TROLLEY WIRE

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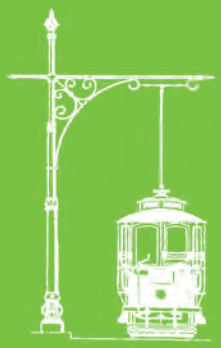

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In this issue

- The AETA's 1950 Report on Newcastle's Transport, part 1
- The Cadillac Railmotor at STM

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CONTENTS

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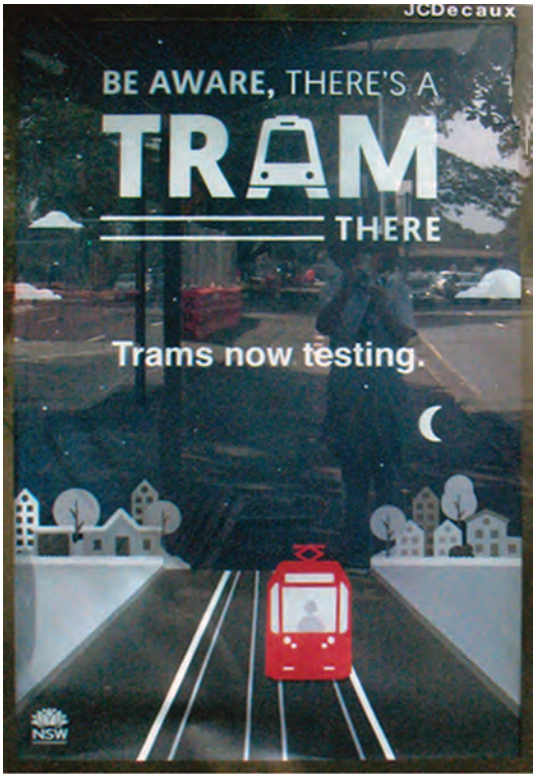

An advertisement in a bus shelter on Anzac Parade, Moore Park advising that trams are now testing, photographed on 1 March 2018. Victor Solomons

Front Cover:
The first live testing of Sydney's new light rail vehicles commenced in Alison Road, Randwick on the night of 23 February 2018. John Cowper

THE AETA'S 1950 REPORT ON NEWCASTLE'S TRANSPORT

By Dale Budd and Randall Wilson

Introduction

This article presents the report prepared in 1950 by the Australian Electric Traction Association (AETA) for the Council of the City of Greater Newcastle, on the future of street transport in that city.

Information is also given on the circumstances which led to the Council requesting the report, and on what happened after it was presented.

The report is given here substantially as it was written in 1950. Minor editorial changes have been applied, to correct typographical errors and to improve readability.

The original report had four vehicle drawings in an appendix, but it had no other illustrations apart from a photographic supplement showing the loading of buses. It did not include a map. Pictures and a map have been added for this article, as has some information on the MMTB C class trams referred to in the report. We thank John Mikita of Transit Graphics for preparation of the map, and Dennis O'Brien for identifying photo locations.

Conversely some sections have been deleted in the interests of making the length of the report manageable. The deletions are explained in the text.

Further, some addenda referred to in the report are not attached to the Sydney Tramway Museum's copy of the document. These omissions are also pointed out in the text.

A PDF of the report as it exists in the Sydney Tramway Museum's archives can be accessed at www.sydneytramwaymuseum.com.au/tramfans/.

The request for preparation of the report

A proposal for Newcastle Council to take over control and responsibility for the city's street transport was considered in 1948 but was rejected in June of that year. Following this decision the Department of Road Transport and Tramways (DRT&T) proceeded with the replacement of Newcastle's trams by buses. The lines to Carrington and Port Waratah had already been closed, in 1938.

On 19 July 1950 the Newcastle Morning Herald and Miners' Advocate (hereinafter the Newcastle Herald) reported on the meeting of the Newcastle Council held the previous evening. The Council had narrowly rejected, by 10 votes to 9, a motion to hold a referendum on the return of trams to the city. Those opposed to the motion pointed to the minimal attendance at public meetings on the issue. (It will be recalled that Newcastle's last tram line, to Waratah, had closed on 10 June 1950.)

However at the same meeting the Council decided to ask the AETA for "another report" on the rehabilitation of the city's tram services. According to the Newcastle Herald's account of the meeting, the AETA had already checked the Newcastle transport position. It had recommended the Council raise a loan

The impressive buildings of Newcastle's commercial centre overlook a coupled set headed by 148 in Hunter Street as it arrives at Perkin Street. Scotts Limited styled themselves 'The Busy Drapers' and this intersection was Scotts Corner.
Dennis O'Brien collection

AUSTRALIAN ELECTRIC TRACTION ASSOCIATION

Report on the Passenger Transport Services of the City of Greater Newcastle

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August 1950

The Hon.H.B.Quinlan,
Lord Mayor,
City of Newcastle.

SIR, We have the honour to submit a report on the administration and operation of the Newcastle Transport System by the Council of the City of Greater Newcastle as was requested in your letter of the 21st July 1950.

We have endeavoured to make this report comprehensive and it is rendered under the following general headings..

We trust that this report will be of value in determining the policy of the Council of the City of Greater Newcastle solution of the problem of the City's Street Transportation System...

for the reopening, reconstructing and modernising suitable tramway lines in Newcastle, and that it seek a temporary lease of tracks, overhead wiring, tramcars, substations and car sheds to prevent any further attempt at dismantling or disposal. There were other recommendations, and the association was asked to prepare a more comprehensive report.

It was reported that "the association has confidence in the ability of the council to operate rehabilitated tramways on suitable routes without financial loss to the ratepayers." It was clear from statements at the meeting that the Council was concerned at the cost of road reconstruction. According to Alderman McDougal "it might be possible to run some type of tram service on some routes – not the ancient trams we had before –and save a few roads from destruction. We cannot carry on with the present bus services with the roads as they are".

The report which the AETA presented to the Council now follows. The first page was a covering letter which included a Table of Contents, and this is provided as a reproduction of the original.

AUSTRALIAN ELECTRIC TRACTION ASSOCIATION

Report on the Passenger Transport Services of the City of Greater Newcastle

1. INTRODUCTION

Transportation in Newcastle was originally furnished wholly by tramways introduced in 1887. For many years the trams were steam-operated but these were later replaced by electric tramcars.

Growth of the City beyond the tramway routes in recent years has led to two major changes. The first was the inauguration of Departmental-operated bus routes penetrating areas beyond and between the existing tramway routes. The second was the adoption of a policy of substituting buses for the electric lines which, with the conversion of the Waratah tramway to bus operation this year, is now in full effect.

The AETA considers that no city authority should adopt an expedient which, while cheaper in the immediate future, will bring heavy and increasing costs in the longer term, for such expenses must ultimately be paid in some way by the citizens. It is for this reason that the association is concerned about the present all-bus set up in Newcastle. The expedient adopted by the Transport Department has already had a detrimental influence on the financial structure of the Newcastle Council. It is likely to be fraught with increasing difficulties for the ratepayers of the city when main and secondary roads and streets, not originally designed for such traffic, take the impact of heavy double-deck buses.

In addition, the problem of traffic congestion, far from being solved by the elimination of the tramcars, has been augmented by replacement bus services. There is definite evidence of a considerable increase in the number of public transport vehicles using Hunter Street. An observer from this association stationed at the intersection of Wolfe and Hunter Streets between 5PM and 6PM on Tuesday March 27th last, counted 98 bus movements in passenger traffic outbound from Newcastle. This was at a time when the Adamstown, Waratah and Broadmeadow tram services were still operating. Since the cessation of these services, the number of public transit vehicles required has added considerably to the volume of traffic on the already congested main city street.

The trend should be to reduce rather than increase the number of public service vehicles for the handling of a given volume of traffic, and the exclusive use of the bus can appreciably add to the confusion of ever-increasing street traffic. (See report by Brisbane City Council experts who recently returned from Great Britain and the U.S.A.)

To summarise the transport position generally, both from the point of view of the travelling public and the Newcastle City Council as the operating authority, it would appear that the re-introduction of a modernised and possibly extended tramway would offer many advantages over the present relatively unsatisfactory all-bus service.

Financially, as will be shown hereafter, the Council would find itself in a more favourable and sounder position, and the travelling public would be provided with a faster, more comfortable, convenient and more reliable service.

2. COMPARATIVE COSTS

The Department of Road Transport and Tramways at present is operating 206 D/D (double-deck) 59/61 seat 73 passenger capacity buses, with which services formerly provided by 97 electric tramcars and 88 D/D

buses have been replaced. The trams were all of the 70 seat "cross bench" type with a maximum capacity of approximately 105 each. They were built between l899 and 1901, and were modified for electric operation in 1923. When the electric service was introduced that year, the city of Newcastle did not possess a single modern car, and modern operation was never envisaged by the authorities when the conversion was made from steam to electric. Otherwise, cars within two years of the end of their economic life (25 years), would never have been selected to initiate services in your city.

We now proceed to a comparison of the relatively modern diesel D/D buses operating in Newcastle with electric tramcars of the most up-to-date design which could be obtained for operation on the heavy traffic routes in Newcastle - routes such as Mayfield, where the lower operating expenses of such vehicles can be demonstrated compared with the present buses.

The points which arise for consideration in an examination of relative merits of the two types of equipment are set out hereunder.

1. Lower operating costs per passenger mile.
2. Lower maintenance costs.
3. Longer vehicle life.
4. Quicker acceleration.
5. Higher schedule speed with given number of stops to the mile.
6. Greater potential speeds with a high degree of safety.
7. Ease and simplicity of control.
8. All-weather reliability and safety.
9. Higher overload capacity.
10. Ability to operate coupled.
11. Greater comfort through absence of fumes, elimination of jerks and skids.
12. Use of locally produced fuel and components.
13. Less noise and no vibration.

The comparative analysis of both the past and proposed tramway operation in Newcastle as against the present relatively modern bus service and that of Melbourne, is set out as follows.

NEWCASTLE	**Old trams**	**Proposed trams**	**Buses**
	Pence	**Pence**	**Pence**
Revenue per car mile	31.23	34	27.48
Operating expenses per car mile	28.26	25	22
MELBOURNE		**Trams**	**Buses**
Revenue per car mile		32.916	22.727
Operating expenses per car mile, including fixed charges		24.807	23.110

Note that a number of photos attributed to Ken McCarthy are believed to have been taken by Ben Parle.

A coupled set - cars 345 and 245 - moves off from Scotts Corner bound for Adamstown.
Ken McCarthy

Inbound on the Waratah line, L/P 265 has entered reserved track from Curley Road near the showground. Ken McCarthy

It must be emphasised that it will take some considerable time, say four years, before this satisfactory state of affairs would be realised. In the meantime, the Council would have to operate the Newcastle tramway system with some of the obsolete L/P class tram cars at present stored in Hamilton Depot, together with certain other used, but fairly modern corridor tramcars that can be obtained to operate the system pending the introduction of the proposed 'Newcastle Standard Tramcar' design.

