' beams which support the building and the 8 ton travelling crane. The twin gable roof is clad in corrugated asbestos cement sheets (AC), while the rear and two end walls are clad in corrugated metal sheets. The front of the building is clad in weatherboards to the level of the upper floor window sills, with AC sheets above (see *Photograph 3.1*).

The site is constrained at the rear by the hillside rising up to the supply tank and reservoir. Within this confined space are a series of run down sheds, and the remains of the cooling towers, which are small overgrown concrete reservoirs with some associated infrastructure.

A schematic plan the internal layout of the Mullumbimby Power Station is shown in *Figure 3.2* (not to scale).



(Source: Northern Rivers Electricity Heritage and Conservation Register)

Figure 3.2 Mullumbimby Power Station Building Plan

The interior of the power station building comprises a large open space with workshop and office extension opposite the main entry and a mezzanine floor in the northeast quadrant. The control panel occupies the northwest quadrant (see *Photograph 3.2*). Although the generation of power using hydro units has not operated since c. 1932 and the diesel engines ceased operation in 1989, the plant is in situ within the power station.

Photograph 3.2 The No.s 1 and 2 hydro units with the control panel behind

The No. 3 diesel engine is the Ruston Hornsby 4-cylinder diesel installed in 1926, with Witton generator. This engine is located at the western end of the hall with the two hydro units to its east (see *Photograph 3.3*). The two hydro units, No.s 1 and 2 installed in 1923 are GEC Peltonwheel turbines with Boving governor controls. The GEC alternators are three phase with 650 volts output at 600rpm. These two units are aligned east-west, while all other units are aligned north-south. The two hydro units and the Ruston, form a discrete group with the four Mirrlees arranged to their west (see *Photograph 3.4*).

Photograph 3.3 View of the Ruston Hornsby engine with the No.2 hydro unit

Photograph 3.4 View from the mezzanine to the Ruston Hornsby, the 2 hydro units and the No. 5 Mirrlees engine in the foreground

The four Mirrlees diesel engines comprise a 7 and a 5 cylinder unit with GEC alternator (No. 5 and 6), while No. 7 is an 8 cylinder engine with Brush alternator and the 7 cylinder No. 8 is coupled to a Schorch alternator (see *Photograph 3.5* and *Photograph 3.6*). The No. 4 engine is understood to have been removed some time ago and was a Mirrlees Ricardo.

Photograph 3.5 The No. 6 Mirrlees engine (Note water pooling on the floor)

Photograph 3.6 The Mirrlees units 7 and 8 located east of the No. 6 unit. Mirrlees unit 8 is fitted with the Schorch alternator

A large part of the associated equipment and infrastructure is extant including the control panel for the station, the monitor and metering panels, a row of five small motor generator sets in the south east corner, and 'Stream – Line' filters. There is a workshop in the south end of the hall, still with tools and equipment and tool pegboards on the walls, including one bearing the slogan BOVING & Co. Ltd. LONDON (see *Photograph 3.7*).

Photograph 3.7 The Boving tool pegboard

3.1.2 Condition

Despite signs of some corrosion and a lack of maintenance having been done to the engines, they appear to be in remarkably good condition and present a clear image of the functioning station. However, it is now nearly two decades since the plant was finally decommissioned after having been operational for over 60 years. During the period of use, maintenance and repair has kept machinery and equipment in good working order. The life expectancy of industrial plant in general, is around 30 – 50 years, and the engines at the Mullumbimby Power Station have reached the upper limit of this timeframe. When operations cease, mechanical parts begin to deteriorate through lack of use, and will continue to deteriorate without cyclical maintenance to retard this process. The cost of bringing the plant up to operational levels, and of ongoing maintenance, can be high.

The power station building, while it is structurally sound, is in a generally poor condition with water pooling across the concrete floor from numerous leaks in the roof and walls. In addition, much of the façade consists of compressed sheeting containing asbestos. This is not an ideal heritage environment for the plant. To assist with the maintenance of the plant, replacement of the asbestos sheeting is suggested to provide improved weather protection.

4 HERITAGE VALUES ASSESSMENT

Establishing why a place or object is significant is essential to determine how the heritage values should be conserved for the community.

4.1 HERITAGE ASSESSMENT PRINCIPLES

An assessment of significance is undertaken to explain why a particular site is important and to enable the appropriate site management strategies to be determined and employed. Cultural significance has been defined by the Australian ICOMOS *Burra Charter* (1999: Article 1.2) as meaning "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. The significance of a place is not fixed for all time, and what is of significance now may change as similar items are located, more historical research is undertaken and community tastes change.

The NSW Heritage Office has also issued guidelines for the assessment of heritage significance – *Assessing Heritage Significance* (2001). These guidelines are based upon the general values defined by the *Burra Charter*. The assessment guideline is used in determining whether formal heritage listing at either a local or State level may be warranted. An item is not to be excluded from the Register on the grounds that items with similar characteristics have already been listed on the Register.

4.2 COMPARATIVE ANALYSIS

A comparison with other related or similar sites and places assists in determining the heritage values of a particular item or feature. Comparative analysis can assist with identifying the appropriate level of heritage significance of a site, and is useful in the validation process of determining whether a heritage listing remains current.

A search of the Australian Heritage Database and NSW State Heritage Inventory using the search term "power station" identified eight registered sites and nine indicative places on the Register of the National Estate (RNE), two sites on the NSW State Heritage Register and twelve sites on local, regional and s170 heritage registers.

Information contained in the Australian Heritage Database and the NSW State Heritage Inventory has been utilised to identify sites with similar characteristics to Mullumbimby Power Station for a brief comparative analysis. These are discussed below.

4.2.1 Moorina Hydro - Electricity Power Development, Powerhouse Rd, Moorina, Tas, Australia

Moorina Hydro - electricity Power Development is included on the RNE. The RNE citation states that it is significant because it is:

> *the oldest operating and intact Hydro-electric power development in Australia, complete with associated dam, penstocks and water races. The complex is a prime example of engineering heritage. The setting in unspoilt timbered terrain adds aesthetic significance to the values of the place.*

The citation also describes the site has being comprised of:

> *A corrugated iron clad timber-framed building housing three 1908 Hydro-electric turbines by J.M.Voight (Heidleheim) with alternators and switch gear by A.E.G. (Berlin). All switch gear is mounted on a marble base. There is original insulation, leather-belt clutches, carbon filament synchronising globes, etc. There is a gravity rockfill dam (the Frome Dam) with a concrete upstream membrane, an upstream bottom outlet pipe with valve joined to a concrete culvert under the dam and a broad-crested spillway in the southern abutment. The power canal consists of a small concrete weir and intake downstream from the dam, unlined canal and concrete flume sections and forebay with forebay spillway. The penstock is a surface pipeline, the lower end of which is immediately adjacent to the power station and serves as the bus-pipe to the machines. The tailrace was connected by a pre-1908 raceline to the Pioneer Mine and later extended eleven miles by the Endurance Tin Mining Company. The setting is in part, precipitous, heavily timbered, granite terrain with temperate rain forest and the lake in a deeply incised river.*

(Source: Australian Heritage Database)

Figure 4.1 Moorina Hydro-electricity Power Development, Powerhouse Road, Moorina, TAS, Australia

4.2.2 Duck Reach Power Station Precinct, Corin St, Summerhill, TAS, Australia

Duck Reach Power Station Precinct is included on the RNE. The citation states that it is significant because:

> *Duck Reach Power Station was Australia's first hydro-electric power station of a non-domestic size, and enabled Launceston to become one of the earliest cities in Australia to get a public electricity supply. The power station was largely washed away in 1929 but the replacement, built on the same site and the same overall size, is still largely intact though not used. The power station cottages are still largely in original condition. The group forms an industrial archaeological monument of national importance.*

(Source: Australian Heritage Database)

Figure 4.2 Duck Reach Power Station Precinct, Corin St, Summerhill, TAS, Australia Power Station (Former), Racecourse Rd, Deloraine, TAS, Australia

The power station (former) in Deloraine is included on the RNE. The citation states that it is significant as it is:

> *Claimed to be the oldest existing hydro-generating plant built and operated by a local authority in Tasmania, and a rare survivor of its type in Australia made additionally significant by the survival of one of the turbines.*

(Source: Australian Heritage Database)

Figure 4.3 Power Station (Former), Racecourse Rd, Deloraine, TAS, Australia

4.2.3 Comparative Analysis Findings

The comparative analysis identified that the Mullumbimby Power Station is unusual in NSW for its use of hydro-diesel power technology. No other heritage listed sites in NSW have this combination, and rather utilise coal as the primary energy source. Tasmania has a number of hydro based facilities still surviving, as outlined above. Some of these pre-date the Mullumbimby Power Station. Again, however, the combination of hydro and diesel is unusual in comparison to the Mullumbimby site.

The comparative heritage listed sites emphasise the importance reliable public electricity supplies have been in the development of the local area. The comparison also indicates that the technological values embodied by the equipment and the role of the site in the historical development of the area are key heritage values. The buildings that house the equipment are functional in nature. While they contribute to the history of the site, they are more open to modification or replacement, particularly if it enables the continued protection of the equipment.

The comparative analysis has confirmed that Mullumbimby Power Station is an unusual and early example of a hydro-diesel electricity generation facility.

4.3 AUSTRALIAN AND STATE HISTORIC THEMES

The contextual history indicates that a number of NSW historical themes are illustrated by sites and items in the study area. Identification of these historic themes assists with the following:

- understanding the role and importance of the study area in NSW and Australian history;
- developing statements of heritage significance for the potential items and features in the study area;
- developing interpretation materials for the study area; and
- prioritising heritage impact mitigation and management activities for the study area.

The NSW Historical Themes Guideline and the Australian Historical Themes framework have been used to identify the historical themes for the study area. The NSW historical themes for the study area as they align with the Australian Historical Themes are provided in *Table 4.1*.

Table 4.1 Historic Themes of the Study Area

Australian Historic Theme	NSW State Historic Theme
3. Developing local, regional and national economies	Industry
	Technology
	Commerce
4. Building settlements, town and cities	Utilities

4.4 DETERMINING THE EXTENT OF HERITAGE SIGNIFICANCE OF A SITE

The grade of heritage significance of a place also needs to be considered. Different components of a place may make up different relative contributions to its heritage value. Loss of integrity or condition may diminish significance. The following table provides an indication of grade and their relative justifications.

Table 4.2 Significance Grading

Grading	Justification	Status
Exceptional	Rare or outstanding item or local or State significance. High degree of intactness. Item can be interpreted relatively easily.	Fulfils criteria for local or State listing.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfils criteria for local or State listing.
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.	Fulfils criteria for local or State listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or State listing.
Intrusive	Damaging to the item's heritage significance.	Does not fulfil criteria for local or State listing.

These gradings are taken from the NSW Heritage Branch Guideline "Assessing Heritage Significance" (2001).

4.5 ASSESSMENT OF SIGNIFICANCE

The Burra Charter (*The Australia ICOMOS Charter for Places of Cultural Significance*) has set a standard for assessing heritage significance based on the aesthetic, historic, scientific and social values embodied in an item or place. In New South Wales the *Heritage Act 1977* has established seven criteria for the identification and assessment of heritage values. These criteria are:

a) *an item is important in the course, or pattern, of NSW's cultural or natural history (Historical Significance);*

b) *an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (Associative Significance);*

c) *an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (Aesthetic Significance);*

d) *an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (Social Significance);*

e) an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (Archaeological Significance);

f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (Rarity);

g) an item is important in demonstrating the principal characteristics of a class of NSW's

- cultural or natural places; or

- cultural or natural environments. (Representativeness)

The Heritage Branch, Department of Planning, (the former Heritage Office) has developed a guideline to assess heritage significance against the seven criteria in their publication *Assessing Heritage Significance*, which has guided the preparation of the heritage values assessments in this study. An item is to be considered of State or Local heritage significance if it meets one or more of the NSW Heritage Assessment Criteria.

The heritage values of the Mullumbimby Power Station have been assessed against these criteria below.

(A) – An Item Is Important In The Course, Or Patterning, Of NSW's Cultural Or Natural History (Or The Culture Or Natural History Of The Local Area)

The Mullumbimby Power Station illustrates the development of electricity generation and supply to the local area. The power station is one of the earliest hydro electric power supply stations in NSW, and played a key role in the development of the Brunswick region. The power station was augmented with diesel engines and supplied power to residences and commercial facilities. Its ownership and management by the Mullumbimby Shire Council provided key income to the municipality for the provision of other services, which also contributed to the economic development of the region.

Significance Grading

High – State Level Significance

(B) – An Item Has Strong Or Special Association With The Life Or Works Of A Person, Or Group Of Persons, Of Importance In NSW's Cultural Or Natural History (Or The Cultural Or Natural History Of The Local Area)

The Mullumbimby Power Station is associated with William Corin, a pioneer in the introduction of hydro-electricity to Australia.

Significance Grading

High – State Level Significance

(C) – An Item Is Important In Demonstrating Aesthetic Characteristics And/Or A High Degree Of Creative Or Technical Achievement In NSW (Or The Local Area)

The Mullumbimby Power Station is a clear example of the unusual combination of hydro and electrical diesel power generation technology. The weir and race are a key aspect to demonstrating this technology.

Significance Grading

High – State Level Significance

(D) – An Item Has Strong Or Special Association With A Particular Community Or Cultural Group In NSW (Or The Local Area) For Social, Cultural Or Spiritual Reasons

The Mullumbimby Power Station is important to the Byron Shire community. It was nominated to the National Trust Register in 1978 by the community and classified as a heritage item in 1987. It is included on the North Coast REP and Byron LEP. The community has extensively documented the evolution of the site through local paper articles between the 1950s and 1980s. Recent consultation has confirmed the importance of the site to the history of the Byron Shire community. The large record on the site held by the Brunswick Valley Historical Society also demonstrates its value to the local community.

Significance Grading

High – State Level Significance

(E) – An Item Has Potential To Yield Information That Will Contribute To An Understanding Of NSW's Cultural Or Natural History (Or The Cultural Or Natural History Of The Local Area)

The Mullumbimby Power Station has limited archaeological potential.

Significance Grading

Low – Local Level Significance

(F) – An Item Possesses Uncommon, Rare Or Endangered Aspects Of NSW's Cultural Or Natural History (Or The Cultural Or Natural History Of The Local Area)

The early combination of hydro and diesel power technology is unusual in NSW.

