

THE INSTITUTION OF ENGINEERS, AUSTRALIA



SOUTH AUSTRALIAN DIVISION

GOOLWA - PORT ELLIOT RAILWAY

AND

EXTENSIONS TO VICTOR HARBOR

AND

STRATHALBYN

A STATEMENT OF THE ENGINEERING HERITAGE
SIGNIFICANCE OF THE RAILWAY

JUNE, 1991

GOOLWA - PORT ELLIOT RAILWAY

AND

EXTENSIONS TO VICTOR HARBOR AND STRATHALBYN

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GOOLWA - PORT ELLIOT RAILWAY

1. Introduction

In December 1853 Australia's first railway established the vital link between the River Murray and a seaport capturing for South Australia river trade from as far afield as Queensland. Originally animal powered, the railway was extended to Victor Harbor in 1864, Strathalbyn in 1869 and connected in 1884 to the intercolonial railway between Adelaide and Melbourne under construction at that time. The line was converted to steam operation with a steam service to Goolwa in December 1884 and on to Victor Harbour in March the following year.

The Railway was one of, if not the first major civil engineering work undertaken in South Australia and the first Government railway in the British Empire. Regular railway services on the line between Strathalbyn and Victor Harbour ceased in April 1984 on the eve of the centenary of the line's conversion to steam operation.

2. Description

The Goolwa - Port Elliot railway was the first part of an engineered railway system with two subsequent main extensions to Victor Harbor and Strathalbyn. Interestingly the first plans to appear in South Australia's Parliamentary Papers are those associated with the first stage of this railway and were included in Governor Young's Dispatch No. 56 of 6 April, 1850.

Goolwa - Port Elliot

The initial works comprised jetties at Goolwa and Port Elliot, a stone breakwater to provide a "safe" anchorage for shipping at Port Elliot, cuttings at Port Elliot and Goolwa and seven miles of interconnecting railway track. The line led from the Jetty at Goolwa by the most direct route in a south westerly direction and onto the Jetty at Port Elliot. By contrast the jetty at Goolwa was at right angles to the main railway track with access to the jetty being by means of turntables. The line was originally conceived for working by steam locomotion with "curves and gradients as well as gradients adopted in the section, are entirely with reference to working of the line by locomotive power" but the line was opened using animal power on the grounds of economy.

For the same reason the gradients in cuttings at each end of the line were steepened from the 1:100 grade limit originally designed. It is also likely that costs determined that the seaport would be Port Elliot rather than Victor Harbor at a further distance of 4 miles.

The initial rails were 40 lb/yard T section laid at 5' 3" gauge on cross sleepers at 2 ft centres. Importantly the rail gauge was established with the agreement of the colonies of New South Wales and Victoria to enable the subsequent interconnection of the then separate railway systems. New South Wales, after a change of engineer, subsequently adopted 4ft 8 1/2 inches while South Australia and Victoria honoured their original agreement. That the government of the day took the question of rail gauge seriously is shown by the Legislative Council proceedings in 1853. They proposed to "memorialize the Home Government to disallow that portion of the Sydney Railway Bill which rules that the gauge of the Sydney railroad to be 4ft 8 1/2 inches... it seems desirable that one uniform gauge should prevail throughout all Australia".

Construction commenced on the railway in 1851.

The first paddle steamers onto the Murray had gone up river in August 1853. The then Governor was anxious that their cargo upon their return to Goolwa be immediately transhipped by rail to Port Elliot. In December 1853 with six miles of track completed and work still in progress on the Port Elliot cutting, the line was placed into service. Bullock drays were used to bridge the gap to Port Elliot. The line was completed by 18 May, 1854 although it was never officially opened.

Rolling stock comprising one passenger car and 11 goods trucks were used in the beginning increasing to a maximum 13 passenger cars and 104 goods trucks (1879) before the line was converted to steam operation (1884).

Port Elliot - Victor Harbor Extension

The mistake in choosing Port Elliot as a harbour soon became apparent with 7 ships at anchor being wrecked there by 1864.

In 1862 work commenced on the construction of a jetty and pier at Victor Harbor with the railway line extended from the northern side of Port Elliot (before the cutting) being opened for traffic in April 1864.

The line of 4 miles 30 chains passed through Port Elliot (where a new station was built) and was constructed using lighter 35lb per yard rail. It also incorporated two bridges.

Watson's gap bridge built in 1906 to replace the 1863 timber structure is a 32ft span arched reinforced concrete structure.