We have estimated operating expenses and revenue per car mile for modern electric trams operating in Newcastle by taking the figures applying to the operation of the old L/P class cars formerly running in the city and increasing revenue per car mile by approximately 10%, and reducing operating costs by an equal amount. Justification for this procedure is that all systems changing from old trams to new trams report revenue boosts of 8% to 15% as a result of the greater attractiveness and popularity of the modern vehicles.

Similarly, because of reduced maintenance on the cars themselves and the lower levels of wear and tear on the rail, roadbed and trolley wire, operating costs of modern trams, render about a 10% reduction in operating expenses per car mile. This is despite a slight increase in power consumption as a result of more powerful motors. The topography of Newcastle is also a determining factor in arriving at operating costs, and comparative figures relating to Australian cities of similar characteristics are appended. (These figures were not available for this article.)

Bus transportation involves not only a larger number of units to render equivalent volume of service as compared with electrically-propelled vehicles but, additionally, it demands a far higher percentage of spare vehicles owing to the greater liability to mechanical defects of internal combustion vehicles. An example of this is furnished by the recent Rockdale - Brightonle-Sands conversion in Sydney. With an electric service, six regular and two spare L/P class cars were sufficient to give dependable and completely adequate transportation. The Sinclair report (Report on road passenger transport services in the Sydney metropolitan and Newcastle areas, New South Wales; by G.F. Sinclair, A.F. Andrews, E.R. Ellen. Sydney: Department of Road Transport and Tramways, N.S.W., 1950[1]) recommended conversion of this route to buses and gave nine as the number of buses required (including spares) to guarantee service. In practice, it has required no less than 24 buses which, although the route has been extended about one mile, clearly indicates the large increase in vehicles and in labour costs involved in abandoning the tram service. Finally, the service is still less satisfactory than that rendered by the eight old electric tramcars. The absence of complaints then, as compared with the spate of criticism now, is most marked.

Cost of operation

Operating costs are closely related to manpower and labour costs and to the number of units required to provide an adequate level of service. In these calculations both mechanical dependability and capacity for speed are powerful factors. It is precisely here that the electric car excels.

The table below shows the running times in minutes from Newcastle to a number of suburbs using the old L/P class cars, the existing D/D buses, and the type of car proposed for introduction pending the provision of the Newcastle Standard Tramcar.

3. TRANSPORT REVIEW

In dealing with a review of transport it is appropriate to consider the topography of Newcastle as the layout of the city and its environs has a significant effect upon transport routes and passenger loadings on both lightly and heavily trafficked lines.

[1] In the AETA's report the publisher of this document was given as London Passenger Transport Executive, Bus Section, 1949.

	L/P trams	Existing buses	Interim cars	Newcastle Standard Cars
		Running time in minutes		
Wallsend	47	45	40	33
Lambton	32	23	27	22
Waratah	35	29	30	26
Mayfield	27	23	22	20

The downtown business district is confined to a narrow area bounded by the railway and river on one side and by a steeply elevated, thinly populated residential area on the other. Beyond Brown Street the high ground descends sharply and at Darby Street the first exit throat becomes available for transport services towards the south. The existing private bus service on the 'Hill'[2] is adequate for the population as riding there is of a purely local character. West of Darby Street, Hunter Street extends through a theatre and shopping district to the south of which lies a residential area. Beyond Hannell Street, the area for residential purposes widens out on the north towards Carrington and Port Waratah, areas adequately catered for by existing bus services. Immediately South of Hunter Street runs King Street where there are a number of industrial establishments. Traffic along this artery is mainly commercial vehicles.

At the junction of Railway Street, Hunter Street, Maitland Road and Tudor Street, the route to Mayfield diverges along Maitland Road through flat terrain to the terminus at Mayfield. This road carries heavy traffic, serves a well-populated area and is most suitable for electric tramway operation because of the volume of riding, street widths and level route.

Along Tudor Street and Belford Street, the city's main artery extends over level ground, the electric tracks being laid in a central reservation apart from ordinary street traffic, a feature which is favourable both to a high speed transit service and to congestion-free street traffic movement.

This reservation ends at Adamstown Junction, the point from which roads to the Racecourse, Adamstown and Wallsend radiate. All these roads had tram services, the first and last named run through flat to undulating country, with the former Adamstown route being extremely short.

In the direction of the Racecourse, the area is considerably built up, although no regular tram service has ever been provided along that route. This report suggests that such a service be provided (see section 5).

The residential area extending along the Wallsend route is an attractive one and is being rapidly built up from Lambton to Wallsend. Beyond Broadmeadow station

[2] The Hill is an inner city residential suburb located immediately south of Newcastle's central business district.

L/P 321 heads into Lambton Hill cutting on its way to the city from Wallsend. The appearance of the track suggests that there are arrears of maintenance to be overcome. Ken McCarthy

Car 275 in Jesmond Park, headed for Wallsend.
Ken McCarthy

the greater part of the abandoned electric tramway is on a reservation or right-of-way completely separated from all street vehicular traffic (a feature we have mentioned). This would enable realisation of the high potential speed of electric traction. Over the last half mile this route reverts to street operation from Co-Operative Junction to the terminus at Wallsend. If restoration of this most valuable line occurs, it is proposed that the street laid section along Robert, Nelson and Kemp Streets be eliminated in favour of a slight diversion along the separate right-of-way (see section 5) to the original Wallsend terminus.

The remaining residential district which is of importance in any restoration of tramway services is the Waratah area. This is a somewhat hilly suburb which is traversed by the lately abandoned tramway over an undulating route to its terminus at Lorna Street (see section 9).

A notable feature of Newcastle's transportation system is that the transport routes to all the areas described above use Hunter Street, with the lines to Wallsend and Adamstown also using Tudor and Belford Streets. This results in a long, three-mile section of heavily trafficked routes between the City and Broadmeadow, with a volume of business able to be more cheaply and advantageously handled by electric tramcars rather than buses.

Loading times

The following is a table compiled by observers of the AETA of bus loading times of substituted buses shifting the after-theatre crowd at Adamstown Junction (Century Theatre).

Theatre crowd check - 19th August 1950, between 11.05 and 11.35 pm

Bus Route Numbers	Passenger Loading (persons)	Time Taken (seconds)
225	4	15
230	(fully loaded – made no stop – passengers left)	
231	19	30
227	20	25
230	10	25
232	5	10
227	10	30
225	23	50
231	8	20
27	15	25

L/P 280 swings from Georgetown Road into Turton Road, headed for Waratah. Turton Road is now a four-lane major road. Ken McCarthy

All these buses originated from Newcastle and were well full on arrival at Adamstown Junction. Slow loading is evident from the table as 114 persons took 230 seconds to board 10 buses or approximately 2 seconds per passenger (see photographic supplement) *(This supplement was not available for this article.)*

Other undesirable features observed on this occasion were:

A) Passengers waiting for a time but discouraged by inability to board their first or even second bus, finally walking instead, with loss of revenue to the transport system.

B) At least 140 persons were counted as waiting for buses after the general dispersion from the theatre had taken place. This was a small crowd, but despite at least 20 deciding to walk rather than wait, 4 were still waiting for a bus at 11.35 pm.

From many other observations under similar conditions the fact emerges that the bus is not well suited to coping with sudden unexpected overloads. This inability of the bus is a source of inconvenience to the travelling public, especially when, as so often happens, intending passengers are left waiting when full buses run through all stops.

The electric tramcar does not pass by waiting passengers and can almost always cope with crowds and load people quickly. An officer of the AETA, immediately prior to abandonment, counted 39 people boarding a tram bound for Waratah in 19 seconds.

The modern Newcastle Standard Tramcar, having fewer doors than the old L/P type formerly running, might load a little less quickly. However, because of its lower steps and wider and more numerous doors, it could be expected to load more rapidly than a bus. This is borne out by experience with corridor cars in Sydney where, despite their fewer doors, they are not appreciably slower at loading than the old footboard cars.

4. DESIRABILITY OF EARLY TRAMWAY RE-INTRODUCTION

Experience in other cities that have either abandoned their electric tramways or allowed them to deteriorate, suggests that bus substitution has usually been adopted on the assumption that money will be saved because

In Macquarie Street near the Smith Street intersection, L/P 265 is bound for Glebe. The AETA report did not recommend the Glebe line for reopening; indeed, the report makes no mention of this line.
Ken McCarthy

Coupled cars headed by 285 at Glebe terminus.
Ken McCarthy

of lower initial costs. This is a facile assumption rarely borne out in practice except in cities so small or with such a low riding habit as to make electric operation unnecessary.

In most instances the lower carrying capacity of buses, their shorter life and higher maintenance costs in comparison with electric tramcars, as well as the high paving costs incurred by municipal authorities inevitably result in much higher costs all round than first envisaged. If a desirable rapid service by public transit equipment is required, the modern electric tramcar is superior.

This report contends that the growing population and industrialisation of Newcastle requires the continuation of some electric tramways under modern conditions of operation. If this occurs, modern electric tramways can provide a nucleus from which a rapid transit system may evolve in line with the city's future population growth (see section 9). Should this not take place, Newcastle will be a city with a relatively makeshift and costly system of transportation which will ultimately become less suited to the requirements of the community.

Members of this association have noticed over the last five years the effects of general neglect of the Newcastle tramway system, including the great decline in the riding qualities of the track due to failure to repack the ballast. We note that the Department sought to take advantage of this when it decried the poor state of allegedly worn out tracks. In reality the rails themselves were generally in good condition, although some were severely worn and required replacement.

