TROLLEY WIRE

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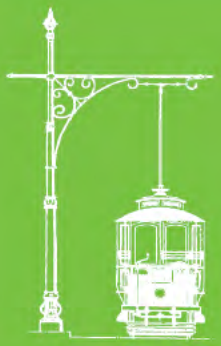
NOVEMBER 2016



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TROLLEY WIRE

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Sydney R class 1740 glistens in the spring sunshine on 9 October. The destination Taronga Zoo Park is appropriate as the zoo was relocated from Moore Park and opened on its present site one hundred years ago, on 7 October 1916. Scott Curnow

Front Cover:
Ballarat bogie car 37 stands at the Sydney Tramway Museum's Royal National Park terminus on 18 September 2016, its first day in passenger service following its restoration. Car 37 has the distinction of being the only tram to have operated on all four Victorian tramway systems. Robert Merchant

Previously published as a Report to Toowoomba City Council, June 1920.

A TRAMWAY FOR TOOWOOMBA

31 Queen Street
Melbourne
June, 1920

To His Worship the Mayor,
And Aldermen of the City of Toowoomba.
Queensland.

Gentlemen,
I have the honour to report to you on the proposed Electric Tramways for your city, as well as on the Electric Power Station. I understand that my instructions in regard to the Power Station were as follows:

First for the requirements of the tramways; second, an Electric Plant capable of supplying the tramways, electric motors driving the pumps and the street lighting. The latter is rather a difficult problem to solve on account of the local conditions that now prevail. The solution to a non-technical mind would seem to be easy to accomplish; but you have two large, direct current, 480 volt motors now used for pumping and 400-100 watt lamps, used on a three-wire system. The voltage for the tramways would be either 550 or 600 volts direct current, and this voltage would be too high for your motors driving the pumps, and too high and variable for feeding your street lamps.

The local electric light company's plant was visited and carefully inspected, and deductions made in regard to same. These various points will be dealt with in the report, as they offer in their sequence.

During my visit to your city in May of this year [1920], I gathered all the data that I could obtain, that would have a bearing on the proposed tramway. I availed myself of the opportunity of meeting a great number of your citizens, who gave me information that assisted me in coming to some of the conclusions of this report.

The study of any Tramway proposition is always on of great interest, and to come to a logical and sound conclusion on the results of the proposition requires that the Consulting Engineer must make himself thoroughly conversant with all the local conditions and requirements.

It is most essential that in judging the capabilities of any city under review, that all the factors should be carefully weighed and considered, and the possibilities of the future be carefully borne in mind.

Toowoomba is peculiarly located, in as much as it is on the main railway line from Sydney to Brisbane, and the junction of the line to the Western Districts. The surrounding country is well settled, and this factor must be taken into consideration, as Toowoomba undoubtedly gives trading facilities that attract people, and this floating population will be a source of revenue to the Tramway.

The distance of the city from the coast, the high altitude, and the beauty of the surrounding ranges, are all assets that will induce transients to visit the district, and particularly so, if cheap and rapid facilities for local travel are at their disposal.

Unquestionably, the decentralisation policy is one that demands the consideration of all Public Governing Bodies throughout Australia, and one of the best steps to be taken in this direction is to give to the public in congested areas, and inland cities, the means whereby they may command the essential points that make life more congenial in the local surroundings.

In Toowoomba the underground water obtained is not good for steam boilers. And the available surface water is not present in large quantities. In view of these facts it is important that a cheap supply of electricity should be made available for power and lighting, and manufacturers might be induced to locate in the city, if cheap Electric Power could be obtained; the only way to effectively meet this requirement is to have a station with comparatively large units, and so flexible that any future demands could be easily and economically met.

THE SELECTION OF ROUTES

The selection, in any case, of the proper tramway routes is not an easy matter, and yet it is one of the most important to decide. Many tramways have suffered serious financial loss in after years, on account of even one route not being properly selected.