Significance Grading

High – State Level Significance

(G) – An Item In Demonstrating The Principal Characteristics Of A Class Of NSW's Cultural Or Natural Places; Or Cultural Or Natural Environments (Or A Class Of The Local Area's Cultural Or Natural Places; Or Cultural Or Natural Environments)

The Mullumbimby Power Station demonstrates the development of electrical power generation and supply that occurred in NSW between the 1920s to the 1950s.

Significance Grading

High – Local Level Significance.

4.6 SUMMARY STATEMENT OF SIGNIFICANCE

The Mullumbimby Power Station is significant at a State level for its role in the development of the area, its ability to demonstrate the principal characteristics of hydro-electrical power stations, for its historic associations with William Corin, and for its importance to the Byron Shire community. The insitu combination of hydro and diesel power general equipment, weir and race is unusual, and is important in the technological development of power generation in NSW.

4.7 CONCLUSION

The values assessment has confirmed that the current heritage listings for the Mullumbimby Power Station remain valid.

5 THE PROPOSAL

The Mullumbimby zone substation is located adjacent to International Power's DirectLink converter station on Lot 52 DP 778243 (see *Figure 3.10*). The site is accessed directly from Wilsons Creek Road and is surrounded by predominately rural residential holdings. The substation receives 132kV from Country Energy's Lismore bulk supply zone substation. Existing infrastructure within the Mullumbimby zone substation includes a 132/66/11kV 75MVA, a 132/66/11kV 40MVA power transformers and an 11kV earthing transformer.

As part of the proposed Lismore to Mullumbimby electricity network upgrade, Country Energy seeks project approval for the proposed Mullumbimby substation upgrade. The upgrade of the Mullumbimby substation would involve:

- the installation of a new 132kV line bay for the proposed 132kV feeder to Ewingsdale via Brunswick Heads;
- the replacement of one 132/66/11kV power transformer with a 132/11kV transformer and removal of the second 132/66/11kV power transformer; and
- the installation of new 132kV poles.

The Mullumbimby Power Station site has limited space available for the required augmentation/upgrade. An option to locate the new transformer bay adjacent to the power station has been identified as feasible by Country Energy. This option allows the retention of the power station.

The new line bay will be sited at a minimum of 5m distance from the power station building along its western side. The transformer line will be 3-4m in height at its highest point. The new transforer will replace an existing transformer of the current substation site. New power poles will be installed adjacent to the southern and eastern sides of the power station building. These changes will result in potential visual impacts on the building and its immediate setting, and are discussed in the impacts assessment provided in *Section 7*.

Site plans showing the current and proposed layouts are provided at *Figure 5.1* and *5.2*.

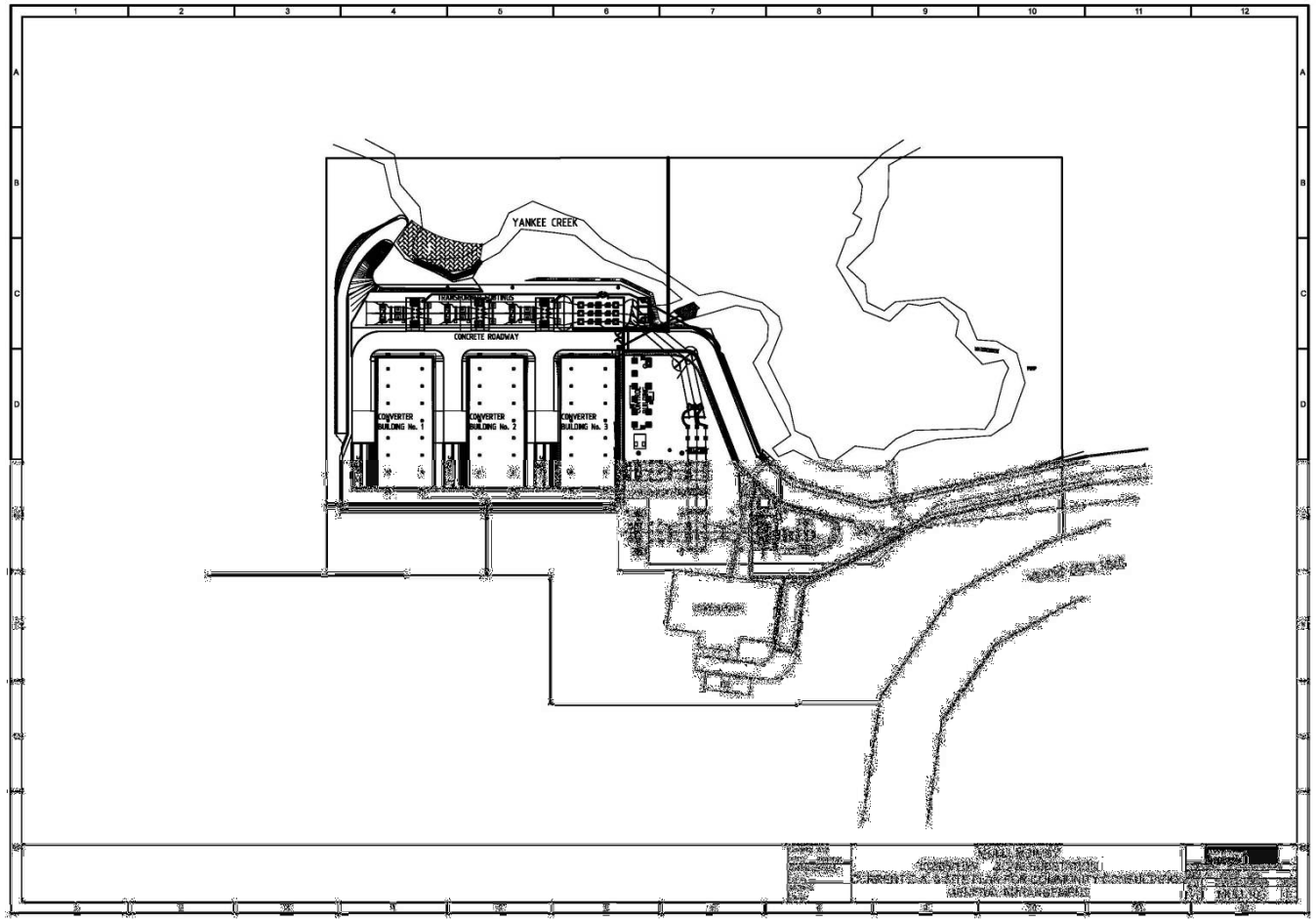


Figure 5.1 Mullumbimby Power Station Existing Site Configuration

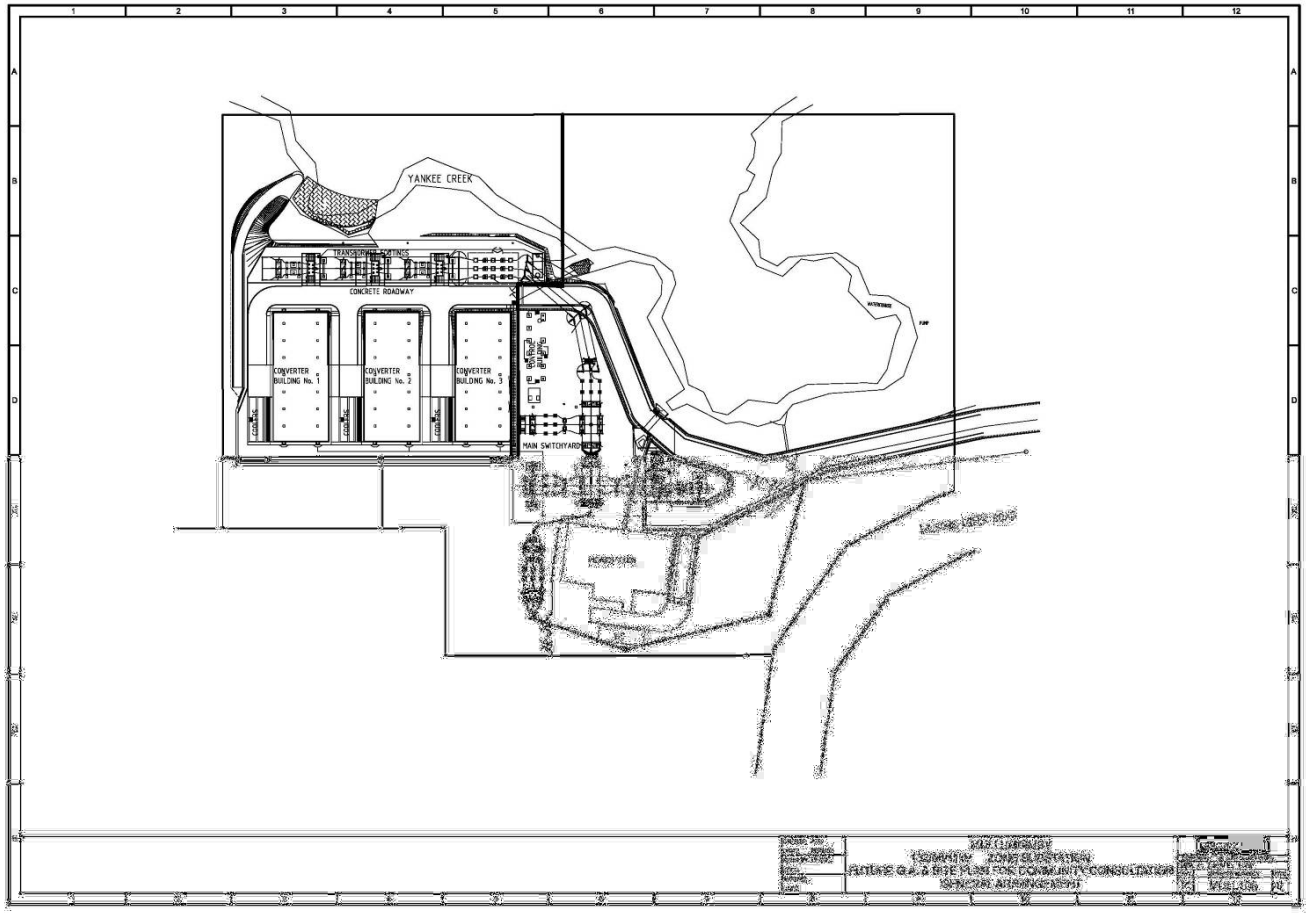


Figure 5.2 Mullumbimby Power Station Proposed Site Configuration

6 STATUTORY CONTEXT

This project is to be assessed and approved under Part 3A of the *Environmental Planning & Assessment Act 1979*. Part 3A can provide developers with 'comprehensive' approval for development, without the need for obtaining further approvals under different State Acts. The Part 3A approval process involves strict requirements established by the Director General of NSW Planning to ensure all environmental factors are adequately considered and addressed.

Historical heritage in NSW is protected under the *Heritage Act 1977.* These acts and their obligations are provided below. The obligations under these various acts have been used to devise relevant mitigation measures for the site, which are presented in *Section 7*.

6.1 NSW LEGISLATION

6.1.1 Environmental Planning And Assessment Act 1979 (NSW)

The *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that environmental impacts are considered in land-use planning, including impacts on historical heritage. Various planning instruments prepared under the Act identify permissible land use and development constraints.

Where a project is approved under Part 3A of the EP&A Act, section 75U(c) of the EP&A Act provides that an approval under Part 4 and an excavation permit under section 139 of the Heritage Act are not required for the project. In those instances management of heritage sites must follow the statement of commitments included in the Part 3A development approval.

The statement of commitments defines the environmental management and mitigation measures the proponent is prepared to make for on the site. The statement of commitments is made in accordance with *EP&A Act 1979*: Part 3A Division 2 Section 75F [6].

A Draft Statement of Commitments is to be prepared as part of the Environmental Assessment for the Project. The draft Statement of Commitments defines the environmental management and mitigation measure the proponent is prepared to make for on the site.

6.1.2 Heritage Act 1977 (NSW)

The *Heritage Act 1977* protects the natural and cultural history of NSW with emphasis on non-Aboriginal cultural heritage. It provides automatic statutory protection to 'relics'. The *Act* defines a 'relic' as:

> *Any deposit or material evidence relating to the settlement of the area that comprises NSW, not being an Aboriginal settlement, which is 50 or more years old.*

Sections 139-145 of the *Act* prevent the excavation or disturbance of land known or likely to contain 'relics', except in accordance with an excavation permit issued by the

Heritage Council of NSW (or in accordance with a gazetted exception under Section 139(4) of the *Act*).

Approvals under the Heritage Act are not required where a development is approved under Part 3A of the *Environmental Planning and Assessment Act*.

The Country Energy Heritage and Conservation Register

Section 170 of the *Heritage Act 1977* (NSW) requires that statutory bodies prepare and maintain a heritage and conservation register for items under their control. The Country Energy Heritage and Conservation Register is known under Country Energy's former title, as the *Northern Rivers Electricity Heritage and Conservation Register* (Section 170 Register). The Mullumbimby Power Station and Substation is identified on the Register and the Statement of Significance supporting the listing is as follows:

> *This is the third hydro power station on the Australian mainland, and part of an important 1920s endeavour to make the North Coast self-sufficient on hydro power. It is understood that the Peltonwheel hydro turbines have rarity value; few others remain in operation (or in museums) throughout the world.*

Under the provisions of the *Heritage Act 1977*, the Heritage Council must be given at least 14 days written notice before an item on a S.170 Register is to be removed from the s170 register, transferred to another owner, ceases to be occupied or is proposed to be demolished.

S170A(2) requires State agencies to ensure properties with heritage values within their portfolios are managed in accordance with the State Owned Heritage Management Principles. These Principles advocate a best practice approach to State owned heritage assets including the implementation of a preventative conservation and maintenance routine.

6.2 NSW PLANNING CONTROLS AND GUIDELINES

There are a range of planning controls and guidelines that outline issues to be considered in the management and protection of heritage in the study area. These include:

- North Coast Regional Environmental Plan (REP) 1988 ; and
- Byron Local Environmental Plan (LEP) 1988.

As outlined in Section 1, Mullumbimby Power Station is included as a heritage item under the North Coast REP and the Byron LEP.

The North Coast REP aims to conserve the environment including heritage values of the North Coast region of NSW. It includes heritage schedules identifying items and sites with State or regional environmental heritage value. The REP also provides a framework for local government to develop, along with the assistance of the Department of Planning, appropriate means for conserving the heritage of their area.

The Byron LEP 1988 is currently under review, with a revised LEP planned to commence in March 2009. The current LEP includes a range of heritage protection provisions addressing European heritage sites, items and areas. The heritage objective

of the LEP is to protect and conserve archaeological sites and places of Aboriginal or European cultural significance. The LEP includes provisions that conserve the remaining fabric, relics, settings and views, and evidence of the cultural significance of heritage items and the environment of heritage conservation areas.