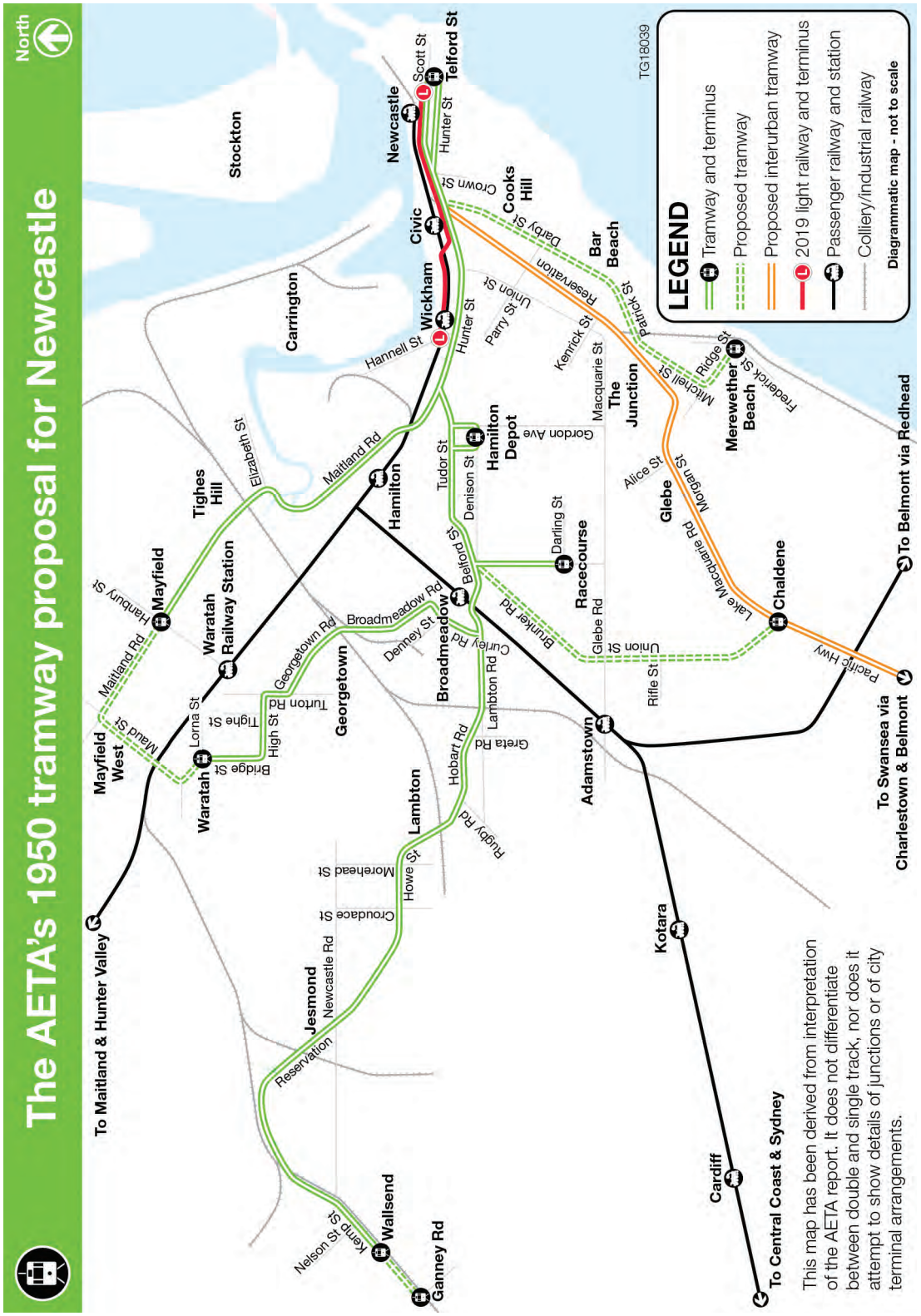
Similarly, although to a less noticeable extent, the tramcars and overhead wiring were allowed to deteriorate, with no brand new trolley wire being installed since the closing of the Port Waratah and Carrington lines in 1938. All replacement wire was obtained from those two lines for use on the other seven lines. Tramcars, although neglected, remained in reasonably good mechanical condition right up to abandonment, notwithstanding the fact that they received their last complete overhaul prior to being sent to Newcastle from Sydney when Newcastle electrification was in progress.

A primary reason for early reintroduction of the electric tramway system is the great expense involved in providing and maintaining roadways of a suitable standard to permit safe and comfortable operation of heavy buses.

On certain of the main and secondary thoroughfares of the Greater Newcastle city area which had tramway tracks laid upon them, responsibility for maintenance of the paving on that portion of the roadway occupied by the tracks together with a margin of 18 inches on either side of same devolved upon the Department of Road Transport and Tramways.

Now that all the tramway system has been abandoned, responsibility for paving the sections occupied by tracks has been shifted from the DRT&T to either the NSW Department of Main Roads in the case of main roads or to the Council of the City of Newcastle where secondary roads are concerned. Moreover, very considerable lengths of a number of tramway routes wore in right-of-way completely separated from roadways (as on the Wallsend line) or were located in central reservation in the thoroughfare away from all other vehicular traffic in Tudor and Belford Streets.

As a result of the conversion of the Wallsend route, the substituted buses are now obliged to use for the most part secondary roads which were never constructed to carry vehicles such as the heavy D/D buses. Those secondary streets, because of their lighter construction are now in a ruinous state of repair. It is understood


The AETA's 1950 tramway proposal for Newcastle
North
LEGEND
Tramway and terminus
Proposed tramway
Proposed interurban tramway
2019 light railway and terminus
Passenger railway and station
Colliery/industrial railway
Diagrammatic map - not to scale
TG18039
To Maitland & Hunter Valley
To Central Coast & Sydney
To Swansea via Charlestown & Belmont
To Belmont via Redhead
Mayfield West
Mayfield
Waratah
Waratah Railway Station
Tighes Hill
Georgetown
Broadmeadow
Lambton
Jesmond
Wallsend
Ganney Rd
Cardiff
Kotara
Adamstown
Hamilton
Hamilton Depot
Racecourse
Carrington
Stockton
Newcastle
Civic
Wickham
Cooks Hill
Bar Beach
The Junction
Merewether Beach
Glebe
Chaldene
Telford St
Scott St
Hunter St
Crown St
Darby St
Union St
Parry St
Hannell St
Reservation
Patrick St
Ridge St
Frederick St
Mitchell St
Macquarie St
Kenrick St
Gordon Ave
Tudor St
Denison St
Darling St
Alice St
Morgan St
Lake Macquarie Rd
Glebe Rd
Union St
Rifle St
Pacific Hwy
Belford St
Brunker Rd
Broadmeadow Rd
Denney St
Curley Rd
Lambton Rd
Greta Rd
Hobart Rd
Rugby Rd
Howe St
Morehead St
Croudace St
Newcastle Rd
Reservation
Nelson St
Kemp St
Maitland Rd
Hanbury St
Maud St
Lorna St
Bridge St
Tighe St
High St
Turton Rd
Georgetown Rd
Elizabeth St
Maitland Rd
This map has been derived from interpretation of the AETA report. It does not differentiate between double and single track, nor does it attempt to show details of junctions or of city terminal arrangements.

it will be necessary to expend many hundreds of thousands of pounds in reconstructing those roadways to the required standard for the continued operation of frequent buses.

From the Newcastle Herald of July 25th 1950 we have taken details and figures of expenditure necessary for reconstructing 13½ miles of bus routes operating in substitution of tramways and they are set out in the table at right.

It is evident, therefore, that from the angle of roadway construction and maintenance costs alone, modernised electric lines should be reintroduced unless an excessively heavy burden is to be imposed upon the ratepayers of the City of Newcastle.

As a direct result of the condition of the pavements, buses operating over these light-built roads are rapidly worn out by the jolting and shaking they receive, again adding to the cost of providing service.

Quite apart from the added expense to the Newcastle ratepayers, it is evident that the travelling public wishes to revert to the electric tram system for the city generally. This association has been most diligent with its observations, inquiries and studies in Newcastle. Our research suggests about 70% favour introduction of modern electric tramway services.

There are other reasons which prompt a return to tramway operation in Newcastle as soon as possible.

Safety

In considering the merits of different forms of street transport the subject of safety is an important one often neglected. In this field the tram stands supreme.

As a rail vehicle can be much heavier than a pneumatic tyred one of the same size, its construction is far stronger, giving increased protection to passengers and better stability.

As all trams are fitted with lifeguards consisting of a release gate under the bumper and a drop tray suspended behind it a few inches above the street, ordinarily, no person falling in front of it can be run over by the wheels.

With its loading wheels unprotected and its course unpredictable, the bus is a danger to pedestrians and vehicular traffic, but other vehicles can confidently run close beside a tram.

It is sometimes pointed out that tram passengers are endangered by having to cross the road to reach a footpath but it should be remembered that half of all bus passengers cross the whole street after alighting.

New Lambton	
St. James Rd. - Royal St. to Mackie Ave.	£ 20,475
Royal St. - St. James Rd. to Portland Place.	7,875
Turton Rd. - Hobart Rd. to Station St.	62,775
Russell, Rugby and Alma Rds. - Croudace to Lambton Rd.	42,525
Broadmeadow	
Lambton Rd. - Brown to Turton	46,238
" " - Turton to Howe St. Bridge	41,963
" " - Brown to Broadmeadow Junction	16,650
Broadmeadow Rd. - Curley to Christo	33,750
Georgetown Rd. - Christo to Turton	22,950
Lambton	
Croudace St. - Howe to Newcastle	17,437
Trunk Route 82 - Chatham to Lloyd	137,025
Durham Rd.- Howe to Karoola	9,338
Lloyd Rd.- Elder to Lambton	6,863
Newcastle Rd. - Steel to Croudace	24,525
" " - Croudace to Lloyd	19,800
Waratah	
Maud St.- Maitland Rd. to Lorna St.	30,825
Lorna St. - Maud to Edith	7,875
Edith St. - Lorna to Platt St.	8,325
Lambton Rd. - Young to Christo	13,163
Mayfield	
Bull, Gregson and Werribi Streets – Ingall to State Highway 10.	71,663
Adamstown	
Globe Rd. - Wood to Brunker	13,163
Wallsend	
Cowper St. - Thomas to Newcastle	32,175
Nelson St. - Level Crossing to Robert	5,850
Newcastle Rd. - Thomas to Cowper	17,550
Robert Street - Nelson to Low	5,850
Hamilton	
Tudor and Belford Streets - Hunter to Broadmeadow Junction.	29,250

The tram's most striking safety feature is its exceptionally efficient braking. Air brakes safely reduce a tram's speed at a rate which would cause any road vehicle to swerve out of control. However, the tram cannot swerve, and if it were to slide towards the obstruction with locked wheels, adhesion is increased by sanding the rails.

If air, sand and reverse power are applied in full together, there is no other vehicle of any kind in the world that can make a more violent stop. When sand is used, emergency braking is affected very little by wet or greasy rails while the danger of violently braking large road vehicles on wet streets is well known. Hand brakes are also provided mainly to hold unattended cars but they are effective if air brakes are out of order.

Traffic

In the use of available street space public transport, which must carry a majority of the travelling public, is entitled to priority over the private vehicle. However, trams have twice the carrying capacity of buses in relation to total road space used and are less obstructive to other traffic, provided they are of modern design and capable of keeping their position in the traffic stream.

Multiple-unit operation

New cars built for the system should be of the multiple-unit type. The cost of this equipment is not much higher than that of fairly similar remote control systems used in many cities and the benefits would far outweigh the slightly higher cost of such equipment. Multiple-unit operation combined with use of modern automatic couplers permits the ready adjustment of service to traffic demands especially in peak hours as in Adelaide and Sydney with minimum increase in labour costs.

Finally, in this review of transport, it is suggested that tramway services be restored in the following order:

a) Telford Street to - Waratah
b) " - Broadmeadow Racecourse
c) " - Mayfield
d) Parnell Place to - Wallsend

The first two lines should be re-introduced as soon as possible as there are no serious difficulties standing in the way (see section 6). In the case of the latter two, track relaying and overhead trolley wire replacement will be necessary in part, and will result in a somewhat later date for reopening.

When the electric service is restored, corresponding bus services should be discontinued. The saving effected in the number of buses required should be used to replace over-age low-bridge and other type buses still in service.

It should be emphasised that restoration of tram services would have an immediate beneficial effect on the paving in those areas by greatly reducing the total number of bus movements and thus lengthening the life and reducing the maintenance required on roads along tramway routes.