It might be wise to give here some of the general principles that guide Tramway Engineers in selecting a tramway route. The centre of the business portion of the city is to be taken as the axis, and in this case will be Ruthven and Margaret streets. The lines should radiate from the centre of the city to the most thickly populated areas, by the shortest routes, taken in conjunction with the local streets that are available. The ideal lay-out, therefore, would be for lines to start

from the axis, and run north, south, east and west, and intermediate lines interposed, as traffic would warrant. These lines could then be continued out further in the future, as the growth of the city demanded. It is unwise to extend too far out at the start, as the proposed tramway would be carrying too much dead mileage, and hamper the financial results of the investment. The principle has been adopted in this case, as far as conditions would seem to warrant. There is always a strong feeling in the lay mind that circular routes are advantageous; but this is not true in practice, unless the routes have special requirements to meet local conditions. It is at once evident that circular routes do not lend themselves to easy extension.

The Mayor, Tramway Committee, Town Clerk, and City engineer, have all supplied proposed routes, while the Inspector of Police has been good enough to submit a plan of all routes now used by the 'buses. These plans or suggested lines have been of great service in arriving at the routes, as shown in the plan affixed to this report.

A skeleton map of routes is affixed, which will give a clear idea of the lay-out, and [the original] shows types of Permanent Way Construction.

The routes as given, are considered as best to meet the requirements at present; but, of course, can be varied as the Council thinks wise. But, definite routes must be taken, in order to work out the cost, and operating charges.

The Car Depot is taken as being placed on the Council's land, in Herries Street, near the railway, and from this point a single line would run to near Ruthven Street. The single track line would start from Ruthven Street, and continue to 250 feet beyond Campbell Street. Double track would be continued 250 feet from Campbell Street, and into Russell Street. The remaining routes would be single track, with passing loops.

The Russell Street route would start from Ruthven Street, along Russell Street, to the intersection of Holberton Street, a distance of about 1.41 miles.

The Mort Street route would start from Russell Street, along Mort Street, and roads shown in plan, to North Street, a distance of about 1.213 miles.

The Campbell Street route would start from Ruthven Street, along Campbell Street and Curzon Street, a distance of about 1.23 miles.

The Picnic Point line would start from the intersection of Campbell Street and Curzon Street, along Curzon Street, Arthur Street and Tourist Road to Picnic Point, a distance of about 2.175 miles. This line would be built along the side of the road as far as possible, and the Permanent Way and Construction would be of a special type, resulting in a considerable saving in capital cost, and perhaps just as efficient for the purpose.

The Ruthven, James and Hume Streets route would start at Klein Street, along Ruthven Street to James Street, along James Street to Hume Street, along Hume Street to South Street. The total distance of this route, including that portion of double track in Ruthven Street, would be about 2.67 miles.

All cars would start from the intersection of Herries Street and Ruthven Street for the following routes: Russell Street, Mort Street, Campbell Street and Picnic Point. The cars on the Ruthven, James and Hume Streets route would work back and forth.

The total single track mileage of the above routes is as follows: Ordinary construction, 7.633 miles; special construction, 2.175 miles. Total, 9.808 miles.

PERMANENT WAY CONSTRUCTION

The Permanent Way Construction recommended is of the very latest type, and is a development of the Construction that has been carried out in the Southern States. It is the result of past experience, and should ensure a substantial track, with low maintenance cost. It seems the better policy to provide extra capital at the inception, with the increase in interest and renewal fund, than have to face a heavy annual maintenance account. It is purely a business proposition, and the former seems to be the better.

The gauge taken is the recognised standard, i.e., 4 feet 8½ inches, and the distance from the centre to centre of the double track, 10 feet, with side pole construction. The general construction is as follows: The excavation is taken out to a depth of 19 1/16 inches, in the centre of track, and to a depth of 18 1/16 inches on the outside, with a total width of 8 feet. In the centre of the excavation a further excavation is made 6 inches deep, and 6 inches wide, and a 3inch agricultural drain pipe is put in, surrounded by ¾ inch blue metal screenings. The pipes are led away from the track excavation at certain points, and keep the foundation well clear of all soakages, and ensure a solid foundation for the road. The bottom of the excavation is covered with ashes, so that when they are properly consolidated by rolling, the depth of ashes is 2½ inches on the sides, and 3½ inches in the centre. The ballast is placed on top of the ashes, and is of the size that will pass through a 2½ inch ring. The depth of the ballast is 6 inches under the sleepers. The sleepers used in this work are 7½ feet by 4½ inches, by 9 inches. Iron bark is the best for this work, and prices were obtained from the Railway Department. The rails are spiked to the sleepers. The whole of the remaining excavation is then filled to the surface and consolidated.