6.3 COMMONWEALTH LEGISLATION

6.3.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides for the protection of matters of National Environmental significance and the environment generally on Commonwealth land. A referral to the Department of Environment, Water, Heritage and the Arts (formerly the Department of Environment and Water Resources) is required if an action has the potential to have a significant impact on matters of National Environmental significance or the environment of Commonwealth land.

The Minister for the Environment, Heritage and the Arts, or his approved delegate in the Department, determines whether the action is 'controlled', and if any further assessments that may be necessary to determine whether it should be approved or refused. If an action is not 'controlled', further consideration under the EPBC Act is not required.

Register of the National Estate

The Mullumbimby Power Station has been included on the Australian Heritage Database as an Indicative Place for the Register of the National Estate (RNE). This means that the place has been nominated but not yet assessed for possible inclusion on the RNE.

Through 2006 amendments to the EPBC Act, the RNE is now a non-statutory heritage register. It provides information about the heritage values of sites that is to be considered in the broader environmental impacts analysis of activities that may require a referral under the EPBC Act.

6.4 NON-STATUTORY

6.4.1 National Trust of Australia (NSW)

The Mullumbimby Power Station has been classified by the National Trust of Australia (NSW) and included on the National Trust Register. The National Trust of Australia has no statutory authority; however, does have a role in raising public awareness of heritage issues and regularly lobbies all levels of government advocating the conservation of heritage places.

7 HERITAGE IMPACT ASSESSMENT

7.1 PREAMBLE

The works associated with the proposed Lismore to Mullumbimby electricity network upgrade are designed to improve and extend the capacity of the electricity grid such that the Lismore region will be assured of electrical energy into the future.

The Mullumbimby Power Station site is already constrained with limited space available for the new infrastructure. To accommodate the proposed Lismore to Mullumbimby electricity network upgrade, Country Energy proposes to install the new electricity infrastructure associated with the substation upgrade immediately adjacent and to the west of the Mullumbimby Power Station building.

7.2 EVALUATION OF IMPACTS

The proposed installation of the new transformer bay at the Mullumbimby Power Station site has the potential to have a limited adverse heritage impact. The proposed new infrastructure would result in some changes to the immediate setting of the power station. The setting of the power station has changed several times since its establishment in 1926 as the capacity of the facility was progressively increased. This has resulted in a highly modified immediate setting to the power station building. The overall visual impact on the setting of the building is limited as it will be contained to its western side.

The height of the new infrastructure will be consistent with existing facilities (3-4m high) and will not over shadow the Mullumbimby Power Station Building.

The proposed new infrastructure will not involve any physical impacts on the Mullumbimby Power Station Building.

The commitment to retain the Mullumbimby Power Station Building insitu has a positive heritage outcome for the project. It is consistent with the positive heritage conservation and maintenance approach required under the s170(2) State Owned Heritage Management Principles, and best practice principles established in the *Burra Charter*.

7.3 ALTERNATIVES CONSIDERED

Due to the physical constraints of the site limiting available space for the substation upgrade, the initial preferred option included the demolition of the power station building and equipment. This would have allowed greater flexibility in the proposed upgrade works but would have resulted in the loss of a significant heritage item.

In the preparation of this HIA and following community consultation Country Energy has considered alternatives to allow for the retention of the heritage item. The feasibility of the revised proposal has been confirmed and is a positive outcome for the heritage values of the site.

7.4 HERITAGE IMPACT STATEMENT

The installation of new electrical infrastructure adjacent to the Mullumbimby Power Station will result in some changes to its setting. This will have a limited effect on the heritage values of the site. The identification of an option that allows the in situ retention, conservation and interpretation of the Mullumbimby Power Station is a positive heritage outcome for the project. Archival recording prior to any construction works to provide a comprehensive record of the building in its current context will adequately mitigate the impact of the new transformer bay.

7.5 MITIGATION MEASURES

The recommended policy/action for the Mullumbimby Power Station and Substation identified in the *Northern Rivers Electricity Heritage and Conservation Register* is as follows:

> *"The hydro installation and the surviving plant (both hydro and diesel) are of heritage interest, but of limited aesthetic interest. It is recommended that original plans, documents and photographs be collected and suitably archived by the NRE* (now Country Energy).
>
> *If for economic reasons, the power station were to close it is recommended that it be carefully recorded in archival photographs by a specialist photographer and the resulting record placed in a suitable archive by the NRE. A suitable permanent sign outlining the history should be placed in a public position adjacent to the site.*
>
> *In such a circumstance it may be entirely appropriate that the hydro equipment be relocated and preserved at Nymboida Power Station or at the Powerhouse Museum, Sydney."*

Based on this recommended approach, and the NSW Statement of Heritage Impacts guidelines, the impacts of the proposed new substation on the power station can be mitigated by Country Energy by:

- preparation of an archival recording, in accordance with NSW Heritage Branch guidelines, of the power station building and its associated machinery and equipment prior to the commencement of any site construction works; and
- lodging copies of the archival recording with the Brunswick Valley Historical Society, State Library of NSW and the NSW Heritage Branch to provide a readily accessible record for the community.

7.6 RECOMMENDATIONS

7.6.1 Project Approval Recommendations

It is recommended that the mitigation measures referred to in *Section 7.5* be included in the Statement of Commitments for the proposed project.

7.6.2 S170 Obligation Recommendations

It is recommended that a Conservation Management Plan be prepared for the Mullumbimby Power Station within the next 18 months in order to ensure Country Energy's s170 obligations are met.

The Conservation Management Plan could give consideration to the following heritage issues for the power station building:

- a program of conservation works, including possible re-cladding the building to remove asbestos sheeting and assist with the protection of the equipment;
- a program of ongoing building maintenance works to prevent the need for major conservation works;
- a program of conservation and maintenance activities to address the ongoing care requirements for the plant and associated tools and equipment;
- installation of an interpretive panel adjacent to the site entry so that information about the heritage values of the Mullumbimby Power Station will be publicly accessible, prepared in consultation with the Brunswick Valley Historical Society and Byron Shire Council; and
- investigation of feasible options for providing public access to view the historic power station and equipment within site safety and security constraints. This could include recording an interview and walkthrough of the power station with former employees during the preparation of the archival recording. The record could be prepared using high resolution digital capture, which can be made available in local libraries and online. Controlled public access through an annual Open Day during NSW Heritage Week is also an option that could be considered in the context of safety and security requirements.

7.7 CONCLUSION

If the mitigation measures are implemented, the heritage values of Mullumbimby Power Station will not be adversely impacted by the proposed new transformer bay.

REFERENCES

Australia ICOMOS 1999 **The Burra Charter – The Australia ICOMOS Charter for Places of Cultural Significance**

Australian Dictionary of Biography Online – William Corin (http://www.adb.online.anu.edu.au/biogs/A080128b.htm)

Australian Heritage Database

Brokenshire, Jim 1988 **The Brunswick Another River and Its' People**, Brunswick Valley Historical Society, Mullumbimby

Brunswick Valley Historical Society – Mullumbimby Power Station Records and Photographs

National Trust of Australia (NSW) Register Classification Card – Mullumbimby Power Station

Northern Star, 1976 **Mullumbimby Electricity Jubilee** Supplement to the 16 August Northern Star paper

NSW State Heritage Inventory

NSW Heritage Branch Guidelines: **Statements of Heritage Impacts; Assessing Heritage Significance; Preparation of Archival Recordings**

Stubbs, B November 2006 **Byron Shire Community Based Heritage Study – Volume 2: Byron Shire Thematic History**, Byron Council

Tanner & Associates Pty Ltd and Godden Mackay Heritage Consultants 1993 **Conservation Plan for Koolkhan Power Station**

Tanner & Associates Pty Ltd 1999 **Northern Rivers Electricity Heritage and Conservation Register** prepared for Northern Rivers Electricity

Annex K

Lismore Power Station Heritage Assessment
(ERM, 2008)

FINAL REPORT

Country Energy

Lismore Power Station
Heritage Assessment

October 2008

Environmental Resources Management Australia
Building C, 33 Saunders Street
Pyrmont, NSW 2009
Telephone +61 2 8584 8888
Facsimile +61 2 8584 8800
www.erm.com

FINAL REPORT

Country Energy

Lismore Power Station
Heritage Assessment

October 2008

Reference: 0051706_Lismore Heritage_FINAL

For and on behalf of
Environmental Resources Management Australia

Approved by: Christine Allen

Signed: 

Position: Senior Associate

Date: 16 October 2008

CONTENTS

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CONTENTS

LIST OF PHOTOGRAPHS

CONTENTS

CONTENTS

EXECUTIVE SUMMARY

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by Country Energy to prepare a heritage assessment of the former power station building on the Lismore Power Station site. This assessment will be used to inform an options analysis for the installation of a new substation at the site.

The Lismore Power Station building, constructed in 1932, is identified on the Country Energy Heritage and Conservation Register (s170 Register), the Lismore Local Environmental Plan 2000 and the National Trust of Australia (NSW) Industrial Archaeology Register. The inclusion of the site on the s170 Register requires Country Energy to inform the Heritage Council of any alterations to the Power Station. The original power station plant was decommissioned in 1989.

The current and projected growth in population in the Lismore region is such that Country Energy needs to upgrade the capacity of the electricity grid to service this increase. The changes necessary to upgrade the capacity of the Lismore Power Station include a range of new infrastructure. These changes could require alterations or removal of the Former Power Station Building and its equipment. However, an options analysis will be undertaken by Country Energy in the preparation for Project Approval.

This report has confirmed that the current heritage listings for the former Lismore Power Station (including its equipment) are valid.

This report recommends that a Heritage Impact Assessment of the options for the upgrade of the Lismore Power Station site be undertaken.

1 INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by Country Energy to prepare a heritage assessment of the former Power Station building located at Lot 1 DP 1691 and Lot 1 DP 857456 on the corner of Union Street and Three Chain Road, South Lismore NSW (herein referred to as "the site"). This assessment will be used to inform an options analysis for the proposed site upgrade as part of the Lismore to Mullumbimby Electricity Network Upgrade Project.

1.1 BACKGROUND

The current and projected growth in population in the Lismore region is such that Country Energy needs to upgrade the capacity of the electricity grid to service this increase.

The changes necessary to upgrade the capacity of the Lismore Power Station include a range of new infrastructure. Country Energy is currently investigating options for the proposed site upgrade which may include:

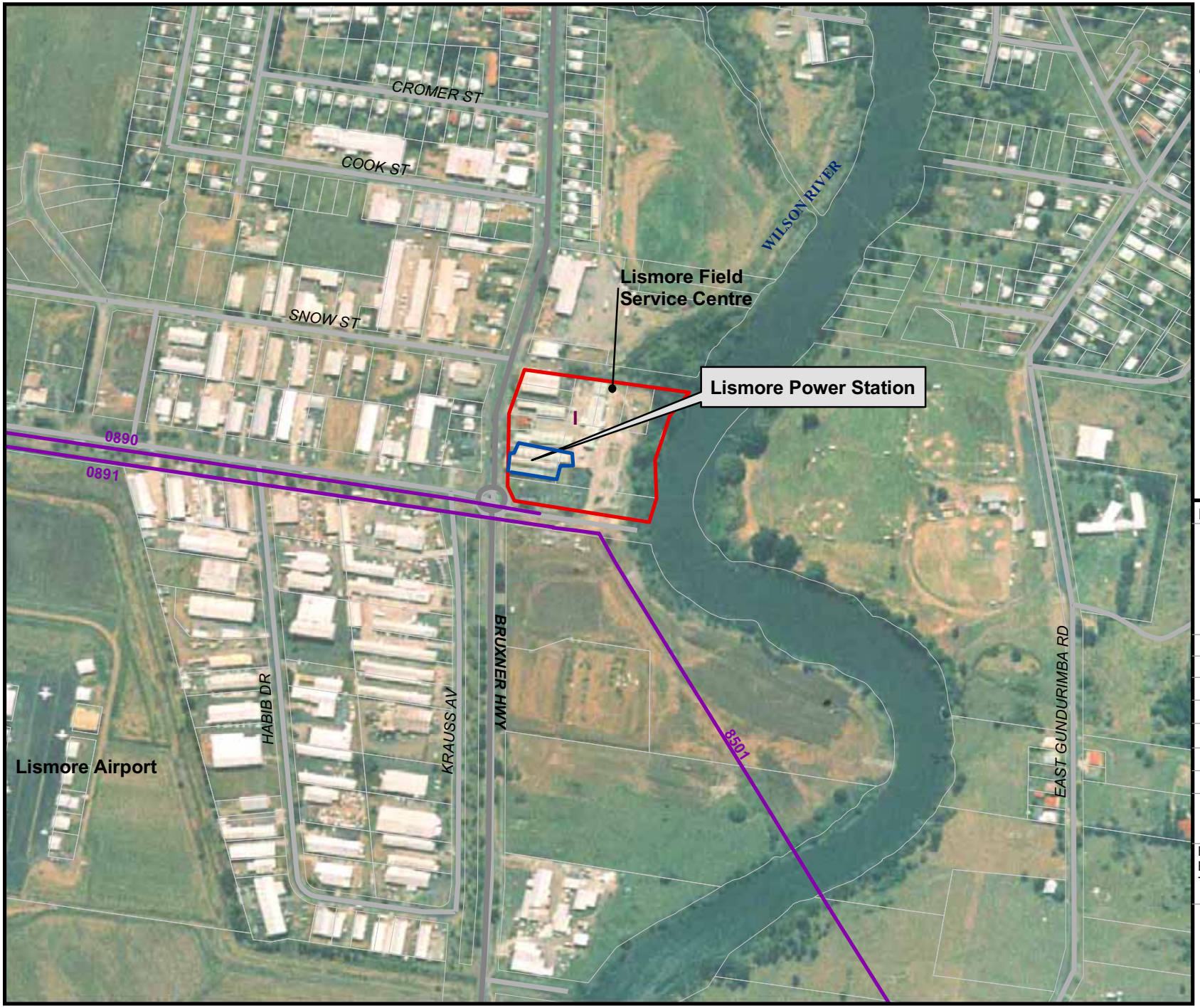
- possible reconfiguration and redesign of the site resulting in the relocation of bus and line bays, transformers and capacitor banks; and/or
- potential permanent decommissioning and demolition of the existing power station building and relocation of significant heritage items i.e power generation equipment.