5. TRAFFIC OPERATION

The financial stability as well as the popular endorsement of a transit system is largely bound up with the manner in which the operation is managed. The service must

An inbound tram on the Merewether Beach line is about to turn from Patrick Street into Darby Street; historian and Sydney Tramway Museum founder Ken McCarthy is filming using a tripod. The AETA report suggested that the possible reopening of this line was a later priority. Ben Parle

The depot for Newcastle's trams and buses, in Gordon Avenue, Hamilton. Acquisition by the Newcastle Council of the depot and plant was one of the recommendations of the AETA report. Ken McCarthy

provide a stimulus to riding, lead to the economical use of vehicles and manpower, and be satisfactory to staff. Periodical checks by traffic checkers should determine the volume of service on any given line but under no circumstances should the service interval be in excess of 15 minutes and preferably not more than 12 minutes. This is especially the case for cities such as Newcastle where riders will, if the wait is too long, prefer to take a taxi or walk, resulting in a loss of revenue to the operator.

Regular headways (as the interval between cars is called) are customary on city transit lines but it is not essential that such headways conform to the usual intervals of 5, 10, 12 or 15 minutes. From an operating point of view, it may be more convenient for services to be provided at 7, 11, 13 or l4-minute intervals.

The following two examples show the relationship between service frequency and the number of trams required to provide a certain level of service. Service frequency, or the time interval between vehicles, is divided into the round trip running time plus layover. In example A, adopting a 13-minute headway in place of a 12-minute headway results in a saving of one tramcar in the provision of the service.

A) Running time, round trip: layover.
Newcastle to Waratah - 65 mins. with 13 minute headway uses 5 cars.

B) Running time, round trip: layover.
Newcastle to Waratah - 72 mins.
with 12 minute headway uses 6 cars.

Experience in Newcastle in the past suggests that the operation of trams in coupled sets had a distinct advantage in rush hour service. However, it is important that use of coupled sets is restricted to these times. To do otherwise would prejudice the frequency of services at off-peak times - an abuse commonly practised on lines operated by the NSW Transport Department.

It is therefore proposed that the new Newcastle Standard Tramcar should be a multiple-unit car capable of being operated singly or in short trains of two or three cars. This would be a great advantage in handling heavy traffic on the Wallsend and Mayfield routes which are ideally suited to a fast electric service.

City to Broadmeadow

As stated in the schedule, services on the Telford Street and Broadmeadow - Racecourse Waratah line would be introduced at once as one line. It is proposed that Telford Street in the city be the temporary terminal and that at an early date a loading island be constructed in the wide part of Hunter Street on the left side opposite Pacific Park. This island should be two cars in length, thus allowing free movement of motor traffic past stationary trams. The retention of the Hospital spur and a small portion of reserved track between Zara Street and Telford Street for storage of cars when necessary, is desirable.

Construction of a safety zone would be desirable at the Civic Theatre due to heavy loadings brought about by the proposed bus terminal in the vicinity together with the size of amusement crowds.

The Waratah line was formerly operated as a single line from Boreas Road to the terminus, with one passing loop at Tighe Street. The safe working was operated by the obsolete 'Staff and Ticket' system. We propose that the 'Forest City' automatic colour light system be installed in place of this for single track operation. The frequency of service on this route will be have a major influence on the success or otherwise of operating this section of line.

Tram stops on this route should be as follows:

In a picture probably taken between March and June 1948, a coupled set stands at Wallsend terminus after defects in the bridge in the background caused the line to be cut back by some 100 metres.
R. Brewer via Peter Neve

(The report then gave a list of 34 stopping places between Zara Street and the terminus at Lorna Street, Waratah; followed by a list of four stops on the Racecourse line from Chatham Street [Century Theatre] and the terminus at Mandalong Road. A shuttle service was to run from Telford Street to the Racecourse.)

6. GENERAL EQUIPMENT - CARS AND PLANT

On the 19th and 20th of August last, a delegation of the Public Relations Committee of the AETA together with certain qualified men made a tour of the lately abandoned tramway system of Newcastle. We list our findings of the general condition of the routes below.

(The report then gave detailed information on the condition of track and overhead wiring on each line. The section from Telford Street to Broadmeadow – Racecourse is retained as an example.)

TELFORD STREET TO BROADMEADOW - RACECOURSE

Overhead

Trolley wire: suitable for 12 months of trouble free operation, then general maintenance.
Span wire: good condition. Poles all in good order. Feeder cables all intact.

Track

From span pole 161 (Adamstown Junction to Newcastle):
General cleaning of all track drains throughout. Ballast and crossover in good order.

Span poles 154-153: new sleepers on both roads. The introduction of tie rods on curves.

Span poles 148-149: To be re-sleepered prior to commencement of service (for both lines). 90 sleepers are required.

Span poles 144-145: New rail required on the up Newcastle road.
Opposite span pole 142 in Tudor Street: Along the road crossing both up and down roads need new rail.
Span poles 134-136: On the up Newcastle road new rail is needed, will need early replacement.

Span poles 126-125: Early replacement of down Newcastle road.
The tram stop at span poles 122-123 up Newcastle road needs new rail.

(Details of other lines have been omitted for the purposes of this article. The retention of the Ivy Street permanent way yard was considered essential – the only such yard for the Newcastle system. It was mentioned that no loop would be provided at the Racecourse. The report advised that Union and Darby Street Junctions should be removed prior to commencement of service. (These were the junctions for the Glebe and Merewether Beach lines respectively).

Tickets

The type of tickets used in Adelaide is recommended for adoption by the Council (examples appended). (These tickets were not available for this article.)

Points and frogs

Experience in other Australian cities suggests that the practice of the NSW Transport Department should be

Chicago PCC 4062, pictured new in about 1948. Its three doors per side layout is similar to the proposed Newcastle Standard Car. Chicago had the largest fleet of PCCs in North America – 683 cars.
Chuckman's collection website

departed from and that standard tramway practice in the matter of points and crossings be followed. This involves use of special work of hardened manganese steel and single blade switch points, thereby reducing track maintenance charges.

Current collection

Modern trends in current collection indicate that carbon insert trolley shoes (in place of trolley wheels) largely eliminate dewirements, reduce maintenance and greatly lengthen the life of the trolley wire.

In Europe, bow collectors are almost universally employed but their use has not found favour with English-speaking operators.

All new trolley wire should be of the grooved type general on all modern tramway installations. This wire has a longer life than the round section favoured by the NSW Transport Department.

Power distribution

On rebuilding the Wallsend line, performance of cars would be greatly improved if a fully automatic small mercury arc rectifier station of 250 kW capacity and requiring no staff is constructed at Wallsend on the site of the old steam tram depot.

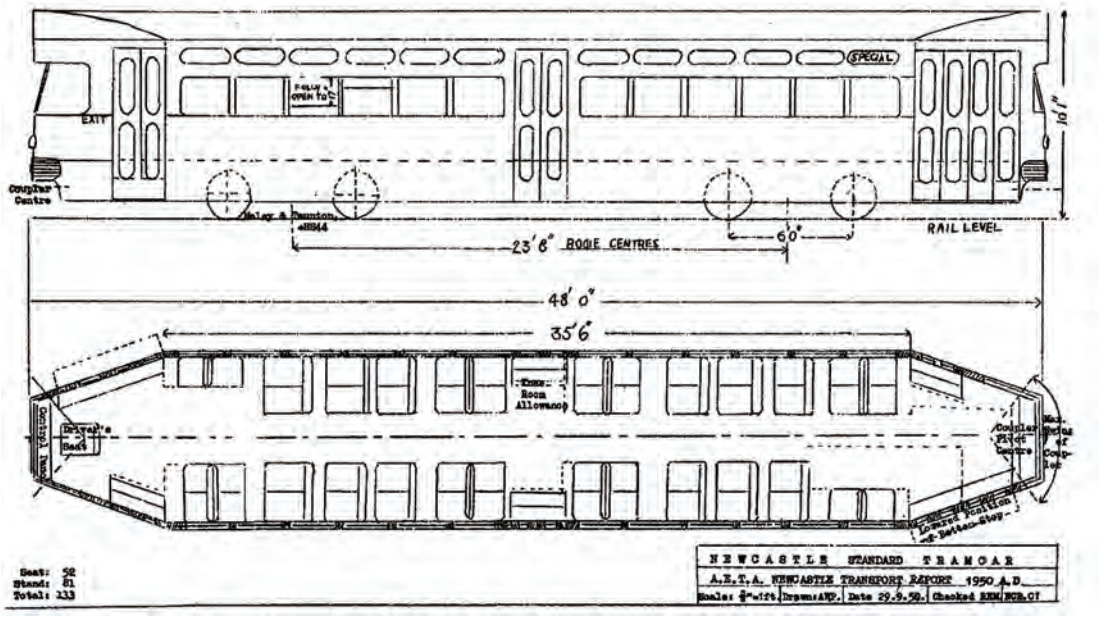
Track centres

This association recommends that upon relaying of tracks they be constructed to 10ft. 6in. centres. This will permit cars 9ft. wide to be operated eventually.

PCC cars

The Presidents' Conference Committee Car (PCC) is the revolutionary modern type tram car introduced in the U.S.A. in 1936 and since extensively adopted in Canada, the U.S.A. and Europe. This car has a balancing speed on level tangent track of 42 mph. Acceleration is

Coupled sets of either two or three cars were proposed by the AETA report. Multiple-unit operation of PCC cars in the USA was the exception rather than the rule, but Shaker Heights Rapid Transit ran three car sets on its line into Cleveland. This picture was taken in 1969.
Doug Grotjahn, collection of Joe Testagrose



at the rate of 4.75 miles per hour per second and service braking at the same rate. Schedule speed is 15 mph, with six stops to the mile (conventional cars 11 mph.)

The car is equipped with power operated doors and partial air-conditioning. Approximately 5,100 are in use in North America, Chicago alone having 930 cars of this type. PCC type cars are coming into use in Europe and the cities of northern England and Scotland.

Newcastle Standard Tramcar

Proposed for adoption by the City Council is the car which has been referred to throughout this report by the above title.

A plan of this tramcar forms part of this report. It is a 52-seat double end, double truck four motor tramcar with power operated doors. It is proposed that PCC-type trucks and control gear of Crompton Parkinson manufacture be installed on these cars. This firm has the English rights to manufacture PCC equipment and purchase from that source would involve no currency problems. Acceleration, braking, maximum speed and general performance would be similar to that of the PCC car previously described.

Contracts for the manufacture of the bodies and interior car fittings should be let to local firms. The estimated cost of each car on present price levels would be around £10,000. This may appear a large sum for one tram when we hear of Brisbane and Melbourne building trams for much less, but it must be remembered that those cities had on hand stocks of some of the component parts and that the Newcastle car would be of a far more up-to-date design than any other tram in Australasia.

To be continued.

Chicago PCC 7100, built by St Louis Car Co and photographed about 1951, around the time that the AETA's Newcastle report was being considered by the DRT&T. Streetcars finished in Chicago in June 1958; many of the components from the PCC cars were re-used in rapid transit vehicles.

www.thetrolleydodger.com

THE CADILLAC RAIL MOTOR AT THE SYDNEY TRAMWAY MUSEUM

By Dennis O'Brien

Introduction

Dennis O'Brien, Member No. 91, was an apprentice motor mechanic in the early 1960s and, after joining the Museum in December 1962, found himself some months later working on a Cadillac rail motor that had been acquired by other members. Dennis recounts those early years working on and also driving this interesting vehicle that was the first rail vehicle to operate in public service at the STM.