The most important thing in laying track of this description is to see that the sleepers are well beater packed, and this ensures a good, sound, steady road. Too much stress cannot be placed on the above.

The rails used in this case will in all probability be those manufactured by the Broken Hill Proprietary Co., at Newcastle, New South Wales. The rail used is what is called the combination tramway rail, and was invented by the writer during the War. The rail has been put in on two tramways here, and is giving every success. The combined rail consists of the ordinary 80 lb. railway rail, with a 35 lb. guard rail, specially rolled, bolted together, and to all appearance, is similar to the well-known tramway section. It is almost impossible to obtain the usual tramway rail from Great Britain or the United States, and, in any case, the imported rail would be too high in cost.

The surface of the road would be blinded with metal screenings, and blinding obtained from the Council's quarries, and thoroughly rolled, and left in this condition until all surface consolidation is complete, when the surface would be well coated with a distilled tar dressing. This would minimise the dust.

The special construction to Picnic point would be similar to the above, but the ballast would only be brought to the top of the sleepers, and no guard rail would be bolted to the rail. This track would be located on the side of the road as near as possible to the building line, and would be out of the way of vehicular traffic, and therefore this type of construction wound not interfere with road traffic. It would also have the advantage of not disturbing the present macadamised roads. Where this construction would cross a road, the guard would be bolted on, and metal brought to the surface.

It will be necessary at a few points on the Picnic Point line to acquire some easements about corners, but money has been place in the estimates for this.

The rails will be made continuous by welding all joints electrically. This practice is now considered more satisfactory. The usual copper bonds will be put on all tracks.

Special work required at the different points is as follows:

1 Four Track Car Depot Layout.
1 Double Track Left Hand Branch-off from Ruthven Street to Russell Street.
1 Double Track Right hand Branch-off from Ruthven Street to Herries Street.
I Double Track Right hand Branch-off from Ruthven Street to Campbell Street.
4 Standard Right Hand Turnouts.
9 Standard Left Hand Turnouts.
3 Standard Diamond Turnouts.

All special work will be put in on sleepers, bedded in concrete.

Some tramway engineers would perhaps say that it is not necessary to have double turnouts into single line construction as recommended, but the easy operation and flexibility obtained would seem to be a complete answer to the increased cost.

It may be necessary to alter at certain points existing gas or water pipes, but this is difficult to say at the present rime, and no allowance has been made for same.

OVERHEAD CONSTRUCTION

The Overhead Construction for this line would be very similar to that now generally adopted, but the price of steel poles is so high, that it is essential from the point of economy to adopt octagon wooden poles. The poles selected should be straight and neat, as the Overhead Construction is always open to inspection and criticism.

The practice on many tramlines now is to make arrangements with the local lighting company, and the Postmaster-General's Department to carry their wires on the tramway poles. This arrangement has been made in nearly every case recently, and is to be encourages, as it eliminates a large number of poles from the streets, through which the tramway passes.

The trolley wire would be of the best hard-drawn copper, of equivalent section to No. 3/0 B. & S. gauge; section to be of the non-fouling type. Span wire to be 7/14 best galvanised mild steel wire. Trolley ears of approved mechanical type, hangers, ball strain insulators, and section insulators to be of the best construction; with suitable frogs, pull offs, etc., for crossover turnouts and curves.

The trolley wire, and most all the copper fittings can now be obtained in Australia.

Special Overhead Construction for all curves, turnouts, crossovers and depot work has been included in the estimate.

The Picnic Pint line would have poles along one side of the track, with bracket construction. This would cost less than ordinary construction for other routes.

Trolley feeders required are included, and would be carried overhead, and equipped with isolation switches.

A Telephone Exchange for tramway purposes only would be located at the terminus of all lines, turnouts, and other special points along the route. A Board of

Trade panel would be located at the sub-station, or power station, as decided, and the usual ground wires carried to the points necessary.