An options analysis would be undertaken by Country Energy in the preparation for Project Approval. This heritage assessment has been prepared to inform the options analysis.

1.2 STUDY AREA

The Lismore Power Station is located at 246 Union Street and Three Chains Road on 2.492 hectares (ha) approximately 3 kilometres (km) from Lismore Airport (see *Figure 1.1*).

The site comprises the Power Station, a workshop/depot, a substation constructed in the 1950s, an AC/DC converter station constructed in 1999 and recent installations of electrical equipment including two regulators currently used for the existing local 11 kilovolt (kV) power supply.



Legend

- Existing 66kV
- Roadway
- Highway
- Lismore South Substation Site

Figure 1.1
Location of Lismore Power Station

Client:	Country Energy		
Project:	Lismore to Mullumbimby Upgrade		
Drawing No:	0051706_01	Suffix No:	A0
Date:	30/09/2008	Drawing size:	A4
Drawn by:	TH	Reviewed by:	MC
Source:	Department of Lands		
Scale:	Refer Scale Bar		

N

0 30 60 120 180 240 Meters

Environmental Resources Management Australia Pty Ltd
Building C, 33 Saunders St, Pyrmont, NSW 2009
Telephone +61 2 8584 8888

ERM

1.3 HERITAGE STATUS

The current heritage status of the Former Lismore Power Station building is provided in the summary table below.

Table 1.1 Current Heritage Status Summary

Heritage List/Schedule/Register/Inventory	Status
World Heritage List	• Lismore Power Station is not included on the World Heritage List.
National Heritage List	• Lismore Power Station is not included on the National Heritage List
Commonwealth Heritage List	• Lismore Power Station is not included on the Commonwealth Heritage List.
State Heritage Register	• Lismore Power Station is not included on the State Heritage Register.
Country Energy Section 170 Heritage Register	• The Lismore Power Station building is included as a heritage item on Country Energy's s170 Heritage Register. The Administration Cottage included in this listing has been replaced with a new administration building.
North Coast Regional Environmental Plan (REP)	• Lismore Power Station is not identified in any of the heritage schedules included in the North Coast REP
Lismore Local Environmental Plan (LEP) 2000 – Heritage Schedule	• The Former Power Station, Lot 1, Section 1, DP 1691, 246, Union Street, South Lismore is identified as an *archaeological site* on Schedule 1 of the Lismore LEP.
Register of the National Estate (non-statutory)	• Lismore Power Station is not included on the Register of the National Estate.
National Trust of Australia (NSW) Register (non-statutory)	• The Lismore Power Station on Bruxner Highway, 1Km south of Lismore Railway Station is identified item No. 724 on the National Trust of Australia (NSW) Industrial Archaeology Register.

1.4 METHODOLOGY

This report has been prepared in accordance with the NSW Heritage Branch, Department of Planning guideline *Assessing Heritage Significance*. The report contains information and analysis gained from:

- site investigation and physical analysis;
- research into the history of the site; and
- review of existing heritage listings.

The Heritage Study will inform the options analysis for the proposed substation upgrade works at the site.

1.4.1 Preliminary Consultation

Preliminary informal consultation has been conducted with the Richmond River Historical Society, Heritage Committee of the Institute of Engineers, and the Lismore City Council Heritage Planner and Heritage Advisor about the history of the site and to seek views on the future of the former Lismore Power Station Building and its equipment.

Country Energy will continue consultation during the analysis of options for the upgrade of facilities at the site.

1.5 AUTHORSHIP

Jennie Lindbergh, former ERM Senior Heritage Consultant specialising in industrial heritage, prepared a preliminary draft report. Louise Doherty, ERM Heritage Consultant, undertook the Land Titles search for the site. Shelley James, ERM Senior Heritage Consultant undertook additional research and revision of the report.

1.6 ACKNOWLEDGEMENTS

The assistance of the following people during the preparation of this report is gratefully acknowledged:

- Bernie Childs, President, Richmond River Historical Society;
- Reg Ramstadius, Heritage Committee, Australian Institute of Engineers;
- Tony Brassil, National Trust of Australia (NSW) Industrial Archaeology Advisor and Industrial Archaeologist, Godden Mackay Logan;
- Rod Mallam, Development Assessment/Heritage Planner, Lismore City Council;
- Ken Young, Lismore City Council Heritage Advisor; and
- Brian Glawson, Mike Hely, Steve Brown, George Schofield, Peter Bale, Peter Nixon, Bob Guest and Robert Harvey, Country Energy.

2 HISTORICAL CONTEXT

The following historical context of the Lismore Power Station is taken from the *Northern Rivers Electricity Heritage and Conservation Register* and the *Conservation Plan for Koolkhan Power Station*, prepared by Howard Tanner & Associates in association with Godden Mackay Heritage Consultants & Industrial Archaeologists, in 1993. It is supplemented with information kindly provided by the Richmond River Historical Society.

2.1 HISTORY OF ELECTRICITY SUPPLY IN NSW 1870-1950

2.1.1 Background

The earliest uses of electricity in Australia were for lighting purposes as a direct current (DC) produced by a generator, usually driven by a steam engine. The development of the electric motor improved the efficiency and reduced production costs so that new markets for power generation were created during the 1880s and 1890s. It was not long before individual businesses were installing a steam-driven generator in their basement and using the electricity to provide lighting and motive power throughout their building. As the demand for small scale electricity requirements grew, small private companies established local generating stations to sell electricity to local consumers at a cost cheaper than running their own system.

The Sydney Electric Light Company Power Station, established in 1888, is a notable example of this trend with the construction of the power house building which still stands in Renwick Street Redfern. In 1896, the NSW Parliament granted the Sydney Municipal Council permission to produce and reticulate energy for commercial and street lighting purposes. Construction was begun on the Pyrmont Power Station with power first being produced on the site in 1904. In 1909, the Balmain Power Station was commissioned and in 1912, construction began on the White Bay Power Station. These four power stations provided Sydney with all its electrical requirements until 1930 when the first stage of the Bunnerong Power Station was completed by the Sydney Municipal Council.

In 1904, the right to provide local electrical supplies was conferred upon the local Councils and, in 1906, to the Shire Councils.

2.2 POWER GENERATION IN THE NORTHERN RIVERS DISTRICT

The Clarence River County Council was constituted in 1922, to supply electricity to the district centred on Grafton. Since early last century, the coastal area of the Dorrigo Plateau, where topography and rainfall were suitable, had been advocated by W. J. Mulligan, Sir Earle Page M.P. and others for the development of hydro power. In 1919, the NSW Parliament passed the *Hydro-Development (Construction) Act* which authorised the construction of hydro electric works at Burrinjuck on the Murrumbidgee River, in the Snowy Mountains on the Tumut River, and at Nymboida, south west of Grafton. However, due to a lack of funds only the Burrinjuck scheme was realised.

The 1920s was a period of economic development for the region with the railway linking Sydney and Brisbane completed in 1924. This significantly improved access to these capitals from the region and fostered the development of more intensive farming practises, including dairying, piggeries, small goods and banana plantations. This expansion of the local economy through the increase in agricultural enterprises and improved rail access, led to a population increase in the area and, a greater demand for electricity supply. Development of power generation sites in the district was a response to this demand, and three small hydro schemes were completed at Dorrigo in 1922, Nymboida and Mullumbimby in 1923 and Lismore in 1932.

A steam power station was constructed at Koolkhan, on the Clarence River near Grafton in 1953 to cope with the increasing demand for power in rural and urban areas in the post-War era. This station was an attempt to make the region self sufficient in power production by utilising local coal resources. The station was closed in 1977 due to a lack of quality coal from the nearby Nymboida mine and the expense of transporting better quality coal from the Hunter Valley.

The Clarence River County Council operated a network covering several municipalities on the North Coast, and remained a separate generation and distribution authority for its region. It did however; continue its connection to the State Grid. The Council was gradually merged with other similar enterprises, being renamed the Northern Rivers County Council in 1953, then Northern Rivers Electricity (NRE), then NorthPower, and is today known as Country Energy

2.2.1 The Development of the Local Power Generation System

The original Clarence River County Council established the Nymboida Hydro-Station on a tributary of the Nymboida River in 1924. The station was augmented over a period of some 12 years (4.5MW) and together with the Lismore Diesel Station (6MW) established in 1933, comprised the generation resources of the system. The essential purpose of the first of the 66kV lines to come into service was to interconnect these two power stations. The line was 160km in length.

During 1932, the Council acquired the Coffs Harbour Electricity system with its local power station. This system was connected into the county system with the construction of a 33kV line south of Nymboida. The line followed a route via Glenreagh and then on to Raleigh, the object being to establish 33/11kV substations in each locality and so reticulate the respective rural areas. The first large consumer to take supply from the Raleigh Substation was the local butter factory.

Late in 1935 the 11kV line, which had served the Lower Clarence District since 1929, was augmented by a 33kV line and 33/11kV substations at Ulmarra and Maclean. The reticulation of Terranora Shire to the north of Lismore was commenced in the same year with the building of 33kV line from Lismore and the construction of one 33/11kV substation at Dunoon.

Thus by 1936, the 33kV sub-transmission system served most of the communities of the Richmond, Clarence and Bellingen Rivers' basins, transforming the Council from a purely local supply authority to one of regional proportions. In 1938, the reticulation of the northern area was further enhanced when the Council entered into an agreement with the Municipality of Mullumbimby to provide a 33kV bulk supply by extending the line from Dunoon to the local power station. At the end of 1939 the system, which had been developing for nearly 15 years, reticulated power to 8,697 consumers compared with

250 in 1925. The area served involved most of the north and mid coastal plain and portions of the western high country.

Between 1948 and 1961, 33kV lines were constructed from Casino to Ubenville via Mallaganee and Bonalbo: from Casino to Kyogle (1953), Raleigh to Woolgoolga (1954) and Maclean to Yamba via Red Cliff (1967). The rapid growth of the Council system during the decade of the 1960s was also indicative of the inadequacy of the 33kV to carry large blocks of load over long distances. As a consequence, it was first augmented then gradually displaced by 66kV and 132kV lines and substations.

At the end of World War II, the Council was faced with an increased demand for power in both rural and urban areas. As a result, it was decided to establish a stream station (29MW) at Koolkhan, 10km north of Grafton, and to interconnect the southern and northern systems by the construction of 66kV lines to Lismore via Nymboida (1953) and Casino (1954).

The first major augmentation of the 66kV system, since the 1933 northern line, took place in late 1944 and early 1945 when a line 196km in length was began operation between Nymboida and Kempsey. The significance of this line was that it connected the Council generation into the Railway/Public Works System and so gave access to the State Grid. In addition, the Raleigh Substation was established as a 66/33/11kV source to augment supply into the Nambucca and Coffs Harbour areas.

With the completion of the Koolkhan Power station in 1953, the Council embarked on a major expansion of its 66kV system in order to augment areas supplied at 33kV. Between 1954 and 1968 it constructed new lines and 66/11kV substations at Mullumbimby (1954), South Lismore (1954), Grafton (1956), Coffs Harbour (1957), Dorrigo (1957), Casino (1960), South Grafton (1961), Newee Creek (1962), East Lismore (1963), Maclean (1966), Ballina (1967) and Raleigh (1968).

The amalgamation of the County Council into that of the Northern Rivers in 1952 brought a unified distribution and transmission network into the system for 28,175 consumers with a peak demand of 20MW.

The growth of the northern load had occasioned the detailed planning and design of a 132kV line and substation to be established at Lismore. The line was commissioned in June 1962 to be operated initially at 66kV. This line, which was 100km in length, represented a basic departure in design practice for the Council and was significant in that it marked the end of the 66kV as the source of system interconnection.

During 1963, the Electricity Commission of NSW placed into service the first of its 132/66kV bulk supply points adjacent to the Koolkhan Power Station and effectively integrated the Council system into that of the Commission. The Kempsey 66kV interconnection was fully uprated by the construction of a new 132/66/33kV substation in 1966 and in 1967 a third bulk 132kV substation was completed at Lismore. The 132kV line, constructed by Council in 1962, was sold to the Commission and became part of a ring system of 132kV lines which extends from Armidale via Tenterfield to Lismore and Grafton.

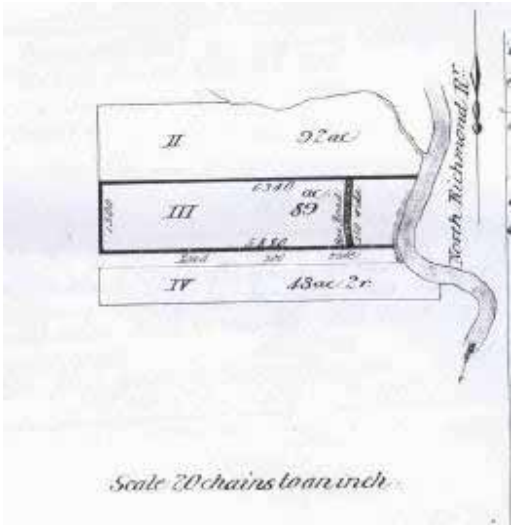
2.3 THE LISMORE POWER STATION SITE

2.3.1 Land Titles Information

A search of the NSW Department of Lands Land Titles records identified the following changes in ownership of the site:

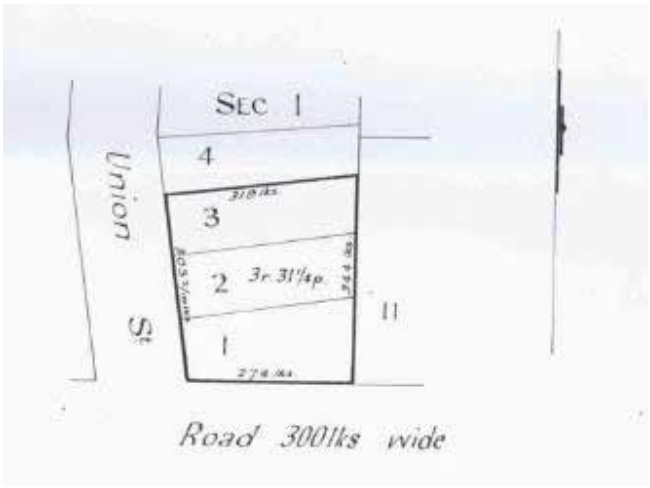
Table 2.1 Land Titles Information

Date	Owner/Purchaser	Lot Details
2 July 1863	Bank of New South Wales	Grant of land purchased by conditional sale without competition from the Crown: 89 acres purchased for £89. Portion 3, Parish of Lismore South
6 April 1884	John William Caeman/Coleman	Lots 4 & 5 Section 2, Deposited Plan 1691
22 March 1887	Edward Saville	Lots 2 to 7 on Section 3, Deposited Plan 1691
22 March 1887	George Nichols	Lots 6 & 7 Section 2, Deposited Plan 1691
22 March 1887	Isaac Johnson	Lots 8 &21 Section 5, Deposited Plan 1691
22 March 1887	James Peter Field Walker	Lots 1 & 9 Section 5, Deposited Plan 1691
7 June 1887	Charles Elliot	Lots 1 to 3 Section 2, Lot 1 Section 3, Deposited Plan 1691
17 June 1887	Charles McLean, of Lismore, Shipwright	Lots 1 to 4 Section 1, Deposited Plan 1691
20 December 1887	Samuel Griggs Snow, of Ballina, Mill Wright	Lots 4 to 6 Section 5, Lots 5 & 8-10, Section 1, Deposited Plan 1691
11 December 1902	Wilhelmina Jessie McPherson, of Nyrallah, Spinster	Lots 5, 8,9 & 10 of Section 1, Lots 4 and 5 of Section 5, Deposited Plan 1691
22 June 1927	Sophia Elizabeth Bauer, wife of William Frederick Bauer, of Lismore, Farmer	Lots 1 to 4 inclusive of Section 1, Deposited Plan 1691
7 June 1929	Charles John Hugh Fox, of South Lismore, Builder	Lots 5, 8, 9 & 10 of Section 1, Deposited Plan 1691
7 January 1932	Clarence River County Council	Lots 8, 9 &10 of Section 1, Deposited Plan 1691
18 March 1932	Clarence River County Council	Lots 1,2 and 3 Section 1, Deposited Plan 1691



(Source: NSW Department of Lands)

Figure 2.1 1863 Land Title - Portion 3 purchased by the Bank of New South Wales



(Source: (NSW Department of Lands)

Figure 2.2 Clarence River County Council purchase March 1932

2.3.2 Development of the Power Station

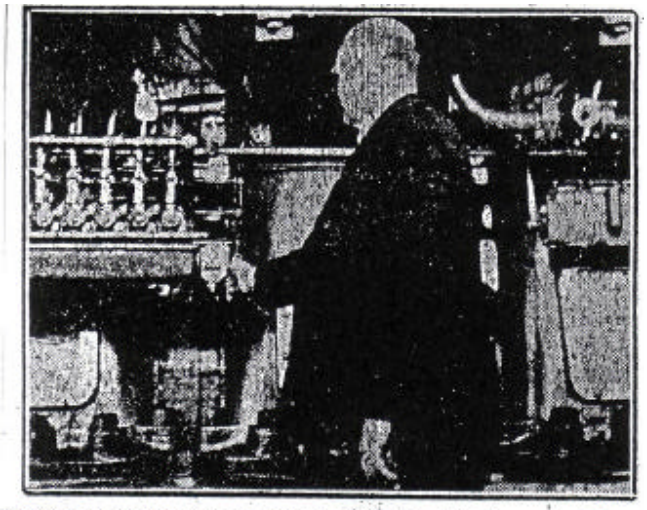
A note in the Power Station file held by the Richmond River Historical Society states:

> *In 1911 a deputation of representatives businessmen waited upon Lismore City Council to 'urge and implore" the installation of electricity in the town. However, the deputation was unsuccessful and it was decide to promote a private company to be known as the "Lismore Electric Supply Company Ltd" and this was incorporated on the 4th of December, 1911. The necessary machinery was installed on a site adjacent to the present site of the Northern Rivers County Council offices in Carrington Street, and the plant consisted in the first instance of an 120-horsepower Campbell suction gas engine which had been exhibited at the Brussels Exhibition and secured the Grand Prix.*

The Electric Lighting Supply Company was purchased by the City Council of South Lismore in 1924 to supplement the generating plant established by Council in 1922, to provide power for the water works pumps and street lighting. In 1933, this generating plant was given to the Clarence River County Council (later Northern Rivers Electricity) and the Lismore Diesel Station (6MW) was established.

The Lismore Power Station building was built in 1932 by Kennedy and Bird H. Galmes of South Lismore (Richmond River Historical Society). The station was officially opened in July 1932 by local member of Parliament, Mr W.T Missingham MLA on Saturday 9 July 1932. This marked the first stage in the extension of the Nymboida Programme for the supply of electricity in the Richmond River region. Mr Missingham, in his speech officially opening the Lismore "Power House", stated:

> *'I hope the time will come when one body will control the supply of electricity from Tweed Head to the Manning River and eventually connect up with other systems extending right to Burrinjuck. I feel that it is only a matter of a few years when we will see the whole of the east coast, and Victoria also, linked up electrically.'* (The Northern Star 11 July 1932, courtesy of Richmond River Historical Society).



Mr. W. T. Missingham, M.L.A., setting in motion the 1000 horse-power Davey Paxman crude oil engine and generating set from which Lismore for the next 18 months, at least, will obtain its electric current.

(Source: The Northern Star 11 July 1932, courtesy Richmond River Historical Society)

Figure 2.3 Mr Missingham switching on the Davey Paxman engine at the opening of the Lismore Power Station in July 1932

Six diesel generators were installed between 1932 with the installation of a 1000 horsepower Davey Paxman crude oil engine, followed by the progressive installation of five English Electric (EE) diesel generators in the 1940s. The eight cylinder Davey Paxman engine was imported from England, and is noted as the only engine of its type built by the Paxman company (Richard Carr's Paxman History Pages).

(Source: Richmond River Historical Society RRHS 3792, Donor: Miss L Oakes)

Figure 2.4 The Lismore Power Station Building 1932 – the photograph is annotated with the caption: This is the new Power Station which is completed ready to receive the large engines and was built by Kennedy and Bird H. Galmes South Lismore

A 1932 photograph of the Lismore Power Station building shown in *Figure 2.4* indicates that the building has undergone several changes since its construction. These include an extension to the east, and the installation of the cooling towers along the northern side of the building. These later additions are shown in *Figures 2.9* and *2.10*.

The details of each engine installed at Lismore Power Station have been recorded by Clark (1992) and provided in *Table 2.2*. The dates of installation of the units reflect the steady increase in demand for electricity in the region. Clark noted that Units 1 and 2 as listed in *Table 2.2* replaced smaller, older units.

Table 2.2 Lismore Power Station Engine Specifications

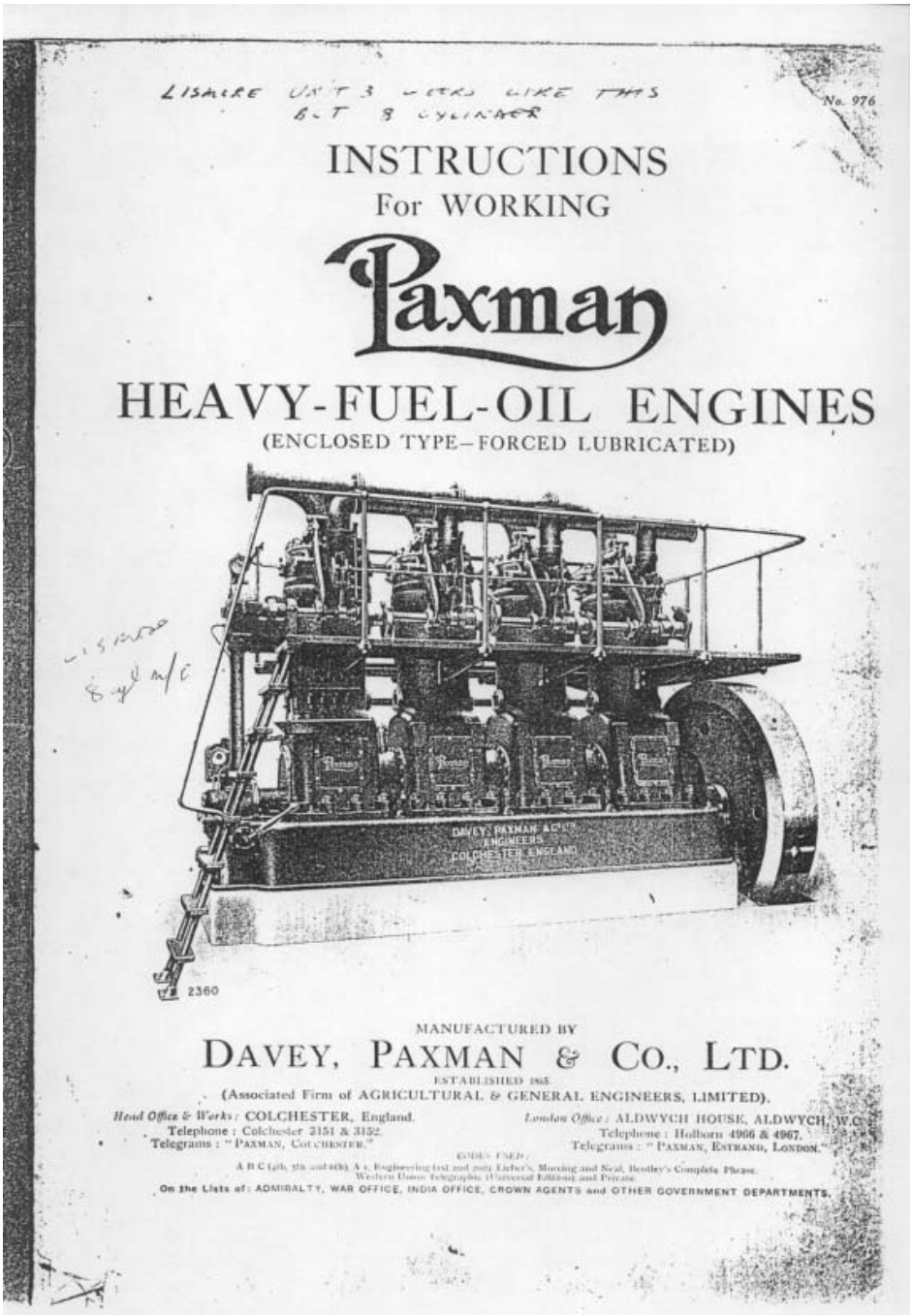
Unit No.	Date Installed	Prime Mover	Generator	Exciter
1	31 October 1937	Willans 8L 1H670 2 Stroke Diesel 1000BHP 375rpm	EE GL 126/616 813 KVA 3 phase 2.3KV 204A 50Hz	EE CA 132 9KW DC 94V 96A
2	1 February 1950	GM 16-567B Cleveland 1440 HP 750 rpm	Elliot D-225 1250 KVA 3 phase 2.3KV 314A 50Hz	Elliot DES175938 10KW DC 125v 80A
3	1933	Paxman 23912 Colchester 8 Cylinder diesel	Crompton Park 813KVA 3 phase 2.2KV 214A 50 Hz	Crom Parkinson F152A139 94V 100A
4	13 November 1934	Willans 8L 1H615 2 Stroke Diesel 1000BHP 375rpm	EE GL126/3A16 813KVA 3 phase 2.3KV 214A 50Hz	ACB16 12KW DC 96V 100A
5	2 June 1937	Willans 8L 2 Stroke Diesel 1000BHP 375rpm	EE GL 126/616 813 KVA 3 phase 2.3KV 204A 50Hz	EE CA 132 9KW DC 94V 96A
6	Scrapped in 1966			
7	7 January 1941	Willans 8Q Fullagar 1F528 2 stroke diesel 1960BHP 300 rpm	EE GL187/5A20 1738KVA 3 phase 2.3KV 3 phase	EE CAM171 300 rpm 92V 182A
8	10 November 1941	Willans 8Q Fullagar 1F529 2 stroke diesel 1960BHP 300 rpm	EE GL187/5A20 1738KVA 3 phase 2.3KV 3 phase	EE CAM171 300 rpm 92V 182A
9	4 February 1952	GM 16-567B Cleveland 1440 HP 750 rpm	Elliot IS-8481 1250 KVA 3 phase 2.3KV 314A 50Hz	Elliot DES191268 10KW DC 125v 80A

1. Sources: Clark 1992

The Fullagar engines designed in the 1920's (Units 7 and 8) are of an unusual design having opposed piston type engines. This type of engine was originally developed by Camellaird for marine use (Clark 1992).

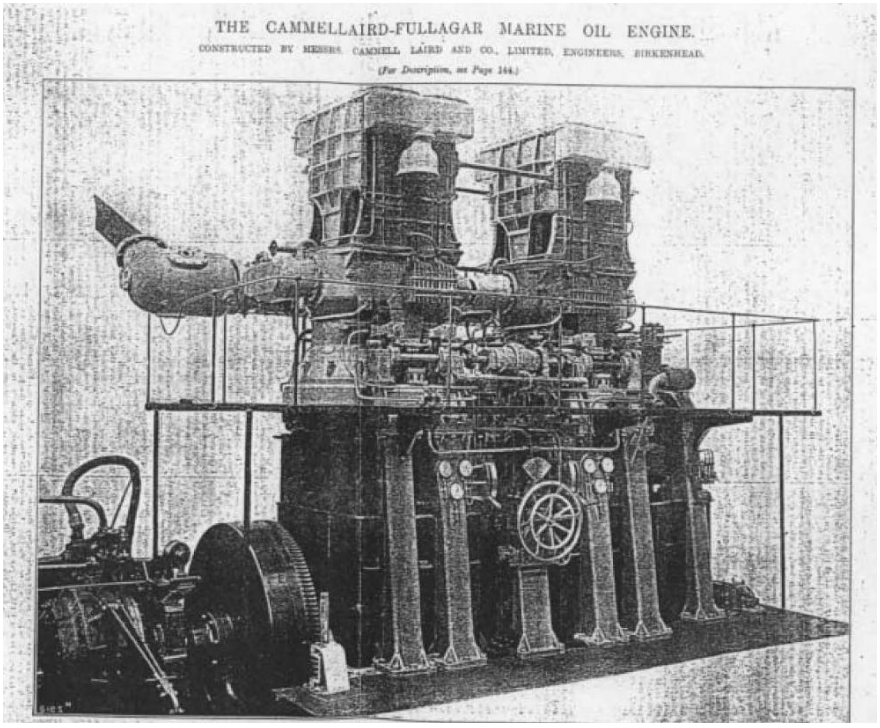
(Source: Richmond River Historical Society RRHS 3792, Donor: Miss L Oakes)

Figure 2.5 ***Delivery of machinery to the Lismore Power Station c1932 – the photograph is annotated with the caption: This is one of the first consignments of machinery being delivered to the new power house consisting of two of the Engine Cylinders each weighing 3 tons each, P Oakes South Lismore***