The Hindmarsh Riverbridge erected in 1907 to replace the 1863 combined road and rail bridge is also of reinforced concrete with five spans built on the beam and slab principal.

Strathalbyn Line

As a result of pressure from the people of Strathalbyn and adjacent country areas for connection to a sea port work commenced in 1866 on a railway line from Strathalbyn to interconnect with the existing line at Middleton between Goolwa & Port Elliot. By December 1868 the first 10 1/2 miles from Middleton was opened for traffic with the whole line of some 21 miles being officially opened by the Governor on 23 February, 1869 with the first shipment of wheat being carried in the same month.

The structures and earth works on this line are most significant with bridges at the Finnis River, Black Swamp and Currency Creek along with culverts at other locations. The Currency Creek viaduct of seven spans and 76 feet above the creek bed is the highest railbridge in South Australia. The newspaper of the day reported that "the railway was admirably constructed with rails, sleepers and ballasting quite sufficient to carry locomotives" in line with the design philosophy for the line from Goolwa to Victor Harbor.

3. Development

In the animal powered era using horse traction, stables for the line were constructed at Strathalbyn, Finnis, Goolwa, Middleton, Port Elliot & Victor Harbor. Goods sheds were erected at Strathalbyn, Goolwa, Port Elliot & Victor Harbor with running sheds also at Strathalbyn and Middleton. Passenger shelters were also provided with the last of those associated with the animal powered era being demolished at Finnis in April 1980.

In the pioneering era for the railway from 1853 to 1884 the line handled 253156 tons of freight and carried 639140 passengers.

By November 1883 the inter colonial railway from Adelaide to Melbourne then under construction had reached Nairne. Building of a line from Mt Barker to Strathalbyn then proceeded being opened in September 1884.

With the introduction of steam traction in 1884 the present railway station complex at Strathalbyn was constructed and became the largest railway centre on the line, along with upgrading of facilities at the other stations. Steam locomotion was introduced as far as Goolwa in December 1884 and to Victor Harbor in April 1885.

Concurrent with the use of steam traction a branch line from Sandergrove (midway between Strathalbyn and Finniss) to Milang on the shore of Lake Alexandrina was opened. In 1925 a passenger motor service from Adelaide to Milang, and possibly the first such service in SA, was introduced on this line. The original structures remained without alteration until the replacement of the bridges on the Port Elliot-Victor Harbor section in 1906. These new bridges at Watson Gap and Hindmarsh River are believed to be the first reinforced concrete bridges in South Australia.

Rail for the line has been progressively upgraded from the original 35 & 40 lb/yd to 41lb, then 60 lb and 80lb in 1926 to suit increasing train weight while in 1958 94lb line was laid at Victor Harbor.

With the introduction of larger and heavier steam locomotives during the reign of Railways Commissioner Webb in the 1920's in a major rejuvenation of the railway system the various bridges on the line between Strathalbyn and Goolwa were upgraded by either replacing the bridge spans while retaining the original masonry abutments and piers or by constructing new and in some cases innovative bridges adjacent the existing.

After the advent of steam the method of working the line used the permissive block system which was followed by the electric staff system introduced in 1914. As part of the development of the line the current main line switch stands with their indicators were installed in 1926 with the introduction of train order working. This was another innovation first introduced in South Australia on this line.

The route of the permanent way today is substantially the original route. Apart from changes at the original termini of Goolwa and Port Elliot the route has proven satisfactory. The Strathalbyn line in 1884 was diverted from Middleton to connect with the Goolwa Victor Harbour section at a new junction, the Goolwa junction, to the north of the township.

To avoid the necessity to "back" trains into the Goolwa station the Goolwa loop was constructed in 1915 to provide a "through" line from Strathalbyn.

4. Railways in Perspective

Railways might be defined as having the five characteristics of being a specialised track, acceptance of public traffic, carriage of passengers, a measure of public control, and mechanical traction. To this definition can be added the scope for development and expansion of the system.

The first railway meeting the majority of these criteria was the Surrey Iron Railway opened in the U.K. in 1802 to provide access to a quarry as well as to carry goods and passengers over a route unsuitable for a canal. By 1825 the Stockton & Darlington railway was opened using steam locomotives for freight haulage and animal power for passengers. This railway was followed by the Liverpool & Manchester railway in 1830. By the mid 1840's railway mania was at its height with some 6800 miles of railway being opened in the U.K by 1851.