TRAMWAY CARS

The Tram Car that it is proposed to use in Toowoomba is of the very latest design that has been developed to suit the requirements of present day traffic problems. It is the outcome of hard consistent work, in order to solve the problem of cheap, efficient transport in the face of rising prices for material and equipment, as well as the heavy increase in wages for motormen and conductors. The history of the development of this car, the Safety car, is interesting, but a brief description will suffice to show that it is the ideal car for a system similar to the proposed Toowoomba system.

The following are some of the points mentioned by John A. Beeler, Esq., Consulting Engineer, of New York:

> Of available operating economics the modern light-weight one-man car, with automatic equipment, is most important in the extent of its application, in the largeness of its savings, and, above all, in the fact that it increases travel.
>
> By "extent of its application," is meant all the services in practically all communities of 75,000 or less; a large part of the service, in cities of the middle size, and service on such lines of metropolitan cities, as are not routed over the more congested streets.
>
> By "largeness of its savings" is meant the reduction in power and platform expense aside from economies in track and car upkeep.
>
> By "fact that it increases travel" is meant the stimulation of traffic through increased service, which has the twofold effect of eliminating automobile competition, and of encouraging short, as well as long, rides.

The car, as mentioned, is called the Safety car, for the reason that it has a great many advantages, that all tend for the safety of the passengers. The car is about 28 feet over all, 8 feet wide, and seats about 32 passengers, with good standing room. The total weight of the car without passengers is a little less than 8 tons, as against most cars of a similar capacity, and with similar convenience, which weigh about 12 tons, or much more. The car is operated by one man – the motorman – no conductors being required. This cuts the wages for operating nearly in two. The passengers enter and leave at the driving end, arrangements being made so that there is a separate inlet and exit. The doors and steps are closed by pneumatic pressure, controlled by the motorman. The car cannot be started until the doors are closed.

The small weight of the car naturally decreases the amount of power required to drive same, and likewise does not affect the Permanent Way to anything like the extent of a much heavier car. The saving in using such a car is everywhere apparent, and a system which was not a payable proposition with the old type of car, proved itself to be quite remunerative when equipped with the Safety car. One of the principle traffic problems is how to give a frequent paying service as frequency of service attracts passengers. The cost of operating the proposed line, equipped with this Safety car, will be so low, that those even acquainted with present operated lines here, will almost doubt the result.

There is no question that the addition of this car will mean for efficiency, and that if the whole construction is carried out as now suggested, that the line will be a model one for future work in Australia. This is not meant as a compliment to the author, but as a solid fact, gained from experience of others, who, perhaps, have made mistakes before arriving at the present result.

CAR DEPOT

It seems evident that through local conditions that the power House will be located some distance from the centre of electric gravity, but one point cannot be lost sight of, and that is the car depot must be located as near the starting point of the trams as possible. This is due to the fact that every car that is put into traffic, should be in its earning zone as soon as possible, or otherwise the car has to run over dead car mileage, i.e., not earning its running costs. Early in the report, it was stated that the depot would be taken as being placed in Herries Street. There is another point where the car depot could be placed, and this is on the foundry ground near Campbell Street and Ruthven Street. This point need not be discussed at present, but the essential point is that the depot should be as near the centre of the City as possible.

The depot should be a building similar to that recently erected by the Fitzroy, Northcote and Preston Tramways, and should only be of such size as to meet the present requirements, with ease for future extension.

The housing capacity should be such that, say, sixteen cars could be accommodated. The tracks into the depot would be four, and on two tracks suitable pits would be put in. A small workshop and store would be provided. The offices would consist of a general office, Manager's office, Inspector's office, Motormen's rooms and conveniences. The offices would be provided with an automatic receiver, and also early morning boxes, which are used to reduce office expenses in operation.

The building should not be expensive to construct, but would be such as to meet the requirements of the

tramway. If a sub-station should be located at the depot, the design is such that room could be arranged as not to increase the cost of the building to any material extent. The distance of the various lines is taken in the report from the plan that has been worked on, but the length of certain lines has been verified, and if there is any discrepancy from the official distance, it is small, and will have no material effect on the capital expenditure, or on the report as a whole.