(Source: Clark 1992)

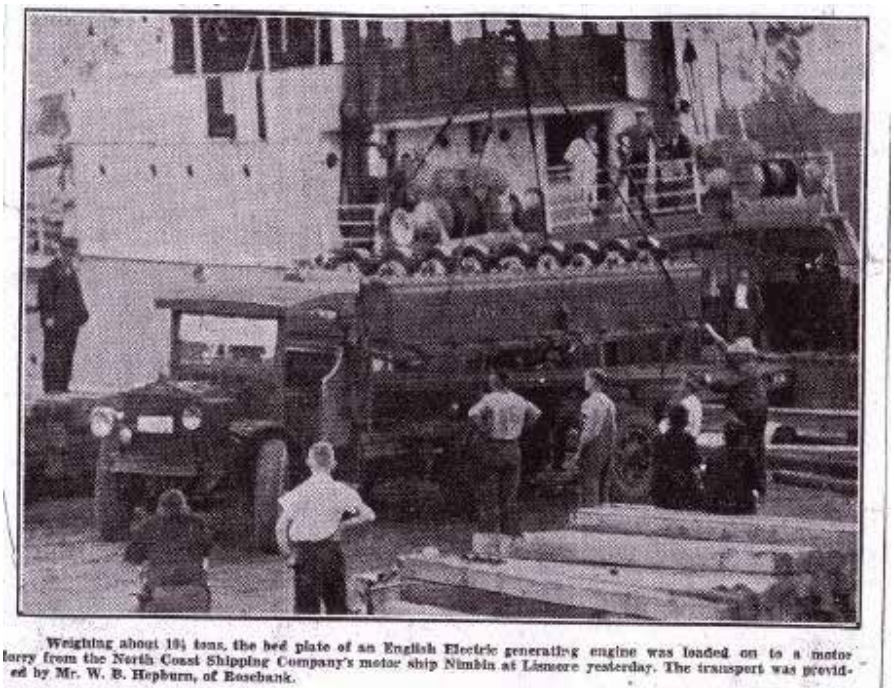
Figure 2.6 Illustration of a Paxman Four Cylinder Engine – the Lismore Power Station Paxman Engine was a unique Eight Cylinder Engine



(Source: Clark 1992)

Figure 2.7 Example of a Fullagar Engine 1920

The transport and installation of the engines was a considerable undertaking, as illustrated in the 1937 photograph below.



Weighing about 10½ tons, the bed plate of an English Electric generating engine was loaded on to a motor lorry from the North Coast Shipping Company's motor ship Nimbin at Lismore yesterday. The transport was provided by Mr. W. B. Hepburn, of Rosebank.

(Source: Richmond River Historical Society)

Figure 2.8 Delivery in 1937 of one of the English Electric engines (known as Unit 5) via ship and lorry to Lismore

The Clarence River County Council's 1938 Annual Report on power production and supply in the region recorded the year as its busiest in its history to date. The Annual Report documents the peak loads in kilowatts of the system between Nymboida and Lismore Power Stations from 1927 through to 1928:

Table 2.3 Overview of Peak Loads of the Lismore Region Electricity Supply System 1927-1938

Year	Nymboida	Lismore
1927	575	-
1928	625	-
1929	680	-
1930	810	-
1931	972	475
1932	1,044	640
1933	1,520	760
1934	2,370	790
1935	2,930	1,170
1936	3,100	1,400
1937	3,550	2,770
1938	4,200	2,520

1. Peak Loads in K.W.s.
2. Source: 1938 Annual Report, courtesy Richmond River Historical Society

This information provides an insight into the relative role of the Lismore Power Station in supplying the region with electricity during this period.

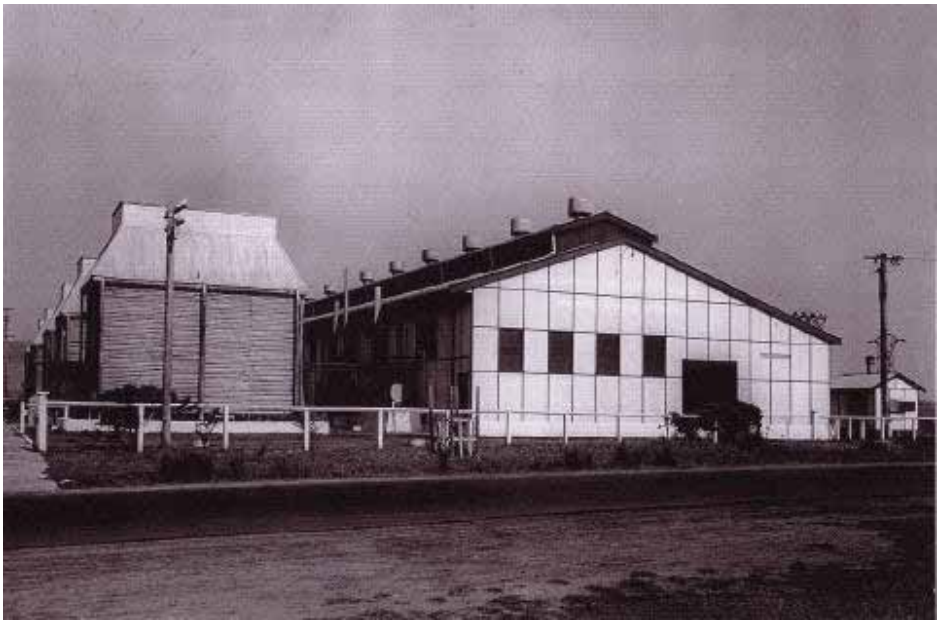
Demand for electricity increased rapidly. The annual report noted "*the future position will in part be cared for by the installation during 1940 of additional generating plant at the Lismore Power Station, for the installation of which Departmental approval was received towards the end of the year*". The report also recorded:

> *Continuous supply was maintained by the Nymboida and the Lismore Power Stations, working in conjunction, throughout the whole year to the main transmission systems. From the beginning of the year until late in October the flow of the Nymboida River was more than sufficient to enable the Nymboida Power station to supply the requirements of the system within the limits of its operating capacity, and during this period, the Auxiliary Power Station at Lismore was required for service only for emergency purposes arising out of maintenance work on plant and transmission lines. Early in November, however, the flow in the Nymboida River decreased to a marked extent as the result of prolonged dry weather conditions and, during the concluding two months of the year, the Lismore Power Station was called upon for considerable service.* (1938 Annual Report, courtesy Richmond River Historical Society).

Lismore's crude oil generation supplied 1,038,926 units out of a total 19,209,846 units generated along with Nymboida, or 5.4% of the total energy generated by the system in 1938 (1938 Annual Report, courtesy Richmond River Historical Society).

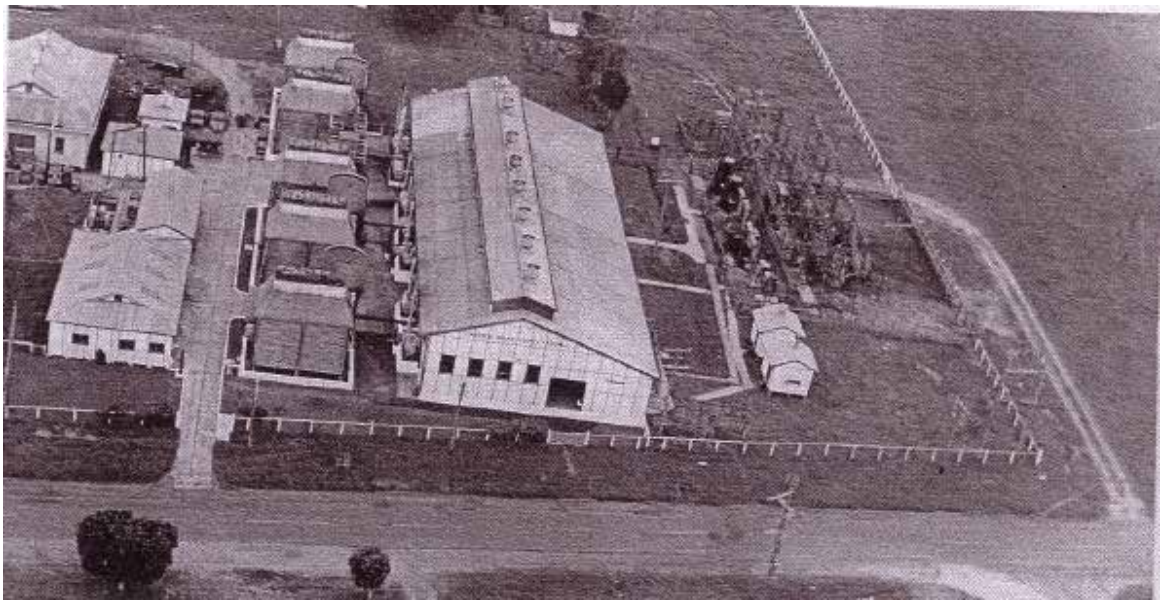
Increases in population and demand in the region, particularly following WWII, necessitated extension of the station's output and the plant was augmented by the addition of two GM generators within acoustic enclosures, increasing capacity to a maximum of 7.380KW. When fully operational, the noise of the engines was significant (pers. comms. Steve Brown 25 June 2008).

The undated historic photographs provided below show some of the changes the site has undergone since its construction. The cooling towers have been added and the building has been extended to the east. The aerial photograph (*Figure 2.16*) shows the sign along the western elevation of the Power Station building *Clarence River County Council*. This indicates that these photographs date from the period prior to the creation of the Northern Rivers County Council in the 1950s.



(Source: Richmond River Historical Society)

Figure 2.9 Lismore Power Station (undated photograph)



(Source: Richmond River Historical Society)

Figure 2.10 Aerial view of Lismore Power Station, undated photograph

The station has been upgraded since the 1950s. In 1952 the State Government decided to amalgamate the various local electricity undertakings on the Northern Rivers under one authority and the Northern Rivers County Council was formed (Richmond River Historical Society).

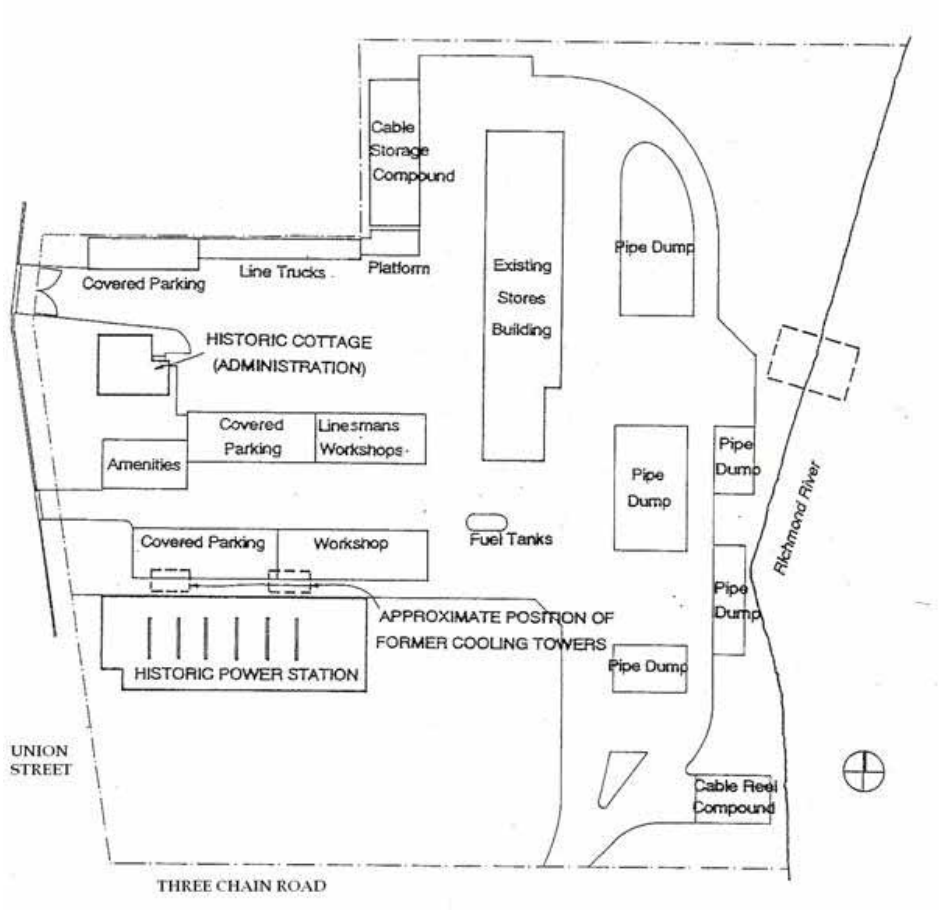
In 1963 the Northern Rivers County Council reported that the transmission line between Koolkhan and Lismore was operating at 66,000 volts, and would eventually carry 132,000 volts (Supplement to The Northern Star, 3 August 1963, courtesy of the Richmond River Historical Society). In 1966, Lismore Power Station was upgraded with the 132kV line and substation operating at 66kV. This included the scrapping of one of the engines – Unit 6 (Clarke 1992).

Several workers accommodation cottages were constructed on the site, possibly during the 1930s. The last of the cottages was removed in the 1990s.

The power station building is below the flood line and the engines have been affected by flood twice since original construction. In 1974 a significant flood affected both levels of the building, requiring extensive airing and repairs to the engines. The 1988-89 floods again affected the engines on the lower level. This latter flood marked a turning point for the diesel engines as it caused lamination of the engine's alternators and was a key factor in decommissioning the plant (pers. comms. Steve Brown 25 June 2008).

The cooling towers for the units were removed in the early 1990s for safety requirements. The fuel oil tanks were also removed in this period to prevent fuel contamination (Clarke 1992).

An indicative configuration of the Lismore Power Station site in the 1990s is shown in *Figure 2.11.*



(Source: The Northern Rivers Electricity Heritage and Conservation Register)

Figure 2.11 The indicative configuration of the Lismore Power Station and workshop depot

3 PHYSICAL ASSESSMENT

The following discussion provides an overview of the results of an inspection of the Lismore Power Station and its immediate environment. The site was inspected in January 2006 and again in May 2008. The following discussion addresses the physical fabric of Lismore Power Station and includes photographs from both site visits.

3.1 THE LOCAL ENVIRONMENT

The Lismore Power Station is located on the outskirts of the city of Lismore on Union Road. Its immediate environment is dominated by light industry.