In the United States of America the U.K. developments were soon copied with the animal powered Maunch Chunk railway in Pennsylvania being opened in 1827. Steam power was first used on the Baltimore - Ohio railway in 1830 while iron rails were first used (and at 4ft 8 1/2inch gauge) on the Western Railway, Massachussetts in 1837.

Australia's first use of transport systems using specialised track was for transport of coal the short distance from the coal pits to Newcastle Harbor during 1827 to 1831 when iron rails were used while the Norfolk Bay to Port Arthur line in Tasmania was opened in 1836, used wooden rails and was hauled by convict labour.

The Goolwa to Port Elliot railway built during 1851 to 1854 is thus the first full scale railway in Australia with the isolated railway ultimately being connected into a national railway network.

The Melbourne and Hobsons Bay railway from Flinders Street Melbourne to Sandridge of some 2 1/2 miles used steam locomotives from inception and was opened in September 1854. New South Wales followed just a year later with the railway from Sydney to Paramatta, while South Australia opened its second railway from Adelaide to Port Adelaide in April 1856.

In Queensland the first railway from Ipswich to Grand Chester was opened in May 1865. Tasmania's first full scale railway from Launceston to Deloraine was opened in February 1871. By July 1879 the Geraldton to North Hampton line was opened in Western Australia while lines into forrests (for logging) had been opened some 8 years earlier. The first line in the Northern Territory from Palmerston to Pine Creek was opened in October 1889.

5. Engineers and Persons Associated with the Railway

While not exhaustive the principal persons involved with the construction and development of the railway include the following.

Hill R.T.	Responsible for the original design of Goolwa-Port Elliot line.
Rogers W.	Superintendent of construction at Port Elliot 1851.
Jones T.	Superintendent of construction 1852-69.
Hayes W.B.	Colonial Architect & Engineer 1852-55 and supervised the work of T. Jones.
Hanson W. MICE	Colonial Engineer & Architect 1860-66.
Hamilton G.E. CE	Resident Engineer for Strathalbyn to Middleton Railway 1861 & 1867.
Mais H.C. MICE MC Mech E MASCE	Engineer in Chief for South Australia 1866-88.
Moncreiff A.B. MICE MASCE FIS	Engineer in Chief for South Australia 1888-1902 and Commissioner of Railways 1902-1916.
Webb W.A.	Commissioner of Railways 1922-1930.
Chapman R.H. CMG MC MIEAust	Chief Engineer Railways 1924-1947. Commissioner of Railways 1947-1953.
Fargher J.S. CMG MCE FIEAust MI Trp	Commissioner of Railways 1953-1966.

6. Statement of Significance

The railway from Strathalbyn to Victor Harbor is of immense cultural significance because of its identification with some of the earliest and most important features of the history of South Australia. Moreover it is of national significance because it was the first fullscale public railway to be built in Australia.

It was identified with the foundation and development of the river trade, and the concomitant inter-colonial rivalry with Victoria for the control of this trade. The railway was built so that the river traders could have access to a deep-sea port, and thereby reflects features of the early history of this trade, first the dissatisfaction with Port Elliot then Goolwa. The construction of the line from Strathalbyn to Middleton, which was also built as a horse-powered railway was the result of lobbying by the inhabitants of the hinterland to have access to the river trade, and illustrates something of the nature of the issues with which early governments had to contend.

The Goolwa-Port Elliot section is significant also in that it marks the first use of 5ft 3 inches gauge then planned as the uniform gauge for Australia. With the extent of 5ft 3 inches broad gauge line in service currently being reduced due to conversion to standard gauge or being abandoned, this line, being used as a tourist railway will increase in significance.

The original railway has undergone several changes. In some places the alignment has been altered; the line to Middleton was diverted from Currency Creek to Goolwa in 1884, and in 1915 the inconvenient spur-line into Goolwa was replaced. However, these very changes mark significant stages in the history of the railway, and indeed, sufficient remains of the original alignment to permit the interpretation of this history.

The Executive committee of the ARHS in 1953 recommended the centenary of railways be commemorated in September 1954 on the anniversary of the Melbourne Sandridge railway on the grounds that for the earlier Goolwa Port Elliot railway "no further expansion and consequent economic advantage of such a railway is possible. Hence it is little better than a horse drawn road vehicle".