COST OF CONSTRUCTION

Permanent Way Construction		
7.633 miles standard construction, as per report, at £7103 per mile …	£54,217 0 0	
2.175 miles special construction, as per report, at £4633 per mile …	10,077 0 0	£64,294 0 0
Special Work		
1 Four track car depot layout … … … … …		
1 Double track left hand branch-off from Ruthven Street to Russell Street … … … … … … …		
1 Double track right hand branch-off from Ruthven Street to Herries Street … … … … … … …		
I Double track right hand branch-off from Ruthven Street to Campbell Street … … … … … … …		
4 Standard right hand turnouts … … … …		
9 Standard left hand turnouts … … … … …		
3 Standard diamond turnouts … … … … …		
1 Special railway crossing … … … … …	£7,159 0 0	£7,159 0 0
Overhead Construction		
6.713 miles overhead construction, including single and double track at £218 per mile … … … … …	£14,218 0 0	
2.175 miles overhead construction, single track, with side bracket Construction, at £1711 per mile … … … …	3,722 0 0	£17,940 0 0
Cars, Car Depot, Etc.		
14 Safety Cars, at £2500 … … … … …	£35,000 0 0	
Car depot and office … … … … …	7,000 0 0	
Interest during construction … … … … …	2,759 0 0	
Engineering Fees and Unforeseen Contingencies … … …	9,600 0 0	£54,359 0 0
		£143,752 0 0

ESTIMATED REVENUE

The most difficult portion of a report on a Proposed Tramway Scheme is the estimating of revenue. The cost of construction can be given with accuracy, and the annual expenditure can be calculated on the car mileage basis; but, in arriving at the possible income, the conditions that prevail in the locality under review have to be considered. Here is no general rule for arriving at the probable returns of any proposed tramway, but the consensus of opinion is that the proper way to arrive at affair figure is to have the estimate on the annual return per head of population, that may reasonably be expected, taking into consideration local conditions.

The population that has been given as greater Toowoomba is 25,000. A plan has been produced with the authority of the Council that shows the density of buildings. And this should give a fair idea of the distribution of population. The general plan of the city, and the layout, as shown on the plan, would indicate that 90 per cent of the population would be within an area of one half mile from any route. The above population can be taken as served by the tramway for the purpose of the report.

A statement was made in the early portion of the report in regard to the influx of the floating population, and

that this factor should be taken into consideration. The above facts have not been lost sight of in coming to the conclusion in regard to the earning capacity of the lines.

In examining any line for the probable income by virtue of a good and frequent service, it is always advisable to see what the competition now exists to the proposed service, and what may have to be met in the future.

The Railways now have a petrol driven carriage, that does certain service, but this will in no way clash with the present proposed tramway, this mode of traffic will not be considered as a competitor. The plan of the 'bus routes in Toowoomba is a most formidable one, the 'buses, their convenience, and frequency of service, is less formidable. The car suggested for this service was designed to cope with motor car competition, and put its rival out of business, in which it succeeded, and there is no doubt that with the congenial surroundings of Toowoomba, the same result will occur again.

The large number of motor cars for hire on the streets is an indication that traffic is available, and that people are willing and able to pay for same.

There is one route in particular that gives an outlet for the people, and that is the Campbell Street-Picnic Point line. The Campbell Street line will pass the Agricultural Grounds on one side, and the Gardens on the other, as well as other club grounds in the vicinity. Webb Park will also be served, and the other line will traverse Tourist road, which route should become very popular. Picnic point as a place of pleasure is now a most charming site, but the possibilities have not been even touched. Traffic facilities at low cost will make the site available to one and all of Toowoomba. It would not be amiss to suggest that the proposed tramway should contribute to a substantial degree to the development of the beauty spot. If a special Tea House or Café, were erected, so as to cater for the travellers, there is little doubt that the return obtained would make the above venture payable, as well as adding to a material extent to the tramway revenue. Picnic Point, with proper tramway facilities, will become the Mecca of enjoyment for the city of Toowoomba.

The Picture Shows and Theatre of the city will become real live, as the facilities for travel cannot but have a stimulating effect.

The lines, when once established, will tend to settlement along the route, and although this would be gradual, it will mean that in the future, the lines will develop traffic that is not now evident.