The site, comprising the power station, workshop and depot, substation and the AC/DC conversion infrastructure is secured behind a high chain wire safety fence. Workshops, associated infrastructure and administrative areas are located across the north and east of the site. The power station building is aligned east-west along its long axis, with its western short wall adjacent to the western site boundary on Union Street.

Figure 3.1 Aerial view of the Lismore Power Station site – the power station building is indicated with the yellow arrow

Photograph 3.1 Exterior view of the power station building – Southern Elevation

Photograph 3.2 Western Elevation of the power station building, adjacent to Union Street

Photograph 3.3 View north across the site from the power station building. The new blue administrative building is in the background

Photograph 3.4 View south to the new works to the south of the power station building

3.1.1 The Building

The power station is a large steel and timber framed structure clad in asbestos cement sheet (fibro) with corrugated steel roofing sheets. The maintenance entry is via a large roller door in the west wall, while the main entry is via centrally placed single timber doors in the north and south elevations (*Photographs 3.5 and 3.6*). The floor is steel trowelled concrete with in-built cable channels that have gatic steel covers.

Photograph 3.5 The south elevation of the power station

Photograph 3.6 West elevation of the power station showing roller door

The framing for the building are steel 'I' beams which support the building and the 10 ton travelling crane. The gable roof is framed by double steel riveted trusses which also support a central clerestory running down the length of the building. Light is provided by the clerestory and windows piercing the north and east walls (see *Photographs 3.7 and 3.8*).

Photograph 3.7 View of the interior showing framing and roofline with clerestory. Unit 4 is adjacent to the main entry.

Photograph 3.8 The south elevation with windows in the upper wall

The interior of the power station building comprises a large space with the workshop areas, an office extension in the west end and a mezzanine floor in the northwest corner with switchboards. The main control panels are along the south wall. Although the station is no longer operational, the plant comprising eight diesel generators is in situ.

A schematic plan of the internal layout of the Lismore Power Station is shown in *Figure 3.2* (not to scale).

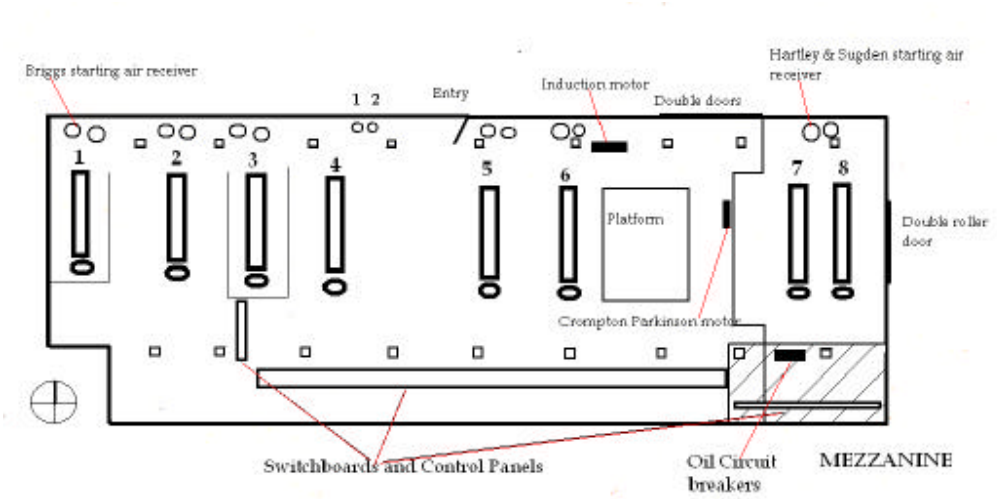


Figure 3.2 Schematic rendition of the internal configuration of the Lismore Power Station

3.2 THE PLANT

Internally the building appears to be relatively unchanged since decommissioning. The plant is in situ, with switchboards and control panels present. There is a range of equipment and tools on the floor and stacked on shelves. Safety and operational signs remain along with a canvas and timber framed stretcher.

The plant is not clearly identified numerically. It is believed that the No. 1 unit is located at the western end of the building. This is indicated by an inspection certificate, dated 12 July 1991, on the starting air receiver for the Unit 1 within the acoustic enclosure at the west end of the building. (This assumes that the numbers run west to east ending at Units 7 and 8 in a sunken area accessed by two sets of steps at the east end.)

Unit 1 and Unit 3 are both isolated by acoustic barriers comprising asbestos cement sheets (fibro). These are the post WWII installations and are identified as GM (General Motors) diesel power engines with Elliott generators (*Photographs 3.9 and 3.10*)

Photograph 3.9 Unit 1 is identified as a GM Diesel Engine

Photograph 3.10 The Unit 1 Elliott AC Generator Manufacturer's Plate from Ridgway PA USA

Of the remaining plant, Units 2, 5, 6, 7 and 8 are English Electric sets (*Photographs 3.12 and 3.13*). These units comprise English Electric diesel engines driven by English Electric generators from Bradford with Units 2, 5 and 6 on a level above Units 7 and 8 from which they are also separated by a metal platform which appears to have been a base for electrical equipment which has now been removed. Unit 2 is between the two later enclosed GM units.

Photograph 3.11 The English Electric sets, Units 5 and 6

Photograph 3.12 The Unit 2 Manufacturer's Plate; English Electric Alternating Current Generator, Stafford Works England

Units 7 and 8 are also English Electric sets (a plaque indicates that the generators, at least, were imported by Siemens of Melbourne) (*Photographs 3.13, 3.14 and 3.15*).

Photograph 3.13 The central stair leading to the eastern sunken area. The mezzanine is in the background.

Photograph 3.14 The English Electric set, Unit 8

Photograph 3.15 The Manufacturer's Plate identifying the Unit 8 English Electric motor generator as being imported by Siemens of Melbourne

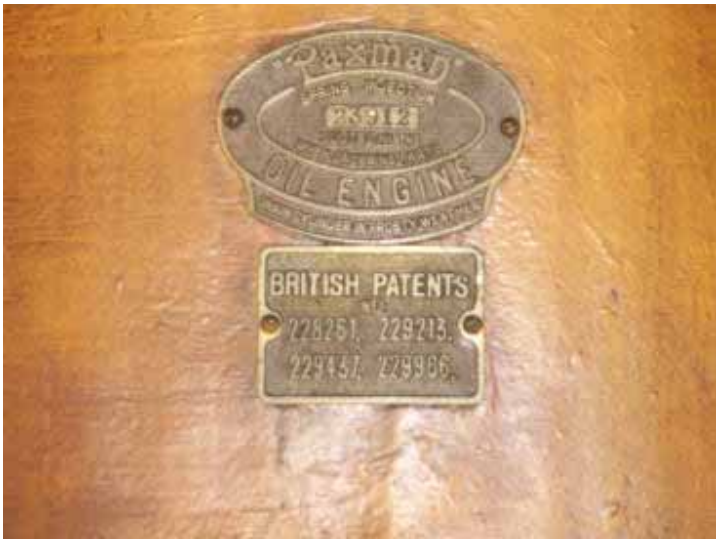
Although there are no indications as to the dates of installation, the Hartley & Sugden starting air receiver for Unit 8 was installed in 1940 indicating that this is the installation date for Units 7 and 8, if not all the English Electric units (*Photograph 3.16*)

Photograph 3.16 Manufacturer's Plate identifying the Hartley & Sugden Starting Air Receiver

The only unit specifically identified in the Heritage and Conservation Register is the first generator set, a 988 BHP Paxman installed in 1932. Unit 4 is a Davey Paxman oil engine driven by a Crompton Parkinson generator (*Photograph 3.17 and 3.18*). The Paxman manufacturer's plate is prominently displayed, as is a plate proclaiming 'Noyes Bros. Sydney' as the supplier (*Photographs 3.19 and 3.20*). That this unit is the earliest installation at the Lismore Power Station is indicated in details such as the abalone shell-shaped lamp shades (*Photograph 3.21*).

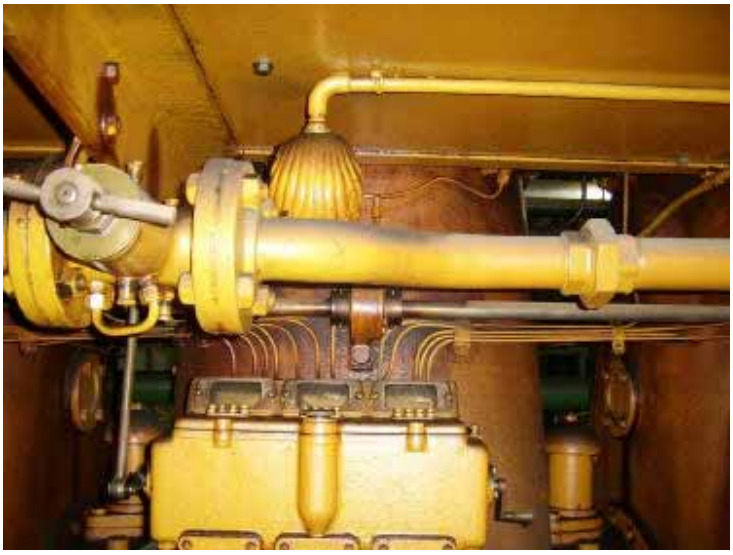
Photograph 3.17 The Davey Paxman Unit 4 diesel engine

Photograph 3.18 The Unit 4 Crompton Parkinson generator



Photograph 3.19 The Paxman Unit 4 Manufacturer's Plate

Photograph 3.20 The Noyes Bros (Sydney) Brisbane Newcastle Manufacturer's Plate on Unit 4



Photograph 3.21 Detail of Unit 4 abalone shell-shaped lamp shade

3.2.1 Infrastructure

As noted above the starting air receiver associated with Unit 8 is a Hartley & Sugden unit (see *Photograph 3.16*). Not all the starting air receivers are identified; however, most are identified as Abbott's units, while the one associated with Unit 1 is manufactured by Briggs of Bethesda, MA (*Photographs 3.22 and 3.23*).

Photograph 3.22 The Abbott starting air receiver adjacent to Unit 5

Photograph 3.23 The Briggs starting air receiver for Unit 8

All the filters, with manufacturer's plates, associated with the starting air receivers are Stream Line of London units (*Photograph 3.24*). However, two units of uncertain function, located adjacent to the Paxman generator, Unit 4, are marked '1' and '2' (*Photograph 3.25*).

Photograph 3.24 One of the Stream Line filter units

Photograph 3.25 The two units, 1 and 2, of uncertain function adjacent to Unit 4

Additional items of infrastructure are still extant at the station including a motor generator and an induction motor, work benches, desks as well as the switchboards and the main control panel for the station, the monitor and metering panels (*Photographs 3.26 – 3.35*).

Photograph 3.26 Crompton Parkinson motor generator above the lower level and adjacent to the platform

Photograph 3.27 Australian General Electric induction motor located adjacent to Unit 6

Photograph 3.28 Work bench between Units 7 and 8

Photograph 3.29 A large part of the east wall is occupied by a tool pegboard

Photograph 3.30 Detail of the control panel on the Mezzanine

Photograph 3.31 English Electric Oil Circuit Breakers on the mezzanine

Photograph 3.32 View of the main control panel from west to east

Photograph 3.33 Control panel for the No.8 and No. 7 alternators

Photograph 3.34 Metering panel and voltage regulator

Photograph 3.35 The No. 2 and No.1 feeder 66kv substation control panels

3.3 CONDITION

Although the engines in the power station have not been operational for some years, they appear to have been maintained regularly and appear to be in remarkably good condition. The function and operation of the station can be readily understood as all associated infrastructure appears to be in situ.

However, it is now over a decade since the plant was finally decommissioned after having served the Lismore area since the 1930s. During the period of use, maintenance and repair has kept machinery and equipment in good working order. The life expectancy of industrial plant in general, is around 30 – 50 years, and the engines at the Lismore Power Station have either reached the upper limit of this timeframe or are nearing it. When operations cease, mechanical parts begin to deteriorate through lack of use, and will continue to deteriorate without cyclical maintenance to retard this process. Although the plant appears to have been maintained, they have not been operating on a continuous basis. The cost of bringing the plant up to operational levels, and of ongoing maintenance, could prove to be prohibitive.

The Power Station building is, as described in the s170 citation, "internally, a splendid industrial shed". While the building is structurally sound, there has been some damage to the fibro wall sheets and windows. Recent storms (May 2008) has resulted in hail damage to guttering, which is heavily corroded along the southern and northern elevations. The steel frame and concrete slab floor are in sound condition.

Photograph 3.36 Plant floor from the mezzanine showing the platform with English Electric Unit 6 beyond

4 VALUES ASSESSMENT

The heritage values of the site have been confirmed through its inclusion on the s170 Register and the Lismore LEP as an archaeological site. The following heritage values assessment has been prepared in accordance with the *Assessing Heritage Significance* guideline. Establishing why a place or object is significant is essential to determine how the heritage values should be conserved for the community.

4.1 HERITAGE ASSESSMENT PRINCIPLES

An assessment of significance is undertaken to explain why a particular site is important and to enable the appropriate site management strategies to be determined and employed. Cultural significance has been defined by the Australian ICOMOS *Burra Charter* (1999: Article 1.2) as meaning "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. The significance of a place is not fixed for all time, and what is of significance to us now may change as similar items are located, more historical research is undertaken and community tastes change.

The NSW Heritage Office has also issued guidelines for the assessment of heritage significance – *Assessing Heritage Significance* (2001). These guidelines are based upon the general values defined by the *Burra Charter*. The assessment guideline is to be used to assist in determining whether formal heritage listing at either a local or State level may be warranted. An item is not to be excluded from the Register on the grounds that items with similar characteristics have already been listed on the Register.

4.2 COMPARATIVE ANALYSIS

A comparison with other related or similar sites and places assists in determining the heritage values of a particular item or feature. Comparative analysis can assist with identifying the appropriate level of heritage significance of a site, and is useful in the validation process of determining whether a heritage listing remains current.

A search of the Australian Heritage Database and NSW State Heritage Inventory using the search term "Power Station" identified eight registered sites and nine indicative places on the Register of the National Estate (RNE), two sites on the NSW State Heritage Register and twelve sites on local, regional and s170 heritage registers.

Information contained in the Australian Heritage Database and the NSW State Heritage Inventory has been utilised to identify sites with similar characteristics to the Lismore Power Station and equipment for a brief comparative analysis. These are discussed below.