That the line after 31 years using horse power was converted to steam locomotive operation without alteration to the route and utilizing the original structures is testimony to the soundness of the design of the line and demonstrates that it was capable of development and expansion as originally conceived. Thus it is asserted that unlike the earlier lines at Newcastle and Tasmania, and contrary to the ARHS view of 1953, the Goolwa - Port Elliot line meets the criteria to be classified as Australia's first (full scale) railway. (The Melbourne to Sandridge railway was Australia's first to use steam locomotion).

The railway is significant because it illustrates the major features of South Australia's railway history, and the technological changes which took place from time to time. What had been an independent system was linked to Adelaide in 1884 and subsequently the line to Melbourne thus being connected to a national rail system. Then, during the nineteen-twenties much of the system was upgraded in the programme undertaken by Railway Commissioner Webb. The railway retains features which were identified with each of these changes, from the horse-powered railway period to the advent of steam, the Webb revolution and the change to diesel. Indeed the line must be seen as a transport route evolving as an engineered system illustrating changes in use of materials, methods of construction, methods of locomotion and methods of working.

This significance is embodied in many tangible items. Some of these are large and relatively permanent like the railway alignment and the station buildings, others are small and moveable like gates and switching and signalling gear. In addition, there are also other items such as ballast pits which were opened at the time the line was constructed. All are important precisely because they are identified with this significant railway, and are an aid in its interpretation.

7. Wording for Plaque

GOOLWA - PORT ELLIOT RAILWAY

Australia's first full scale railway was ready for traffic in December, 1853 and completed by 18 May, 1854. This vital link between the River Murray and a seaport captured for South Australia river trade from as far as Queensland. The railway was extended to Victor harbor in 1864 and Strathalbyn in 1869. Designed for working by locomotives, horse power was used until steam was introduced in 1884 when it was connected to the inter-colonial railway to Melbourne. Full regular services on this the first Government railway in the British Empire ceased in April 1984.

D.C. KEMP

4/6/91

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7. They Built South Australia - D.A. Cumming
8. ARHS Bulletin 168 October 1951
9. ARHS Bulletin 203 September 1954
10. Parliamentary Papers
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Dispatch 56 6-4-1850
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12. Western Australian Government Railway publication
13. NSW Railways publication
14. The Advertiser 24 April, 1869.

ITEMS CONTRIBUTING TO THE HERITAGE OF THE VICTOR HARBOR RAILWAY

Items between Strathalbyn and Victor Harbor include:

STRATHALBYN

Station complex comprising station building (1883) with signal mast and controls (c. 1926) within building, hand-operated station crane (Ransomes & Napier c. 1880's), goods shed, elevated water tank, steam engine ash pit, manually operated turntable (Edgemoor Iron Co. 1883), timber buffer stops.

SANDERGROVE - FLINNISS

Rare native species (Ac. Pinguifolia) amongst dense trackside vegetation. Earth works and railway reserve associated with former branch line to Milang (1885 - 1970).

Stone faced culverts under line dating from Strathalbyn - Middleton horse railway (1868).

FINNISS

Former horse change station on Strathalbyn - Middleton railway and site of last remaining passenger shelter (demolished 1980) associated with the horse-drawn era.

Evidence remains of former maintenance facilities.

Station yard gates and pedestrian turnstile (1880's).

Station Master's House (c. 1897)

Cream shed (wood and iron c 1919)

Bridge over River Finnis. Dressed stone wing walls, abutments and piers (1868) with steel single span truss and floor beams (1926).

Ballast pits and earthworks for branch line to pits associated with construction of Strathalbyn - Middleton Railway.

GILBERTS

Primitive steel and timber decked siding.

Culvert with wing and headwalls in dressed stone and arched brick tunnel (c. 1868)

BLACK SWAMP

Bridge over Tookayerta Creek with concrete abutments and piers (c. 1926).

Piers and abutments (west of present bridge) remain from original railway (c. 1866).

Foundations for engine watering facilities associated with conversion of line to steam.

CURRENCY CREEK

Viaduct with masonry piers and foundations (1868).

Concrete encasement of masonry piers and seven steel spans (1926).

Arched brick lined culvert with stone headwalls (1868).

GOOLWA

Earth works remaining from Goolwa - Port Elliot horse railway (c. 1853).
Superintendent's House (1852).
Former horse-railway stables (1854).
Original 1854 passenger station platform (at present Post Office).
Wharf Shed (1878).
Goods Shed (c. 1880's).
Goolwa station building (c. 1915).
"Look out for train" boards on tapered timber posts.

MIDDLETON

Railway cutting north east of road crossing on original route of Strathalbyn-Middleton line.
Bridge with stone abutments.