The route of the first electric tramway south of the Yarra in Melbourne, when catered for by 'buses, could only support a few of these vehicles. Yet, when the section was put in operation as a tram line, the local electric traction came into its own, and the return for the first year was somewhere about £23,000. This is mentioned, as few people can understand the results of a well-run tramway.

The returns of most tramways during the last few years have shown a great increase in receipts. This increase is gradual, and it ought to be put down to the better conditions that people now live in, and their more frequent use of tramways as a source of pleasure.

The Adelaide Electric Tramways have been making a return for years of two pounds sterling per year per head of population served. This is high, but the lines have practically no other competition.

The electric tramway lines in Melbourne now return an income of anything from 25 shillings to 30 shillings per head of population of the area served. Their average fares amount to about 1.73 pence per passenger.

The last estimate of revenue made by the writer for a tramway was £14,834 per year. The line is now in operation, and for the first few months, the returns are such that the amount for the first year will be well over that estimated.

In the case of Toowoomba it is suggested that a threepenny fare should be charged. It might be possible, if the Council thinks fit, to give workmen special fares, which would be available during certain parts of the day.

The population of the area served is taken as 22.500, and with the fare proposed to be charges, and taking into consideration that no competition exists, it is fair and reasonable to say, in the light of past experience, that the return per head of population should be 26 shillings per year. Thar would mean a gross return per annum of £29,250.

EXPENDITURE

The power for operating the tramways should be generated by the Council; as the local company has only small units that would not be suitable for driving the cars. It would be necessary for the local company to install suitable plant to meet the supply, for which they would have to charge. The Generating Station will be treated in a separate part of the report, but a reasonable figure has been included for power, in the estimate of working conditions for the tramway.

The current consumption of the Safety cars is very low, indeed. The description given under Cars, makes this quite clear. Taking the different routes as now laid out, and going into all the details, it does not seem beyond the bound of possibilities that the units consumed per car mile would not exceed 1.2.

The cost of current is going to be higher than on some tramways that have a big, efficient generating station. The low current consumption will more than balance the above high cost of power.

The tables have been run out for each line, in order to note the service, and the number of car miles per annum. The service on Russell Street would be about 12½ minutes, and the same would occur on the Mort street line. The Campbell Street and Ruthven, James and Hume Streets line would have a fifteen minutes' service. The service on the Picnic Point line would be restricted during week days; that is, a few trams would run in the morning, noon and evening. On Saturday afternoon, Sundays, Public Holidays, etc., there would be a special service. There is little doubt that residential development along this line would soon justify a more frequent daily service.

The total car mileage per annum, after making out the time tables as above, would be 420,000.

With the gross income of £29,250, and taking car mileage as 420,000, this gives a return per car mile of 16.7 pence.

The return of the Prahran and Malvern line in 1919 was 16.657 per car mile. The return of the Melbourne, Brunswick and Coburg line in 1919 was 14.366 pence per car mile. It is essential to remember that these lines have fares of a penny to nine pence; but, as stated before, the average works out as 1.73 pence. It can, therefore, be taken that is a threepenny fare was charged on your line, that the average would be very much higher than that indicated for the above-mentioned tramways. The logical conclusion is that the estimated amount of revenue, under the circumstances, will justify the conclusions arrived at above.