An overview

"We need a pumper" was the catch cry in the early days of operation of this rail vehicle at the old National Park site at Loftus, as early members will remember. The procedure was required to enable petrol to be supplied to the engine under pressure from the fuel tank.

Originally this vehicle was part of the J & A Brown coal mining empire, and ran in traffic from approximately 1938 until 1949. The conversion from a road vehicle to its present form was carried out, in house, by the Hexham Engineering Company, Hexham.

After withdrawal it was set aside in the confines of the locomotive depot at Richmond Main colliery under cover.

Many members' first sightings of the rail motor was on the occasion of the Australian Railway Historical Society's tour on Sunday 17 June 1962, when it had been pushed out of its secure area for inspection and photography. Member John Shoebridge, who was employed by the company, was the tour guide and spared nothing to ensure the smooth running of this outing.

Soon after the company decided to start to dispose of some of its assets and the Cadillac was one of the items on its list. John, together with his brother, felt that this item could be an asset to our museum to allow visitors to undertake a demonstration ride along our tramway and acquired it for £25.

Transport enthusiast Eric Law was the proprietor of a towing firm located at Beacon Hill and was he engaged to pick up the unit on Sunday, 29 September 1963. It was delivered to the Museum's National Park site the following Saturday afternoon.

An assessment was undertaken to establish what was required to return it to operational condition. Several minor parts were missing. It was also detected that the engine was in a locked position after standing for so long not being used.

All spark plugs were removed and the cylinders were filled with lubricating oil in an attempt to free up the engine. With the guidance of Laurie Gordon's copy

The Cadillac arrives at Loftus being towed by Eric Law's tow truck on 5 October 1963.
Dale Budd

D scrubber car 134s was used to rescue the Cadillac after it failed in service at the south terminus. Richard Jones

of *Dykes Automobile and Gasoline Encyclopaedia* the various system were serviced and made functional again. Barry Tooker happened to be standing beside the engine when it began to turn over and was sprayed with displaced oil from the cylinders, amidst much mirth from the watching crowd!

The engine was finally coaxed to start, emitting copious amounts of blue smoke, at the same time all work stopped at the museum where members downed tools to enjoy the experience of witnessing and riding on its first run over our tramway.

Further work was required before the unit could be used in traffic including turning down the wheel flanges, minor body work, painting and the fitting of conductor's running boards. Most of these tasks were undertaken by Ken McCarthy and Richard Clarke. Richard's Morris Major sedan suspension was fully tested with each rail wheel being placed in the boot of the car to be taken away for re profiling at Gordon Marr & Sons, iron founders, in the suburb of Waterloo. Richard reminisces that the impression of the wheels were still in the boot mat when he sold the car.

The Cadillac enters museum service

It was decided by the Museum board that a limited demonstration rides would commence on 1 January 1964. They operated as required until electric operation commenced in the following year.

During January 1964 the railmotor was actively employed carrying visitors and members of the Church of England Boys Society who had established a camp for a fortnight adjacent to our museum site. A basic half hourly service was provided and special card tickets, printed by our friend in Melbourne Geoffrey Dean, were issued. Common questions or comments from the younger visitors were:

The Cadillac is returning to the depot yard and passes L/P class 154 standing on the depot siding. Dale Budd

The Cadillac at the Museum's southern terminus with a full load of passengers.
Dennis O'Brien collection

How do you steer it.?
I have never seen an old bus like this one before.

The Cadillac proved to be a popular working exhibit on open days and generated much goodwill for the society with our visitors.

Failure in traffic

On 3 January 1965, late in the afternoon, the Cadillac became a total failure at the South terminus with a blocked fuel filter. As described in the February 1965 issue of Trolley Wire, the call went out for a tramcar to come to the rescue of the stranded passengers. Being the only tram readily available, D class scrubber car 134s was driven down to the terminus. After transferring the passengers back to the Museum, 134s returned to tow the errant Cadillac back to the depot.

Retirement from service

From January 1964 until the museum was officially opened on the afternoon of 13 March 1965 the rail motor was used as required. It was in traffic on that day and undertook a couple of runs in the late afternoon. With the introduction of the electric service the vehicle saw very little use, and it was later relocated to a garage in Belfield to provide additional space at the museum premises.

It was again moved to the No. 1 roundhouse at Enfield locomotive depot on Saturday 23 September 1972, becoming one of the many exhibits on display at that location then occupied by the NSW Rail Transport Museum.

Due to a change of government the Enfield site had to be vacated and the rail motor was returned to Loftus. It was stored off rail until it was acquired by the Richmond Vale Railway Museum where a full restoration is currently taking place.

Acknowledgements

Grateful thanks to Richard Clarke for additional information, and to Martin Pinches for assistance with the preparation of this article.

A side view of the Cadillac at the entrance to the depot yard.
Dennis O'Brien

Published in *The Empire*, Monday 20 September 1909, page 3.

THE SPECIALLY CONSTRUCTED TRAM THAT WILL CONVEY PRISONERS FROM DARLINGHURST GAOL TO THE LONG BAY PENITENTIARY

It is stated that the tramway officials are rather at a loss to find a name for the new prison tram which is to run from Darlinghurst to Long Bay, so that ordinary passengers will not try to board it. The writer of the following lines is firmly assured that no name is required; the '948' will soon be as famous as the 'Black Maria,' and no matter how desperate the hurry of a citizen to catch a tram, he will take good care not to be a voluntary passenger in '948'

THE 948

This car is a through one, no sections or fares.
Though the 'fairs' are in sections, reserved seats are theirs.
And the signal displayed when they stop at the gate
Is "She's running to 'time,' the 948."

A riddle, your aid, to solve me I .seek.
O learned Professors of Latin and Greek —
Why those who run crooked are made to run straight
From the Oxford-street Circus to 948?

Seen Fred, Tom? The last time I saw him about
He was doing some cadging, and asked me to shout.
What! Haven't you heard of his Long Bay Estate,
Where he's gone for the "rest cure" in 948?

A Jack Tar indulging — he's had a fine trip.
Been the "Pride of the Watch, Sir!" the "Cock o' the Ship."

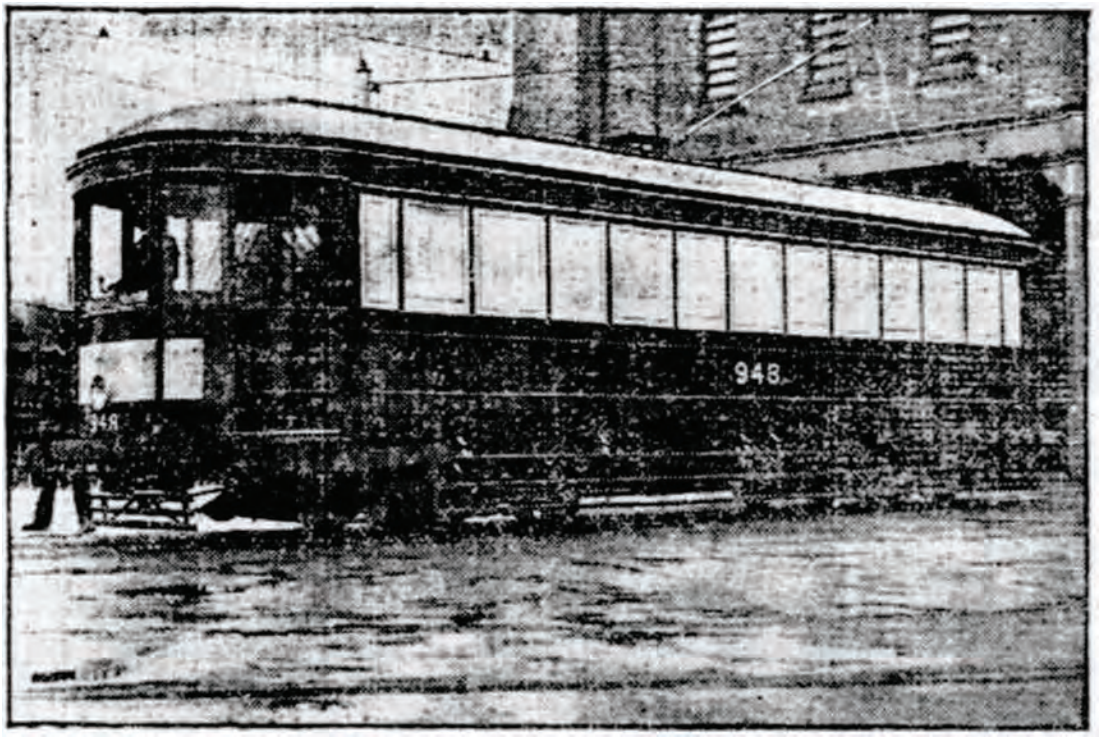
"Three months" your next, cruise is, as guest of the State.
So take the first tram, Jack, the 948.

Real history of England, we're told, first began
With the Roman invasion, and Bill was the man:
But in future there's many will have chance to state
They started their history in 948.

A racecourse – a meeting – a crowd on the Flat
And a flat in the crowd – and three cards on a hat;
A "bolt from the blue," but they started too late,
So they're booked for a tram ride in 948.

A Judge and a Jury – a prisoner on trial,
A wife in the Court vainly trying to smile;
"Discharged" by the Judge, and she waits at the gate.
"Thank God you have missed it!' — the 948.

G. A. H.



HERE AND THERE
AUSTRALIAN AND OVERSEAS NEWS

Vale David Burke OAM

Noted railway historian and author David Burke passed away on 17 March 2018, at the age of 90.

Born in Melbourne, David achieved prominence when, as the editor of the Young Sun section of the Melbourne Sun newspaper, he persuaded the Victorian Railways in late 1954 to run Puffing Billy for just one more time, as a Young Sun event. The railway had ceased operation in August 1953. The spectacular success of the first and following trips provided a platform for the preservation society to get started.

Later David became a railway and tramway historian, with more than 30 books and other works to his credit. He also wrote on other topics, particularly Antarctica. In his writing he focused on people rather than technical information. He wrote Juggernaut, about Sydney's steam trams, and One American Too Many, about Joseph 'Boss' Badger, controversial and forceful manager of Brisbane's tramways.

When the Sydney Tramway Museum reorganised its membership structure in 1986, David became the Museum's first Friend, number 2001.

He was awarded the Medal of the Order of Australian (OAM) in 2005, for service to the community as a historian and author, particularly through the preservation and promotion of the history of rail transport in Australia and exploration in Antarctica.

As a founder of railway preservation in Australia, David will be greatly missed.

- Dale Budd

Adelaide

William Adams

Preparing the new Citadis trams for service

Work on preparing the three Citadis trams that arrived in Adelaide from Madrid in December 2017 continued during February and March.

Car 207 (formerly Madrid 150) was seen in the north yard of Glengowrie Depot during early February with Adelaide Metro decals having replaced its Madrid operator's identity. Car 208 (formerly Madrid 154) was tested along North Terrace on 8 March and entered regular service during April.