PORT ELLIOT

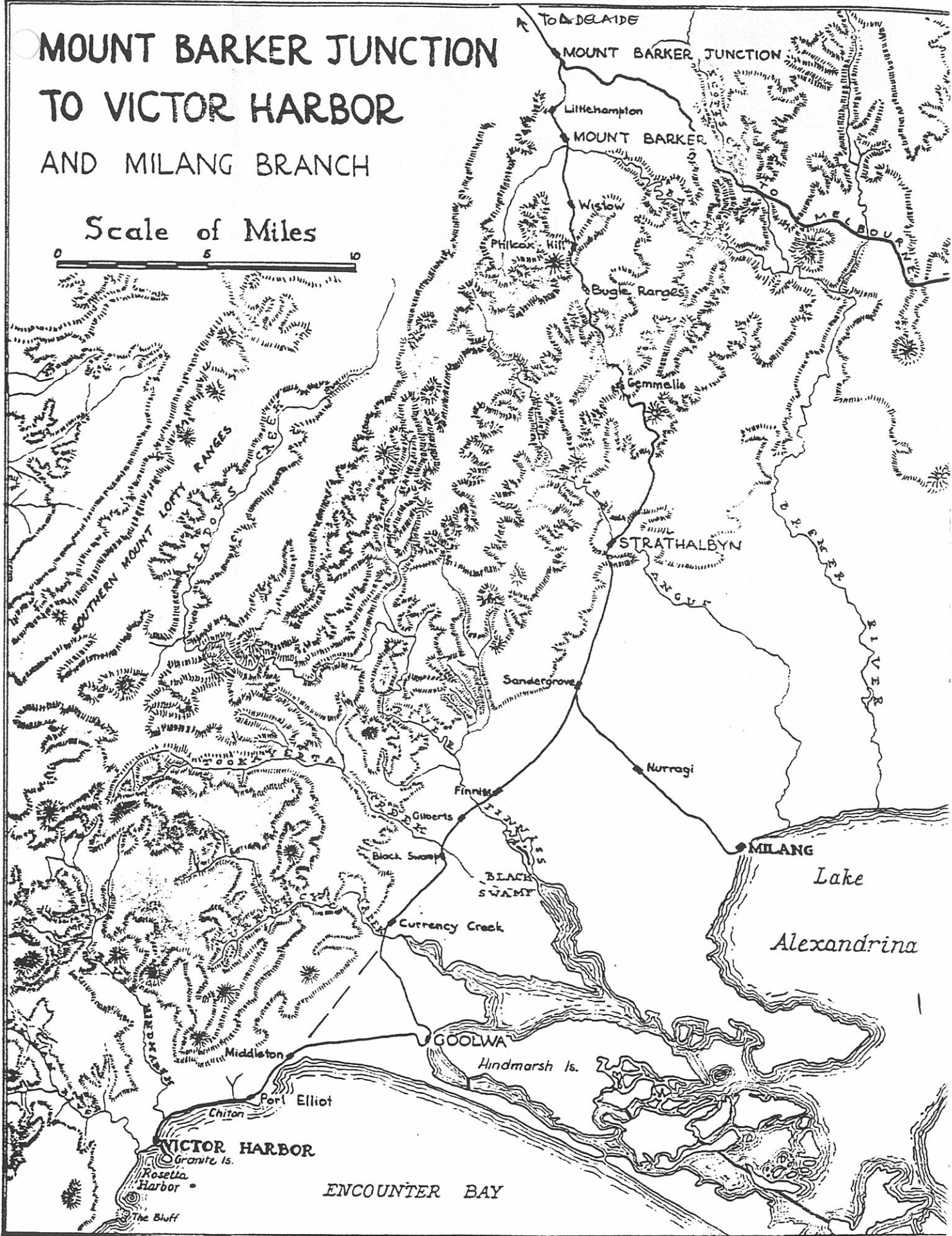
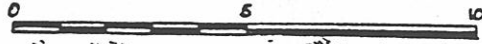
Route of original railway to Horseshoe Bay Jetty.
Station building (c. 1911)

VICTOR HARBOR

Timber piers of 1863 bridge at Watsons Gap.
Watsons Gap bridge - reinforced concrete arch (1906). The first of its kind in the state.
Hindmarsh River Rail Bridge (1907) - early reinforced bridge and the first on "beam and slab" principle in Australia (reinforced concrete girders).
Horse-railway formation on south-east side of present Hindmarsh River rail bridge.
Manually operated timber gates at Coral Street Railway Crossing (c. 1907) possibly the last in South Australia.
Bent rail "scotch block" east of Coral Street.
South Australian Government Railways knob on switch west of Coral Street (c. 1885).
Station building (c. 1926).
Goods shed stone construction (1864).
Pillar crane (timber) (c. 1864).
Station Master's House (1867).
Route of line from station to Granite Island and screw pile jetty.