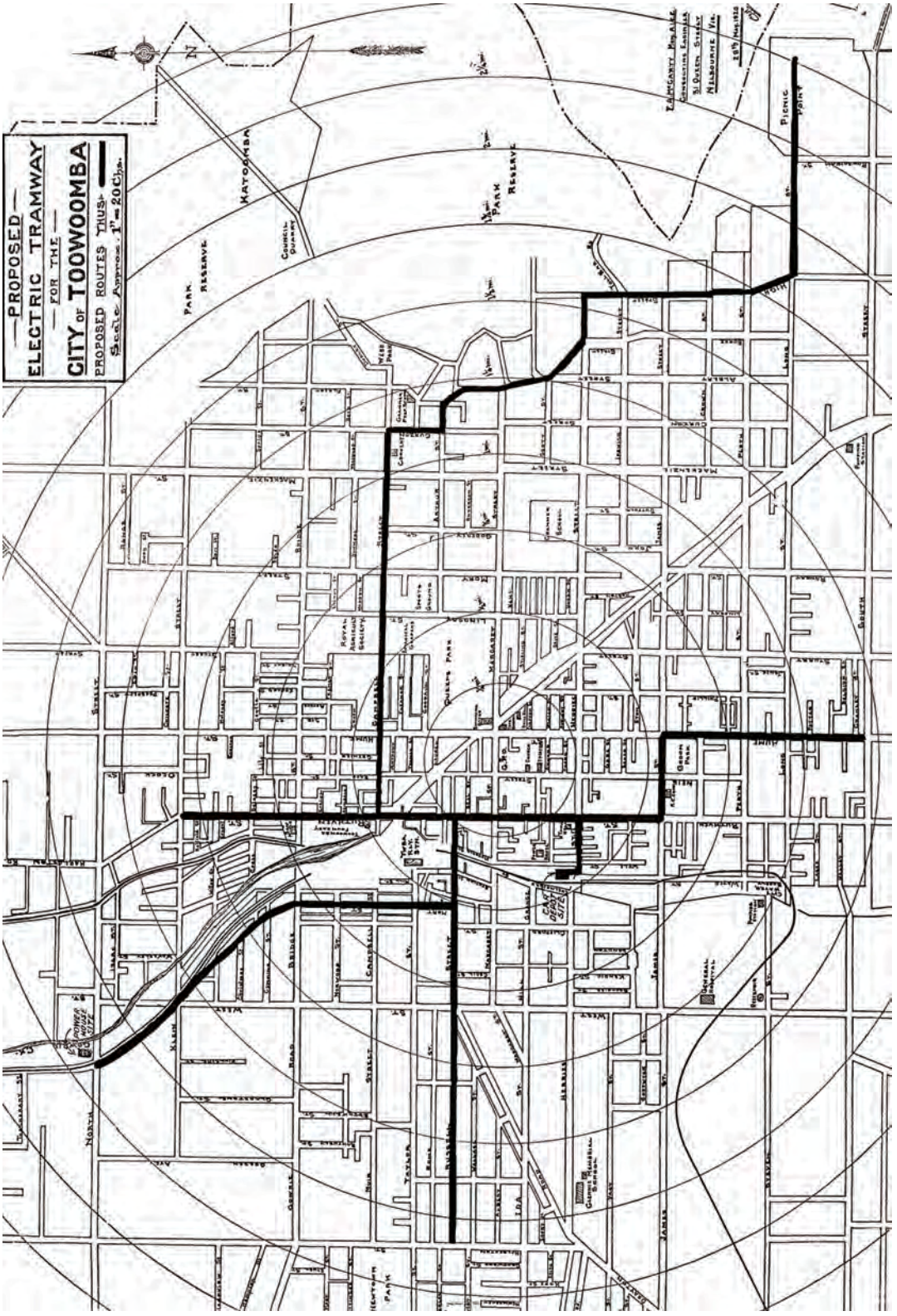
The estimate of the working expenses of the system will be taken as 8.75 pence per car mile; therefore, the annual working cost on 420,000 car miles will be £15,313. This working cost of £15,313 is equivalent to 52⅓ per cent of the gross receipts estimated. This is very low, indeed, as most of the tramways operating in Australia work anywhere from 58 per cent to 78 per cent. The solution is not difficult to understand, as the proposed tramway is so designed, that it is in conformity with the very latest design, not only in regard to the line, but with special emphasis in regard to equipment. These considerations have a great bearing on the present estimate, and it is at the bottom of the logic of the report.

A Renewals Reserve Fund should be established on the following expenditure:

Permanent way	£64,294 0 0	
Special work	7,159 0 0	
Overhead construction	17,940 0 0	
Cars …	35,000 0 0	
Car depot and offices …	7,000 0 0	
		£131,393

This is the type of Safety Car F.A. McCarty recommended for use in Toowoomba, better known as the Birney car.