4.2.1 Longreach Powerhouse (Former), 12 Swan St, Longreach, QLD, Australia

The former Longreach Powerhouse in Longreach is included on the RNE. The citation states that it is significant because:

of the major influence its operation had in the local community. The power station was close to the centre of town and over the sixty year period of its operation came to dominate the site and had a major impact on the town. Electricity was able to bring a range of benefits to the town, such as lighting and water reticulation and was seen to be the facilitator of progress. The generation of electricity became a tangible component of Longreach life and the former powerhouse was valued by the community for its long association with the town and as a workplace across generations of local families. The powerhouse is also significant for the evidence contained within the surviving fabric that the generation of electricity was formerly a local undertaking. The coal burning gas producers are significant as an early example of this type of plant being used for the supply of public electricity. This may have been the first time such a process had been used in the electricity industry in Australia. The success of this operation encouraged the adoption of the technology elsewhere in the State.

(Source: Australian Heritage Database)

Figure 4.1 Former Longreach Powerhouse in Longreach, QLD

While the electricity generation system is different at Longreach (coal burning gas producer technology), the functional character of the buildings is similar to the former Lismore Power Station building.

4.2.2 Comparative Analysis Findings

The comparative analysis identified that the majority of power houses that have been heritage listed in NSW were built as coal fired electricity generators. Several (mostly in Tasmania) are hydro power based, and one (Mullumbimby Power Station) is a combined hydro-diesel based system.

The comparative analysis has confirmed that former Lismore Power Station equipment is an unusual example of a diesel electricity generation facility. It has also identified that the building itself is not an unusual example of its type.

4.3 AUSTRALIAN AND STATE HISTORIC THEMES

The contextual history indicates that a number of NSW historical themes are illustrated by sites and items at the site. Identification of these historic themes assists with the following:

- understanding the role and importance of the site in NSW and Australian history;
- developing statements of heritage significance for the potential items and features at the site
- developing interpretation materials for the site; and
- prioritising heritage impact mitigation and management activities for the site.

The NSW Historical Themes Guideline and the Australian Historical Themes framework have been used to identify the historical themes for the site. The NSW historical themes for the Lismore Power Station building and its equipment as they align with the Australian Historical Themes are provided in *Table 4.1*.

Table 4.1 Historic Themes of the Study Area

Australian Historic Theme	NSW State Historic Theme
3. Developing local, regional and national economies	Industry
	Technology
	Commerce
4. Building settlements, town and cities	Utilities

4.4 DETERMINING THE EXTENT OF HERITAGE SIGNIFICANCE OF A SITE

The grade of heritage significance of a place also needs to be considered. Different components of a place may make up different relative contributions to its heritage value. Loss of integrity or condition may diminish significance. The following table provides an indication of grade and their relative justifications:

Table 4.2 Significance Grading

Grading	Justification	Status
Exceptional	Rare or outstanding item or local or State significance. High degree of intactness. Item can be interpreted relatively easily.	Fulfils criteria for local or State listing.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfils criteria for local or State listing.
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.	Fulfils criteria for local or State listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or State listing.
Intrusive	Damaging to the item's heritage	Does not fulfil criteria for local

Grading	Justification	Status
	significance.	or State listing.

These gradings are taken from the NSW Heritage Branch Guideline "Assessing Heritage Significance" (2001).

4.5 ASSESSMENT OF SIGNIFICANCE

The Burra Charter (*The Australia ICOMOS Charter for Places of Cultural Significance*) has set a standard for assessing heritage significance based on the aesthetic, historic, scientific and social values embodied in an item or place. In New South Wales the *Heritage Act 1977* has established seven criteria for the identification and assessment of heritage values. These criteria are:

a) *an item is important in the course, or pattern, of NSW's cultural or natural history (Historical Significance);*

b) *an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (Associative Significance);*

c) *an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (Aesthetic Significance);*

d) *an item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (Social Significance);*

e) *an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (Archaeological Significance);*

f) *an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (Rarity);*

g) *an item is important in demonstrating the principal characteristics of a class of NSW's*

   - cultural or natural places; or

   - cultural or natural environments. (Representativeness)

The Heritage Branch, Department of Planning, (the former Heritage Office) has developed a guideline to assess heritage significance against the seven criteria in their publication *Assessing Heritage Significance*, which has guided the preparation of the heritage values assessments in this study. An item is to be considered of State or Local heritage significance if it meets one or more of the NSW heritage assessment criteria.

The heritage values of the former Lismore Power Station and equipment have been assessed against these criteria in the following pages.

4.6 ASSESSMENT AGAINST THE NSW CRITERIA

(A) – An Item Is Important In The Course, Or Patterning, Of NSW's Cultural Or Natural History (Or The Culture Or Natural History Of The Local Area)

The former Lismore Power Station building and its equipment illustrates the development of electricity generation and supply to the local area. The building and equipment formed a key role in supplying the local area with cost effective and reliable electricity between the 1930s and the 1990s. This has played a role in the economic development of the local area.

Significance Grading

High – Local Level Significance

(B) – An Item Has Strong Or Special Association With The Life Or Works Of A Person, Or Group Of Persons, Of Importance In NSW's Cultural Or Natural History (Or The Cultural Or Natural History Of The Local Area)

The former Lismore Power Station building and its equipment does not meet this criterion.

Significance Grading

Not applicable.

(C) – An Item Is Important In Demonstrating Aesthetic Characteristics And/Or A High Degree Of Creative Or Technical Achievement In NSW (Or The Local Area)

The former Lismore Power Station building and its Paxman and Fullagar diesel engines are a strong example of 1930s power generation technology.

Significance Grading

High – Local Level Significance

(D) – An Item Has Strong Or Special Association With A Particular Community Or Cultural Group In NSW (Or The Local Area) For Social, Cultural Or Spiritual Reasons

Preliminary consultation indicates that the Lismore Power Station building and equipment are of considerable importance to the community, particularly the Paxman and Fullagar engines. The site is of particular interest to the Australian Institute of Engineers.

Significance Grading

High – Local Level Significance

(E) – An Item Has Potential To Yield Information That Will Contribute To An Understanding Of NSW's Cultural Or Natural History (Or The Cultural Or Natural History Of The Local Area)

The former Lismore Power Station building and equipment have industrial archaeological values that could further enhance an understanding of the history and operation of the site.

Significance Grading

High – Local Level Significance

(F) – An Item Possesses Uncommon, Rare Or Endangered Aspects Of NSW's Cultural Or Natural History (Or The Cultural Or Natural History Of The Local Area)

The eight cylinder Davey Paxman engine in the power station has been recorded as the only example of its type. Preliminary research indicates that it is unique in the world. The Fullagar Engines are of an unusual design comprising an opposed piston type of engine. These engines represent 1920s technology that is rare in Australia.

Significance Grading

High – State Level Significance

(G) – An Item In Demonstrating The Principal Characteristics Of A Class Of NSW's Cultural Or Natural Places; Or Cultural Or Natural Environments (Or A Class Of The Local Area's Cultural Or Natural Places; Or Cultural Or Natural Environments)

The former Lismore Power Station building and equipment demonstrate the development of electrical power generation and supply that occurred in NSW during the 1930s.

Significance Grading

High – Local Level Significance.

4.7 SUMMARY STATEMENT OF SIGNIFICANCE

The former Lismore Power Station building is significant at a local level for its role in the development of the area, its ability to demonstrate the principal characteristics of electrical power stations of the 1930s and for its archaeological potential. Some of the original equipment, particularly the eight-cylinder Davey Paxman engine and the Fullagar engines, are significant at a State level as unusual surviving examples of 1920s era diesel engine technology.

4.8 CONCLUSION

The values assessment has confirmed that the current heritage listings for the former Lismore Power Station and its equipment remain valid.

5 STATUTORY CONTEXT

This project is to be assessed and approved under Part 3A of the *Environmental Planning & Assessment Act 1979*. Part 3A can provide developers with 'comprehensive' approval for development, without the need for obtaining further approvals under different State Acts. The Part 3A approval process involves strict requirements established by the Director General of NSW Planning to ensure all environmental factors are adequately considered and addressed.

Historical heritage in NSW is protected under the *Heritage Act 1977.* These acts and their obligations are provided below. The obligations under these various acts will be used to devise relevant mitigation measures for the study area once an options analysis by Country Energy has been completed.

5.1 NSW LEGISLATION

5.1.1 Environmental Planning And Assessment Act 1979 (NSW)

The *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that environmental impacts are considered in land-use planning, including impacts on historical heritage. Various planning instruments prepared under the Act identify permissible land use and development constraints.

Where a development is approved under Part 3A of the EP&A Act, section 75U(c) of the EP&A Act provides that an approval under Part 4 and an excavation permit under section 139 of the Heritage Act are not required for the project. In those instances management of heritage sites must follow the statement of commitments included in the Part 3A development approval.

The statement of commitments defines the environmental management and mitigation measures the proponent is prepared to make for on the site. The statement of commitments is made in accordance with *EP&A Act 1979*: Part 3A Division 2 Section 75F [6].

A Draft Statement of Commitments is to be prepared as part of the Environmental Assessment for the Project.

5.1.2 Heritage Act 1977 (NSW)

The *Heritage Act 1977* protects the natural and cultural history of NSW with emphasis on non-Aboriginal cultural heritage. It provides automatic statutory protection to 'relics'. The *Act* defines a 'relic' as:

> *Any deposit or material evidence relating to the settlement of the area that comprises NSW, not being an Aboriginal settlement, which is 50 or more years old.*

Sections 139-145 of the *Act* prevent the excavation or disturbance of land known or likely to contain 'relics', except in accordance with an excavation permit issued by the

Heritage Council of NSW (or in accordance with a gazetted exception under Section 139(4) of the *Act*).

Approvals under the Heritage Act are not required where a development is approved under Part 3A of the *Environmental Planning and Assessment Act*.

The Country Energy Heritage and Conservation Register

Section 170 of the *Heritage Act 1977* (NSW) requires that statutory bodies prepare and maintain a heritage and conservation register for items under their control. The Country Energy Heritage and Conservation Register is known under Country Energy's former title, as the *Northern Rivers Electricity Heritage and Conservation Register* (Section 170 Register). The Lismore Power Station and Workshop Depot at 246 Union Street on the corner of Three Chain Road is identified on the register and the statement of significance supporting the listing is as follows:

> *An important and relatively intact example of 1930s diesel fuelled power generation plant set within a substantial purpose-built structure. A most interesting collection of machinery and equipment. Preservation is recommended, since this can be simply achieved on this large site which retains its depot function.*

Under the provisions of the *Heritage Act 1977*, the Heritage Council must be given at least 14 days written notice before an item on a S.170 Register is to be removed from the S.170 register, transferred to another owner, ceases to be occupied or is proposed to be demolished.

S170A(2) requires State agencies to ensure properties with heritage values within their portfolios are managed in accordance with the State Owned Heritage Management Principles. These principles advocate a best practice approach to State owned heritage assets including the implementation of a preventative conservation and maintenance routine.

5.2 NSW PLANNING CONTROLS

The Lismore Local Environmental Plan (LEP) 2000 applies to the site, as the Former Power Station is identified as an archaeological site in Schedule 1. The Lismore LEP includes a range of heritage protection provisions addressing European heritage sites, items and areas. The heritage objective of the LEP is to protect and conserve archaeological sites and places of Aboriginal or European cultural significance. The LEP includes provisions that conserve the remaining fabric, relics, settings and views, and evidence of the cultural significance of heritage items and the environment of heritage conservation areas.

5.3 COMMONWEALTH LEGISLATION

5.3.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides for the protection of matters of National Environmental significance and the environment generally on Commonwealth land. A referral to the Department of Environment, Water, Heritage and the Arts (formerly the Department of Environment and Water Resources) is required if an action has the potential to have a significant impact on matters of National Environmental significance or the environment of Commonwealth land.

The Minister for the Environment, Heritage and the Arts, or his approved delegate in the Department, determines whether the action is 'controlled', and if any further assessments that may be necessary to determine whether it should be approved or refused. If an action is not 'controlled', further consideration under the EPBC Act is not required.

5.4 NON-STATUTORY

5.4.1 National Trust of Australia (NSW)

The Lismore Power Station has been classified by the National Trust of Australia (NSW) and included on the Industrial Archaeology Register. The National Trust of Australia has no statutory authority; however, does have a role in raising public awareness of heritage issues and regularly lobbies all levels of government advocating the conservation of heritage places.

6 CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

This heritage assessment has confirmed that the former Lismore Power Station including the equipment has significant heritage values. The options analysis for the future upgrade of Lismore Power Station will need to appropriately consider these heritage values and address potential heritage impacts.

6.2 RECOMMENDATIONS

6.2.1 Project Approval Recommendations

It is recommended that the options analysis to be undertaken by Country Energy consider the feasibility of the option of retaining the building, equipment and associated tools, control panels and signage on site.

It is also recommended that a Heritage Impact Assessment of Country Energy's options for the upgrade of the site be prepared with the input of an Industrial Archaeology specialist.

6.2.2 S170 Obligation Recommendations

In the event that the decisions about the future upgrade of Lismore Power Station is delayed or deferred, it is recommended that a Conservation Management Plan be prepared for the former Lismore Power Station and equipment within the next 18 months in order to ensure Country Energy's S.170 obligations are met.

The Conservation Management Plan could give consideration to the following heritage issues for the former Lismore Power Station Building and equipment:

- a program of conservation works, including possible re-cladding the building to remove asbestos sheeting and assist with the protection of the equipment;
- a program of ongoing building maintenance works to prevent the need for major conservation works;
- a program of conservation and maintenance activities to address the ongoing care requirements for the plant and associated tools and equipment; and
- interpretation and site access options.

REFERENCES

Clark, M 1992 **Northern Rivers Electricity – Lismore Power Station: Interim Report on an inspection by Malcolm Clark on behalf of the Heritage Committee, the Institution of Engineers, Australia, Newcastle Division**, unpublished report, copy provided by Country Energy

NSW Department of Lands: Land Title Deeds for Lots 1,2,3,8,9,10 on Deposited Plan 1691

Perumal Murphy Wu Pty Ltd 1995 **Lismore Heritage Study** prepared for Lismore City Council and the NSW Department of Planning

Richard Carr's Paxman History Pages:
www.nelmes.fsnet.co.uk/paxman/ausdiesel.htm

Richmond River Historical Society records

Tanner & Associates Pty Ltd and Godden Mackay Heritage Consultants 1993 **Conservation Plan for Koolkhan Power Station**

Tanner & Associates Pty Ltd 1999 **Northern Rivers Electricity Heritage and Conservation Register** prepared for Northern Rivers Electricity