MOUNT BARKER JUNCTION TO VICTOR HARBOR AND MILANG BRANCH

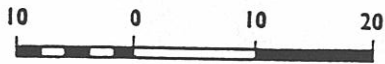
Scale of Miles



GOOLWA

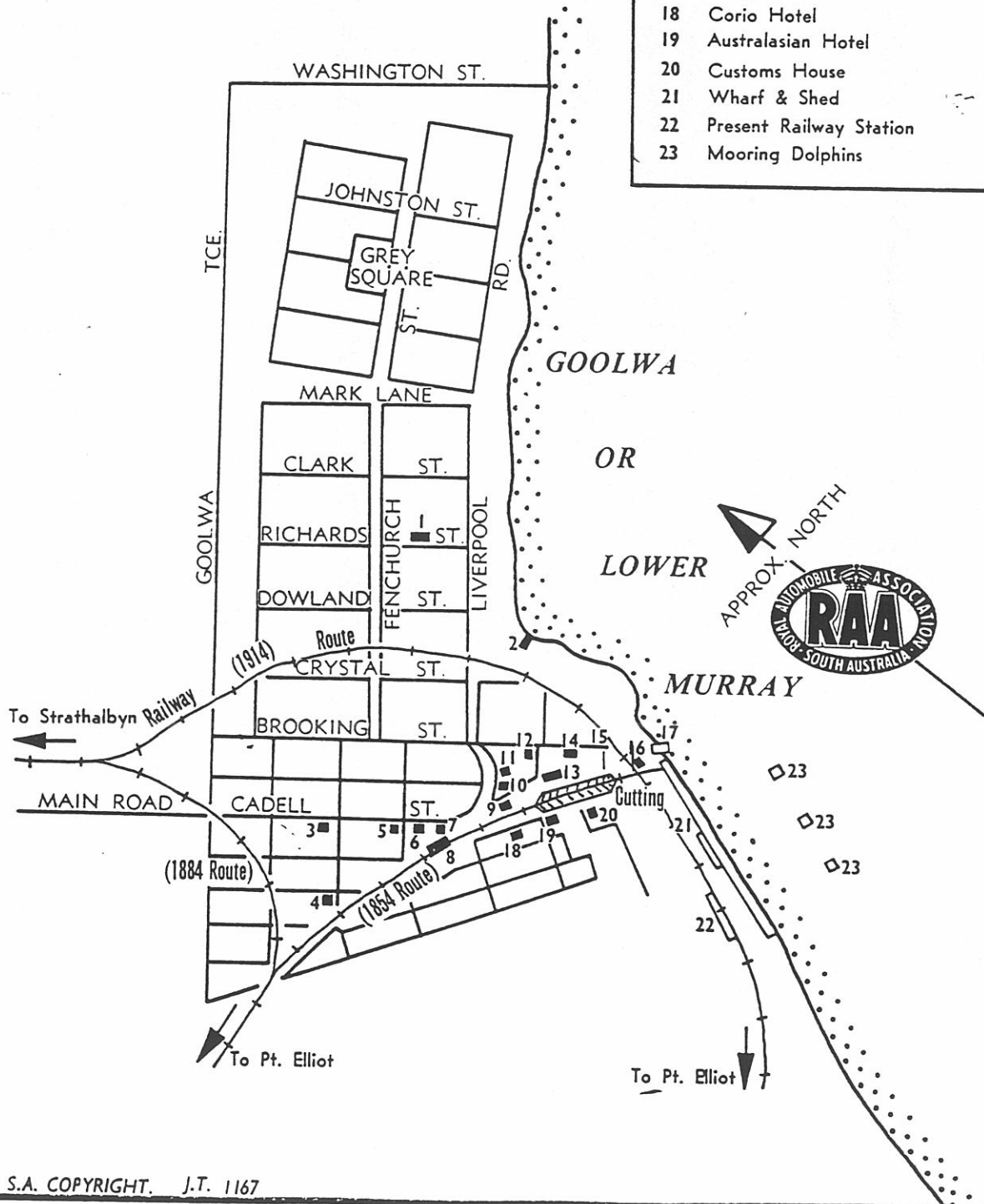
Drawn by R.A.A. of S.A. from Sketch supplied by
J. C. Tolley.