Citadis 204 – flipped pantograph

Citadis tram 204 suffered a flipped pantograph at the intersection of King William Street and North Terrace on 9 March while running from Hindmarsh to Glenelg. The incident disrupted tram services and led to major traffic delays because it occurred just before the Friday afternoon peak during the Adelaide Festival. Flexity tram 111 was used to tow the disabled Citadis car back to Glengowrie Depot. Following repairs, 204 re-entered service several days later.

Tramway extension update

Work on the tramway extensions to East Terrace and Elder Park continued until mid-February. However, there was little progress in the month that followed because of activities relating to the Adelaide Festival of Light that took place on North Terrace as part of the Adelaide Fringe. Tasks undertaken from mid-February to mid-March related to the placement of road kerbing, modifications to footpaths and construction of tram stop platforms.

Sydney's CBD & South East Light Rail goes live

Overnight on the evening of 22-23 February, initial testing took place along the stretch of track between Doncaster Avenue and Lang Road in Alison Road, Randwick. Sydney Tramway Museum member, John Cowper was there to record the event and said the excitement of the team was evident as Sydney's first new Alstom Citadis X05 was put through its paces.

Two trams have now been delivered, and testing is continuing with the trams loaded with 24 tonnes of sandbags to represent a full passenger load, and clocking speeds of up to 70 km/h. The trams' ability to apply an emergency brake application and stop within a short distance is impressive.

Testing of coupled cars commenced around midnight on 10 April, towards Kensington Junction.

- additional information is included in the notes from Loftus, elsewhere in this issue.

Ryde tramway monument

Ryde City Council has relocated the tramway monument close to its original position at the corner of Church Street and Blaxland Road. The monument was originally located at the junction of the Ryde Station line which curved into Church Street, and the line to Hattons Flat (now Top Ryde) which turned right to the terminus a short distance to the west. The monument was moved due to road widening and was last located in the former bus terminal. When the terminal was moved the monument was placed in the garden behind the Ryde Council Chambers.

The monument was erected by the Municipality of Ryde to commemorate the extension of the tram service to Ryde. It was unveiled by the Hon. C A Lee, MLA, Minister for Public Works, on Saturday 12 December 1908.

The tramway monument in its original position at the corner of Church Street and Great North Road (now Blaxland Road).
National Library of Australia

The monument in its new location at the corner of Church Street and Blaxland Road, photographed on 13 April 2018.
Robert Merchant

BENDIGO

BENDIGO TRAMWAYS

1 Tramways Avenue, Bendigo, Victoria 3550 www.bendigotramways.com

Dan Rutherfurd

Bendigo No. 7 launch

Saturday 9 December 2017 saw us launching our latest showpiece, No. 7. With about 110 donors and tourists coming to see the exemplary restoration work, there was general agreement that the day was a resounding success. When crew training is completed, we expect No. 7 to appear regularly on the Bendigo system.

Repairs to No. 44

Following an accident last year, No. 44 was withdrawn from service pending repairs to the driver's cab. The repairs have been completed, and the tram is expected to return to service soon.

While No. 44 was in the workshop, new doors were fitted to the driver's cab bulkhead. This followed the success of a similar modification to No. 25 several years ago.

Upgrading Yarra Trams No. 961

No. 961 arrived in Bendigo in December 2017 and work has begun to upgrade the tram to a W8. Current tasks relate to removal of any asbestos, and tagging and removing each component from the tram. Once removed, components are categorised as being fit for reuse, suitable as spare parts or unusable because of obsolescence.

Santa Tram

Year by year the popularity of the Santa Tram is increasing. In the lead up to Christmas 2017, we offered an additional 17 services, resulting in a total of 89 services being run. In all, 2718 passengers joined in the festivities, with families being treated to an exciting and fun-filled ride while they searched for Santa.

Track repairs in November 2017

We thank everyone for their patience during a three-day shutdown of all services. The shutdown was necessary to complete some major replacement and repair works on several sections of our network. Major repairs to the Nolan Street curve and Cathedral curve were completed by Downer Rail, with smaller spot fixes in other locations being completed in-house.

We expect to be completing the next stage of our repair works later in 2018, with planning discussions already under way with the City of Greater Bendigo.

The launch ceremony at Bendigo depot on 9 December 2017. Bendigo Tramways

FERNY GROVE

BRISBANE TRAMWAY MUSEUM SOCIETY
PO Box 94, Ferny Hills, Queensland 4055 www.brisbanetramwaymuseum.org

Peter Hyde

The Museum recently received advice that the Brisbane City Council had approved a grant of $49,500 under the Building Stronger Communities program, with the funds going towards the cost of re-roofing our No. 1 tram depot. The grant equates to almost half the expected cost of the project. The existing corrugated iron roof on the depot comprises sheeting obtained when Ipswich Road Depot was dismantled. Now 91 years old, the old roof has certainly stood the test of time, and no one can complain about the quality of materials used then.

Another recent grant from the Council under the Men's Shed Grant scheme has provided $18,370 for the purchase of a new lathe and milling machine for the workshop. This has prompted a re-organisation of the layout of the workshop with all metalworking equipment being moved to a new location in the

The Museum recently received funding of $18,370 from the Brisbane City Council's Men's Shed Grant scheme for the purchase of a new lathe and milling machine. They are shown here awaiting setup after delivery. Peter Hyde

southern side of the trolleybus building. The changes mean that more space will be available in the future for woodwork projects.

When the main tram workshop was built about 16 years ago, the embankment separating it from the next higher level of the complex was left mainly as an earth slope because of lack of finance. The prolonged wet season this year has caused erosion, requiring the construction of a retaining wall. This was completed recently and the area is now almost backfilled and grassed.

It may have taken 16 years but erosion caused in the unusually wet summer this year has finally prompted construction of a retaining wall between the woodworking shop and the main workshop. Peter Hyde

Work continues on restoration of Dreadnought 136, FM 400 and trolleybus 34.

As usual, evening tram operations was conducted on 13 April to commemorate the anniversary of the date when the last tram ran in Brisbane 49 years ago. A clear and warm night saw good crowds enjoy the tram rides and food stalls.

Restoration of Dreadnought 136 has reached the stage of laying flooring. To prevent movement of the floorboards, which would crack the malthoid surface, underlay is being laid first. Peter Hyde

Above right:
Single-truck cars ten-bench 65 and Baby Dreadnought 99 await their turn of duty on 13 April. Ian Martin

Dropcentre 341 is ready to start its journey with a full load during our night operations on 13 April. Ian Martin

Two lads have commandeered the best seats (they will be beside the driver) as another passenger takes a phone photo while waiting for departure time on 13 April. Ian Martin

WHITEMAN PARK

PERTH ELECTRIC TRAMWAY SOCIETY (INC)
PO Box 257, Mount Lawley, Western Australia 6929 www.pets.org.au

Michael Stukely

Traffic operations and service cars

Perth experienced unusually mild weather conditions in the summer months, with just one running day being lost due to bans imposed by the local authorities on days rated with high fire danger. There were good levels of patronage on the trams, with services on seven days per week as usual in the summer school holidays.

Melbourne W7 1017 was the main service car for much of the period, with regular backup provided by W2 329, and with Fremantle 29 also running occasionally.

Hayden Holmes again travelled from Sydney to assist on the Easter traffic roster as a motorman, and has remained in Perth for the April school holiday traffic as well. Thank you, Hayden!

In recognition of the success of Whiteman Park in winning the WA Tourism Council's Gold Tourism Award (Category 1 – Major Tourist Attraction) for the second successive year in 2017 (see *Trolley Wire*, February 2018), posters have been installed in all service trams.

Bill Allnutt (left) and Brian Hossack preparing a sub-floor beam for installation below the end platform of Perth A class 130 on 8 November.
Lindsay Richardson

The eastern end platform of Perth A class 130 on 25 February, with the newly installed flooring and end apron, after the refurbishment of the sub-floor beams was completed. David Brown

Works car 1023W is back at the Carbarn after a successful proving run under its own power on 21 February, with members of the team (from left) Noel Blackmore, Ray White, Colin Spooner, Trevor Dennhardt and Ian Kelly.
Lindsay Richardson

Contractors re-erecting the overhead line on Village Junction Curve on 28 February, using the collars attached to the new spun-concrete poles, after the completion of Whiteman Park's Fire Escape Link Road project. The new level crossing is visible in the foreground.
Lindsay Richardson

Perth E 66 at the temporary terminus among the grasstrees at the western end of the Village Mall on 16 November, during the closure of the track to Village Junction Station terminus for the construction of the Park's new Fire Escape Link Road. Lindsay Richardson

Progress with the excavation of ballast from the access tracks leading from the main line to the Lindsay Richardson Carbarn, to enable slewing of the tracks to a new alignment to the right. This work was funded by the Trustee of the Oketon Geddes Trust Fund.

Lindsay Richardson

Members of the Wednesday team, led by Len Pearce, have carried out a major tidy-up and rearrangement of workshop tools and equipment in the Noel Blackmore Tram Service Centre. Ian Sidebottom (left) and Len Pearce are seen here with a newly rearranged tool cabinet on 15 November.

Lindsay Richardson

Tram restoration

Restoration work on the last tram built for Perth, WAGT A class 130, continues. Repairs to the supporting beams below the eastern end platform have been completed with new timber spliced in where needed, and the new flooring timbers have now also been installed. The aluminium sheeting has been fitted around the apron. The bumper bar at this end has been re-attached following repairs and painting. Repairs to the saloon side timbers, where required, have been completed.

New level crossing and tramway upgrade

The contractors completed their overhead work associated with the Park's Fire Escape Link Road project in early March. Collars were attached to the eight new spun concrete poles on the Village Junction Curve to enable the correct running-wire height to be attained. Fitting of the new pull-off attachments to the new poles was then carried out.

The PETS overhead team then took over to complete the final alignment and re-adjustment of the overhead on the full curve.

New member, Maree Cowley cleaning trolley-pole bases with a high-pressure hose on 24 January. Lindsay Richardson

The sleeper exchanger machine with its wheel flanges re-profiled to operate through grooved rail, with Roy Daley in the driver's seat, on 11 October. Lindsay Richardson

Trevor Dennhardt operates a needle-gun to de-scale an ex-Melbourne turnout received ex storage at Ballarat, for use in the new carbarn fan, 15 November. Lindsay Richardson

Works tram W7 1023 (to be re-numbered 1023W) was run under power for the first time and fully track tested on 21 February. It was then able to be driven from the Carbarn to the far end of the Village Mall, from where it was manoeuvred around the Village Junction Curve within the de-energised work-site as required, using the mule. The use of 1023W in combination with the cherry-picker has been a great success.

With the main adjustments completed, the overhead through the Village Junction Curve to the Village Junction Station terminus was electrically tested and then re-energised on 12 April.

All tram services have continued to use the temporary tram terminus at the far end of the Village Mall near the Lolly Stop, until the commissioning of the new work is completed.