SCALE IN CHAINS



LEGEND

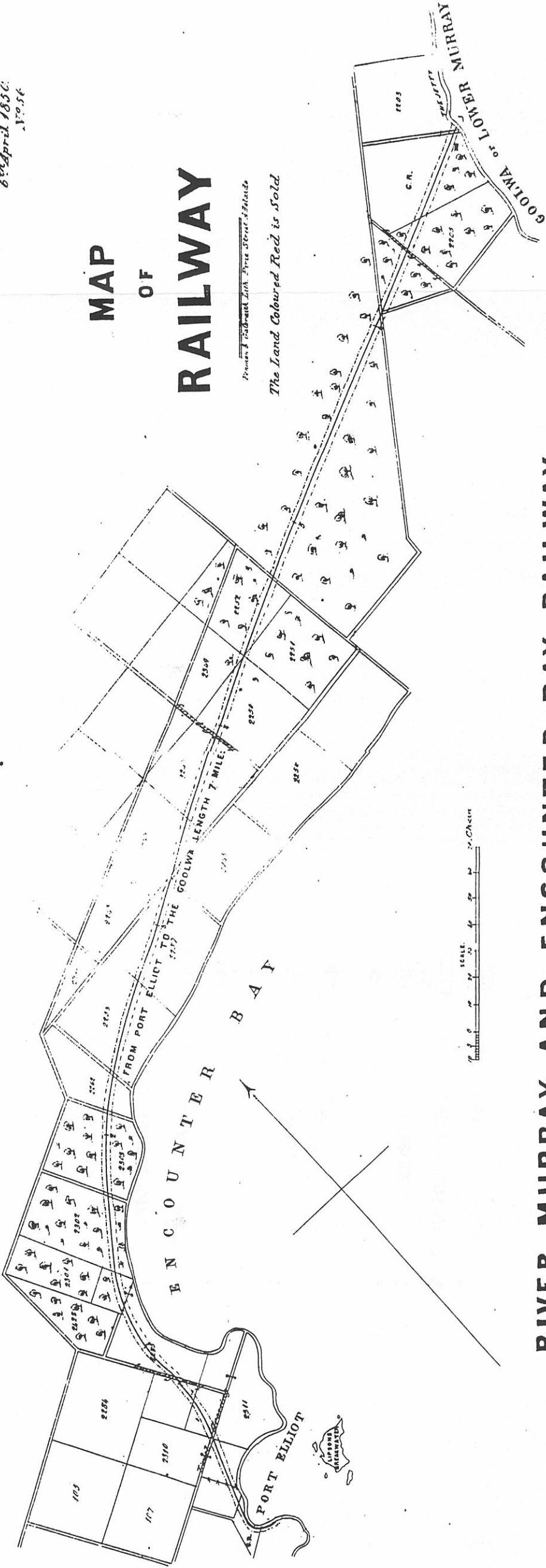
- 1 Dutton's Brewery
- 2 Goolwa Foundry Slip
- 3 Church of England
- 4 Flour Mill
- 5 Hall and Council Chambers
- 6 Goolwa Hotel
- 7 Goode's Store
- 8 First Railway Station
- 9 Post Office
- 10 Police Station
- 11 Court House
- 12 Morgue
- 13 Railway Horse Stables
- 14 Railway Superintendent's House
- 15 Flagstaff
- 16 Original Stone Store
- 17 Ferry to Hindmarsh Island
- 18 Corio Hotel
- 19 Australasian Hotel
- 20 Customs House
- 21 Wharf & Shed
- 22 Present Railway Station
- 23 Mooring Dolphins



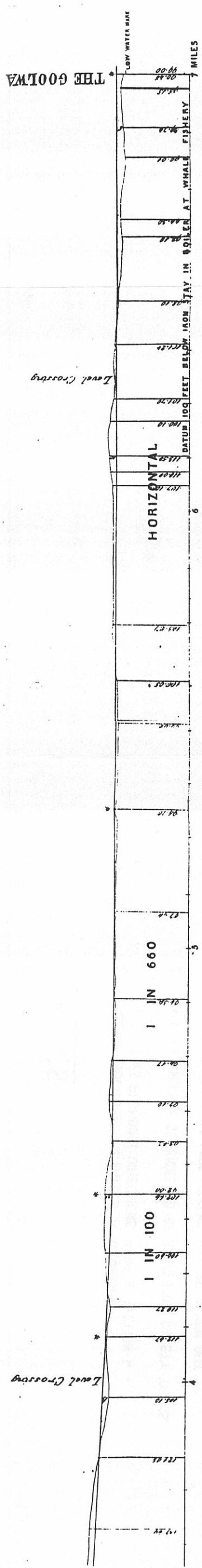
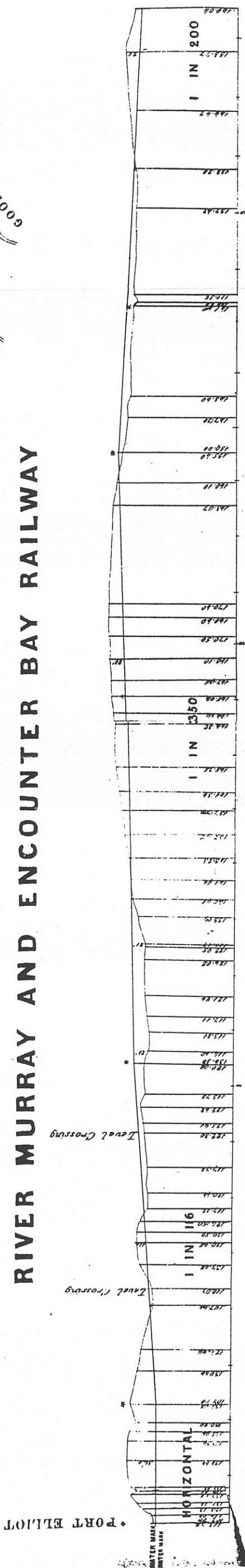
In Sir Henry Young's Despatch
6th April 1850.
No. 56

MAP OF RAILWAY

From the Harbour to the River Murray
The Land Coloured Red is Sold













RIVER MURRAY AND ENCOUNTER BAY RAILWAY



SCALES
HORIZONTAL 6 IN. 1 MILE
VERTICAL 25 FT. 1 IN.

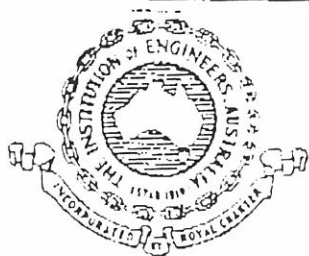
Richard F. Hill C.E.
Surveyor Harbour Commission
Gov. Office, Adelaide, March 27th 1850

LEGEND

	HOT WATER CONTROL POINT.
	COLD WATER CONTROL POINT..
	ISOLATING VALVE
	TUNDISH
	INSPECTION POINT.
	FLOOR TRAP
	RISER
	HOT WATER SERVICE.
	WALL MOUNTED BOILING WATER UNIT.
	DISHWASHER

NOTES

1. DISHWASHER TO BE INSTALLED IN ACCORDANCE WITH E&WS PLUMBING DIRECTIONS. PART 6. SECTION 4 - 7.
2. ALL HOT WATER SERVICES TO BE PLACED ON SAFETY TRAYS.
3. COLUMNS ADJACENT WET STACKS WILL BE BOXED OUT TO ALLOW CONNECTION OF NEW DRAINS TO WET STACKS WITHOUT THE CUTTING OF FLOOR PENETRATIONS.



HISTORIC ENGINEERING MARKER

GOOLWA - PORT ELLIOT RAILWAY

COMPLETED IN MAY 1854, THIS WAS AUSTRALIA'S FIRST PUBLIC RAILWAY AND THE FIRST GOVERNMENT RAILWAY IN THE BRITISH COLONIES. BY LINKING THE RIVER MURRAY TO A SEA PORT IT CAPTURED FOR SOUTH AUSTRALIA RIVER TRADE FROM AS FAR AS QUEENSLAND. IT WAS EXTENDED TO VICTOR HARBOR IN 1864 AND STRATHALBYN IN 1869. DESIGNED FOR WORKING BY LOCOMOTIVES, THE RAILWAY WAS OPERATED WITH HORSES UNTIL IT WAS CONNECTED TO ADELAIDE IN 1884 WHEN STEAM WAS INTRODUCED. SINCE COMMERCIAL OPERATIONS CEASED IN APRIL 1984 IT HAS BEEN RUN AS A TOURIST RAILWAY.

DEDICATED BY
THE INSTITUTION OF ENGINEERS, AUSTRALIA, 1992.