Other track and overhead work

The six-monthly track inspection was completed, as required under our Safety Management System, and a report forwarded to Whiteman Park as per our lease requirement. On the track work-day on 10 March, the track team focused its attention on repairs to the section between the cattle grid north of the Triangle and the main Village road crossing. Regular greasing of the main line curves, which gives a greatly improved ride on the trams, has continued.

Major overhead line maintenance is continuing on the west-to-north curve at Stockman's Triangle, which is used by all service trams.

Motor vehicles

A replacement for the bucket tractor has been purchased, and we await delivery. Work on the Mitsubishi sedan has been completed.

New carbarn

Preparations are in progress for the installation of underground cabling for power supplies to the new carbarn.

Pegging of the new alignment for the access track to the Lindsay Richardson Carbarn was completed, and a contractor was hired to remove the road-base from above the sleepers of the existing access track to permit its slewing to the new alignment. The cost was met by the Oketon Geddes Trust. This change will include relocating the mainline points to this access track further east, to provide space for the installation on the mainline of the three sets of tramway points for the new carbarn roads.

Lindsay Richardson stacking fish-plates which required relocation to enable the erection of the new roof from the transformer compound wall, over the top of the green-painted electrical fittings container seen in the background, on 15 November.
Nick Tsiaglis
for Lindsay Richardson

After the Easter barbecue on 1 April, under a near-full moon, members and friends enjoyed a night ride on Fremantle 29. Hayden Holmes is at left.
Shane Parsons

Nick Tsiaglis (left) is presented with the David Secker Memorial Award by PETS President, Allan Kelly at the Easter barbecue on 1 April. Treasurer, Tony Kelly is at right. Shane Parsons

Another new building

Sitting at the moment on our access drive, a new demountable building, formerly situated at the Park's Lord Street entrance, has been donated to the Society by Natural Area Consulting Management Services. After ground works are completed, it will be positioned next to the new carbarn.

Electrical fittings container

The new roof over the electrical fittings container in the compound south of the Oketon Geddes Carbarn has now been satisfactorily completed by the contractor, the cost being met by the Oketon Geddes Trust.

Easter barbecue

The members' barbecue was held at Mussel Pool on Easter Sunday, 1 April, with a good number of members, family and friends attending. We thank all those who helped with the preparation for the event. The David Secker Memorial Award was presented to Nick Tsiaglis by President, Allan Kelly. This award is presented annually to a Society member who has shown meritorious service above and beyond the normal contribution made by the membership. Nick has for several years been a regular on the Wednesday team as well as the weekend track team, and does excellent work maintaining our motor vehicles. He is always a willing hand who helps with other Society activities.

HADDON

MELBOURNE TRAMCAR PRESERVATION ASSOCIATION

324 Sago Hill Road, Haddon, Victoria 3351 www.mtpa.com.au

Anthony Smith

Restoration of W5 792

Work is continuing on the restoration of this tram, but at a slower pace due to a need to divert manpower to other projects. The lower frame section of the No. 2 end driver's bulkhead upper panel has had a new section spliced in to replace the rotted original. The four second-hand saloon sill timbers previously removed from store have had minor joinery repairs carried out on them and all old paint removed, after which they were sanded and primed. These sill sections were fitted to 792 in February.

The four drop-centre quarter panel sills were machined from new stock and fitted during March. Work is now concentrating on preparing the No. 2 end cabin ceiling for varnishing. This is going to take a considerable time and effort by our small restoration team, due to the poor condition of the ceiling timbers as a result of accident damage and water staining. Whilst it would have been much easier to paint the cabin ceiling cream, as was the practice in later years, this would have detracted from its originality.

Kym Smith is continuing to make good progress on removing the old Colorflek and varnish from the No. 1 end saloon on his visits from South Australia. He has only to complete the last two bays in this area to complete the task, after which he will concentrate his efforts on the drop-centre roof boards.

New troughing being installed in the lower terminus carbarn. Jacqui Smith

View of L 103, VR 41, SW5 849 and W3 663 inside the carbarn after being cleaned.
Anthony Smith

View showing newly fitted sill timbers on W5 792.
Daniel Edwards

Anthony Smith and Daniel Edwards installing a new bracket arm stay wire.
Jacqui Smith

A new overhead pole being positioned into the hole in readiness for concreting.
Jacqui Smith

Anthony Smith painting one of the crossing light poles.
Jacqui Smith

Lower terminus carbarn

Work is now under way on installing the troughing for the trolley wire in this building. During early March the support beams, mounting brackets and adjuster rods were fabricated and fitted to the roof trusses utilising the Dodge cherry picker. Also in early March, timber for the troughing was purchased, assembled and painted with clear lacquer in readiness for erection. The troughing has now been installed and ears fitted in readiness for the trolley wire.

Overhead

During February, the two mainline bracket arm assemblies were overhauled in situ with both boom arms sleeved to increase the level of insulation. The stay wires and adjusting turn buckles were also renewed. The lightening arrestor unit on bracket arm pole No. 20 was relocated to pole bay 19 which is at the start of the mainline straight as part of this project. On 16 March, six additional steel overhead poles were erected along the north-west and south-west curves utilising a contractor's excavator to bore the holes and lift the poles into position for concrete back filling, which occurred later on the same day. These poles have now been fitted with riser units into their tops to increase their height.

Around the site

As part of our ongoing routine infrastructure maintenance program, the level crossing light units and posts have been cleaned and repainted along with the pole mounted dropping resistor boxes. In March, a new steel posted retaining wall was installed along the south side of the lower terminus carbarn. This area is being raised and levelled utilising fill that was donated and delivered to the site free of charge by the retaining wall contactor. This fill is now in place and when it has compacted, the area will be used to store our road vehicles.

The new retaining wall area being backfilled.
Anthony Smith

ST KILDA

AUSTRALIAN ELECTRIC TRANSPORT MUSEUM (SA) INC
PO Box 213, Salisbury, South Australia 5108 www.trammuseumadelaide.com.au

Colin Seymour

Accessibility ramp

The formwork for an accessibility ramp at the museum was constructed in the last week of 2017. The ramp is adjacent to Road 2 near the signal cabin where it can easily be reached by users. However, the prolonged hot weather in January and February meant that the concrete was not laid until 24 February. Hand rails will be erected before the ramp becomes available for public use. It is planned that a tram with wide centre doorways, such as an Adelaide F1 type tram or a Melbourne W series car, will be parked on Road 2 on operating days.

The Salisbury Council constructed a ramp at the Playground terminus two years ago. The new ramp will enable people with mobility restrictions to enter and leave selected trams at both ends of our line.

Formwork in place on 31 December 2017 for the accessibility ramp next to Road 2 of the depot fan.
Steve McNicol

Testing the folding ramp using drop-centre car 264 on 12 March. William Adams

Bib & Bub 14 & 15

Many small finishing jobs have been carried out as the set moves closer to completion. On 6 April the set was driven from the Bodyshop onto the depot fan for further testing.

Bib & Bub cars 15 and 14 on the depot fan on 6 April. Michael Crabb

Bruce Lock watches Tony Smith adjust the headlight fitting on car 15 on 6 April. Michael Crabb

BALLARAT

BALLARAT TRAMWAY MUSEUM

PO Box 632, Ballarat, Victoria 3353 www.btm.org.au

Dave Macartney and Warren Doubleday

Tramway operations

The annual Begonia Festival, held in fine weather, over the Labour Day weekend in March, saw a total of 7669 passengers carried over four days. Two weeks later, the Easter long weekend yielded 337 passengers, with 397 visitors taking an interest in our Museum display.

Charter business continues to be strong, and on two occasions 671 and Cuthberts 939 operating at the same time. Since October last year, the "Pipers" tram has delivered eleven bridal parties to Pipers by the Lake for their wedding breakfast. There are already 15 future bookings.

The Museum in conjunction with Bright Life Catering is presenting High Tea on Cuthberts 939 on the first Sunday of each month. Prior bookings are essential and these can be made via the Museum's website.

The operation of the horse tram on Australia Day this year was postponed at the last moment because very high temperatures were forecast. Hot asphalt and horses hooves are not a good combination. The horse tram operation was rescheduled for 8 April, which turned out to be a warm day. In all, some 542 passengers were carried, either on the horse tram or by No. 25 from our electric fleet. This year the horses and the two attendants were provided by Sovereign Hill and we thank them for this. Cuthberts 939 ventured out to the crossing loop and was open for inspection. With its coffee machine in operation, Cuthberts 939

A happy couple pose by tram 671 on their way to Pipers by the Lake on 17 February 2018.
Roger Gosney

Installing the second motor back into tram 18's truck on 29 March 2018 is Carl Mahoney and Alan Hasler.
Mick Duncan

Three of the horse tram crew enjoy their lunch in the splendour of Cuthberts939. From left to right – Richard Gilbert, Peter Winspur and Len Millar, 8 April 2018.
Roger Gosney

provided a pleasant air-conditioned meal room for our hard working volunteers, a location to have a break in. The electric tram for the day was No. 26.

At the depot

The depot building has been repainted in recent months as the original Colorbond was showing its age. The new colour is sympatric to the original bronze olive green.

Inside the depot work on No. 18's truck continues, with various problems relating to the bearings now resolved. By 4 April the motors were refitted, and the truck should be reunited with the body in the near future. Meanwhile No. 38 has been sidelined with worn bearings, and will be having a holiday for the next few months.

Barry Richardson applies the new coat to the south side of the depot, 22 March 2018.
Peter Waugh

Prior to repainting, the depot is cleaned down, 16 March 2018.
Peter Waugh

Weddings involving a big limo and even a bigger W4 make an interesting combination for photographs. Tram 671, in its Piper's livery is waiting for the bridal party to join on 17 February 2018.

Roger Gosney

LOFTUS

SOUTH PACIFIC ELECTRIC RAILWAY CO-OP SOCIETY

PO Box 103, Sutherland, NSW 1499 www.sydneytramwaymuseum.com.au

From SPER News

Vintage Tramway Festival

On 25 February the museum again hosted the annual Sydney Vintage Tramway Festival, this year marking 57 years since the closure of the Sydney tramways. It was another successful start for this year's calendar of events. Leading the new attractions was newly restored freight tram 24s running for the first time on a public operating day. While it was unable to carry passengers, the tram ran between passenger trips for photographs, and it used its on-board crane to demonstrate picking up 'tramway department equipment' along Tramway Avenue.

Also new to the festival was the Museum's magnificently restored AEC Regent III double deck bus 2619. This was the first time in over two decades that the Museum has been able to use one of its own buses at the festival. The bus performed faultlessly, taking passengers between the Museum and Sutherland Station. It is already proving to be a great ambassador for the Museum and a popular exhibit at rallies and heritage events.

The Engadine Rover Crew again supported the event with the traditional Scout sausage sizzle, backed up this year by a coffee van. Both services were very well received by our visitors.

Art of Transport Art Show

Part of the Inner West Council's Inner West Open Studios Trail (IWOST), the Art of Transport Art Show brought together a number of transport artists to display their work at the Sydney Bus Museum's Leichhardt Depot.

Artists included the Sydney Bus Museum's 'artist-in-residence' Jane Bennett who exhibited bus paintings and prints, artists Steve Leadenham (transport themed paintings), Andrew Burns (transport poster art), John Darroch (ferry artist), and Sydney Tramway Museum member Katy Strancar who exhibited her amazing and quirky tram paintings.

While Katy may be more familiar to many of us undertaking grounds maintenance, cleaning or restoring trams around the Museum, she has real talent in her art work and we can be very proud of her achievements in representing the Museum and trams at the exhibition.

Royal Easter Show

Another cooperative initiative between the Sydney Tramway Museum and the Sydney Bus Museum was the display of our corridor tram driver's cabin mock up at the 2018 Sydney Royal Easter Show. Late last year the Royal Agricultural Society approached the Bus Museum seeking a double deck bus for display at the show as part of the RAS Heritage Unit's 'Going to the Show in the 1950s' exhibition.

Duncan MacAuslan then suggested to the RAS that the STM may also be able to assist. RAS staff were

Some of Katies Strancar's artwork on display at the Sydney Bus Museum's Art of Transport Art Show. David Ccritchley

delighted to find out how well our exhibit fitted their 1950s theme in the Heritage Hall. The driver's cabin was located inside the RAS Heritage Exhibition space surrounded by images and other memorabilia from the 1950s, and attracted wide attention.

Up to three volunteer crews attended each day of the show to look after the mock up and publicise the museum. While remarks such as "I've never heard of the museum" are becoming less frequent, particularly thanks to electronic media, we are still regularly getting comments such as "I've heard of the museum but I've never been there!"

On 26 March Channel 7's 'Sunrise' 6.30am live weather cross opened with the tram mock-up in the background; and on 31 March it was visited by Gabrielle Upton MP, Minister for the Environment

Our Sydney tram front display in the Royal Easter Show's Heritage Hall with our young supporter Sebastian Critchley in attendance. David Critchley

and Heritage. She expressed interest in our museum in a conversation with Richard Jones.

As volunteer Fay McCabe noted "Although totally exhausted after two days on our feet, we were overjoyed at the responses we got from passers-by. We were in a different world, as these people were not rail enthusiasts, however some were heritage enthusiasts. Many promised to visit the museum, and some were also quite interested in coming as volunteers."

Ed Terry and Martin Pinches prepare to remove the railing from the Liverpool Street Tramway Signal Box.
Michael Hatton

Heritage grant projects

Work has commenced on the two projects for which we received Transport Heritage grants, announced on 14 October 2017.
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The glass replacement for trolleybus No. 19 is under way, with our contractor measuring up for the new windows on 28 March.

Work on the restoration of the Liverpool Street Signal Box has also begun. The badly corroded handrail on the landing has been removed and a new railing ordered. One badly damaged window has been removed for repair / replacement, whilst the exterior door, which is badly warped, has been measured for a replacement door to be manufactured.

Track and associated work

At the north end of Waratah Loop the eastern track has been extended by 12 metres across the No. 2 access gate from Rawson Avenue. Once concreted this gate will be brought into regular use to allow the northern No. 1 gate to be closed whilst earthworks take place to lower the ground levels past our No. 3 substation prior to further laying of pointwork and track to complete the loop.

The collection of spare bogies at the southern end of the yard at our northern terminus have been moved and restacked to clear an area in the south eastern corner for five 20 foot shipping containers. Two strip footings have been laid to support these containers. Three are already elsewhere on site and there are a further two expected soon from Penrith. When they arrive all five

The container strip footings at the southern end of the yard at our north terminus.
Danny Adamopoulos

Concreting the northern end of the eastern track panel at the TAFE level crossing. Martin Pinches

containers will be placed on these footings, making the northern terminus area much tidier.

When the Sutherland line was laid in late 1987 two track panels were set in the concrete slab at the TAFE Crossing. With Council footpath and landscaping works to happen in this area later this year it was decided to extend the isolated eastern track both sides of the crossing by one track panel, 12 metres each side to ensure that the Council works fit in with our future plans for a second track to just north of TAFE Crossing. Concreting of the northern panel was completed with surplus concrete and rails soon to be installed south of the crossing.

At Depot Junction former Kensington rails have been welded into 66-metre lengths for the up-coming relaying of track up the hill south of the junction. Two old I beams have been cut up for steel sleepers for this job but more will need to be stockpiled prior to commencement of work to minimise closure time of the RNP line.

New footings are being constructed at our main front entrance to support the gates. When the concrete slab was core holed it was revealed that thickness of the slab was less the 120mm, not thick enough to secure the bolts that hold the gate. The new gate post footings will be 800mm deep.

David Bennett has put in a major effort updating accurate scale drawings of our tracks and sites as well as mapping all our underground services, water, drainage, electrical and communications. This is required so they can be supplied to '1100 dial before you dig', so as to ensure our services are not damaged by other public utilities when they do excavations.

This work has entailed combining 40 years' worth of drawings from multiple sources including deceased members and council drawings, as well as recently reconstructed track and overhead.

Overhead

A new span wire has been installed at the top of Army Hill between the two electricity supply poles adjacent to our line. New poles will soon be installed at the north terminus to allow overhead to be erected on the siding.

The side arm bracket on pole 321 on the Sutherland line was damaged by a falling tree which was removed on 21 January.

Electrical

Many years ago while Randwick Tramway Workshops were still making traffic light posts and railway pointwork, a number of transformer/rectifier units were installed so that Waterloo tramway substation could be de-commissioned, some 15 years after the tramway closure in 1961. Later when the workshops finally closed we obtained a number of these units. Two had been stored in our top shed.

On 6 January one was moved, cleaned and tested, and hired to Mario Mencigar to test his two Adelaide H cars at his outer Sydney property. On its return to Loftus both units were moved to our No. 3 substation at Waratah Loop.

To make room, a spare transformer and the second ex-Kogarah oil switch cabinet were placed along with the other sister unit into the former railway substation yard. Quotes are being sought to shot blast and paint these former trolleybus substation units.

Our CSO team have started the trenching and laying of conduits under the National Park line from the rear of the new south shed to a junction pit, then heading

The utilities extension pits from which trenching and conduit laying will continues south.
Danny Adamopoulos

further south to the next pole along the railway boundary. This trenching and conduit installation will continue to be extended all the way to the level crossing control hut, so power can be brought into use at the south shed.

Workshop and maintenance

Ballast motor 42s had been running with one motor cut out with a defective armature while a spare GE1000 motor was overhauled. When the tram was lifted for the motor change it was discovered that the replacement motor had its cable entry positions reversed to those in 42s.

Plan B was to put the good armature into the original motor. However the bearings that fitted the good armature were not a good fit to the motor casing while the other set of bearings were too tight on the armature shaft.

Plan C saw the armature placed back in the big lathe for shaving a few thousandths of an inch from the shaft to allow proper clearance for oil circulation. 42s was lifted and the bogies placed back under it on 27 January.

Nagasaki 1054's repairs following a mishap were completed on 28 March. The south end apron was repaired by Rod Sanders using his motor car restoration skills. He was assisted at various times by others of the workshop team. The paint colour had to be specially matched to some chips of the original paint by our paint supplier in Sutherland.

Melbourne W2 392 made a successful trial test run to the northern terminus on 11 April.
Martin Pinches

The damaged internal grab railings were repaired by the members of the workshop team. It was found that the rail anchoring flanges on all the centre door railings had suffered the ravages of time and corrosion, so all were replaced. The rail mounts are now much stronger than they were when we took delivery of the car. On close inspection of the car, evidence of a number of other happenings during its service life in either Sendai or Nagasaki came to light. 1054 is truly a veteran and a survivor.

Melbourne W2 392 has had gutter rails, windows and handrails refitted. A number of members have painted the ceiling and re-varnished the interior panelling and timber seats. The exterior of the tram has been completely repainted. The longitudinal saloon seats have been recovered and installed. The car is to leave Loftus soon for a future home in Thailand along with Mario Mencigar's two Adelaide H cars.

The weedkiller trailer has been prepared for up-coming use and a new large mulcher capable of ingesting eight inch diameter branches and tree trunks has been purchased to tame our line-side vegetation. It was relatively cheap compared with most commercial mulchers, as it runs from the power take off on the Fiat tractor and does not need its own engine.

Launceston 14 progress

Both drivers' bulkheads have been completed and are awaiting glass to be supplied and fitted. Two saloon side panels were removed and replaced using 12mm marine plywood and coated with several coats of wood filling undercoat in preparation for their top coat.

Both front panels have been completed and voids filled and undercoated. Bench throw over seat backs in the open sections have been completed and fitted. The backs to seats attached to the drivers' bulkheads are under construction.

The centre saloon doors have had several coats of paint removed to reveal the richness of the 100 year old Blackwood. The doors have been restored to a magnificent finish with more than three coats of clear varnish.

As explained by our team of dedicated volunteer craftsmen 'good enough is not good enough'. Progress on the restoration, now in its second year in the former TAFE premises, is ahead of expectations and promises to be an 'as new' job when completed sometime in 2019.

'Biff', works supervisor, checks John Binns' work on the Blackwood saloon door of Launceston 14.
Quentin Manning

Barry Cole and Graham Wright fitting panelling to the new bulkhead. Quentin Manning

Rob Hodge making good the underframe prior to fitting side panelling. Quentin Manning

Rob Hodge making the throwover seat backs. Quentin Manning

Christchurch news

Restaurant tram 411 has been well patronised throughout the summer season. The Museum's share of its 2017 profits will, as agreed by the Board, remain in New Zealand and will be put to use by the Tramway Historical Society, Ferrymead towards the progressive restoration of Christchurch Yank 12 in coming years. As the car was delivered in 1905 from the USA in CKD form it was dismantled in that fashion. This will enable components to be restored over time without the whole tram taking up valuable workshop space.

Sydney R car 1888 (nee1808) is proving a very popular attraction on the tourist tramway. The restoration costs to bring it up to the necessary 'tourist quality' condition are being recovered from rental income payable to STM over the next two years.

The three trucks for P 1729 and PR1 1573 are being worked on at THS. Motors have now been fitted. Next jobs are to obtain and fit rubber motor mounting blocks and fit brake rigging, sand boxes and motor bearings.

Citadis X05 trams

Courtesy of Alstom executives Project Director Nouredine Benkaza and Marketing and Communications Director Sheldon Young, three Museum representatives were given a guided tour of the new Randwick Depot and a preview of new X05 trams 2 and 3 on 5 April. (No. 1 has recently completed tests in France and will be shipped to Australia soon. These numbers are not fleet numbers.) They are impressive vehicles with seating for 48 and standee capacity of 185 per car. They have six double doors per side, and should prove popular with passengers when the new south east light rail opens in 2019.

Nouredine generously presented us with a model of the new tram enclosed in a plastic tube, for display at the Museum. Sheldon will provide other material so a small exhibit can be set up in a display case.

Adelaide E class tram No. 118 stand on Road 6 in the depot yard ready for service at the Australian Electric Transport Museum on 11 December 2017.
Steve McNicol

Two horses from Sovereign Hill haul the Ballarat Tramway Museum's 1887 horse tram along Wendouree Parade on 4 April 2018.
Mal Rowe