A. Reid


PROPOSED
ELECTRIC TRAMWAY
FOR THE
CITY OF TOOWOOMBA
PROPOSED ROUTES THUS
Scale Approx. 1" = 20 Chs.
N
PARK RESERVE
KATOOMBA
COUNCIL CHAMBERS
PICNIC POINT
QUEENS PARK
CAR DEPOT SITE
POWER HOUSE SITE
NORTH
WEST
STREET

If two (2) per cent per annum were charged on this sum of £131,393 for Renewals reserve Fund, it would amount to £2628.The financial aspect of the proposed tramway would then be as follows:

Revenue per annum … … … … …		£29,250 0 0
Working Expenses per annum, including maintenance, power cost and management, 420,000 car miles at 8.75 pence … …	£15,313 0 0	
Interest on £143,752, at 6 per cent … … …	8,625 0 0	
Renewals Reserve Fund on £131,393, at 2 per cent… …	2,628 0 0	
		£26,566 0 0
		£2,684 0 0

The results as shown by the above figure is a surplus, amounting to £2684. The figures should be found to be correct, but the amount assumed as being the cost of power, is taken as the highest cost, if the tramway only is dealt with; and, on the other side, if a large and efficient plant was installed, with sufficient output, the cost of power would undoubtedly be reduced, which would make for a reduction in the above operating costs.

TRAMWAY ENGINEERING DIFFICULTIES

In this particular case, there are no engineering difficulties at all. At certain points bridges may have to be strengthened, to meet the tramway construction, but otherwise there is nothing to hinder the undertaking. The tramway will cross the railway near the station, but this is only a usual case, and nothing in regard to engineering difficulties presents itself. The drainage of the subsoil of the trenches of the tramway in Toowoomba should present no difficulties, and so far as judged, nothing is in the way of producing a good substantial piece of work that should meet the requirements for many years, without any excessive maintenance charges.

The general deductions will be given at the end of the report, after the Power Station has been analysed.

POWER STATION

The treatment of the Power Station is one that has a particular interest to this city. The local company has a station equipped with a plant that deals with all local requirements at present. It is owned by a company that has been in operation for a number of years, and has been probably of material influence in the development of the electrical industry in Toowoomba. The present plant consists of four units, of about 100Kw each, and another unit is now being added. This plant, even with the addition of an extra unit, would not be suitable for a tramway supply, and without radical alterations, the cot of generation would be high. On the other hand, in a small community, it seems wrong to have a separate generating station. The Railway Department is now arranging for the construction of a railway workshops at Toowoomba, and will, if necessary, require power, as the best practice in a shop of this kind, is to have the various machines driven by electric power, on account of the flexibility. If the Railway Department decides that it will erect a separate plant; then, with your proposed scheme, there would be three separate plants, none of any great capacity, and all working in an inefficient manner, taking them as a whole.

If one large plant were installed, to supply all the requirements of the city, with every facility of easy and economical extension in the future, it would have a tendency to further the commercial activities of Toowoomba, and enhance the opportunities of obtaining manufacturers to settle in the area. Even if a loss were made on the actual initial operation, probably the indirect results would give a distinct advantage.

Many plants supply current in bulk, and allow others to distribute same. The arrangements are mutually agreed upon, and from the calculations made in regard to this report, there is no gainsaying the advantages obtained by the community as a whole. Many of the suburban cities, in and about Melbourne, purchase their current in bulk from the Melbourne City Council, the Melbourne Electric Company, from the Victorian Railway Department's new electric station. These cities then distribute in their respective areas, and make what charge they think will be best for their local conditions. The above idea is not new, but it is the tendency of the times, to obtain the lowest possible cost for electric power.

STATION FOR TRAMWAY ONLY

This Station would be of sufficient size and capacity to deal with the tramway load only. It will, of necessity, have duplicate units, as one of the essential points in tramway operation is to have a plant that will not fail in reliability of service. The plant will be of the

best for the output required, and will have all various refinements that can be reasonably afforded for a station of the size.

The station would be located near North Street, on the western Railway Line. A fairly good supply of water can be obtained at this point, and as the water problem is one of importance in regard to the station, this point in the present case is the deciding factor in regard to the generating site.

One unit of the size indicated would be sufficient to supply the normal load, the other unit being in reserve.

2 – 250 kW 600 volt, direct current compound wound generators, suitable for direct connection to the engines.
1 Switchboard for generators and feeders.
2 – 382 BHP, 400 RPM, compound steam engines, of the high speed, vertical type, for 150 lbs. steam pressure, 160°F., superheated, and working with a vacuum of about 23 inches.
1 Condenser, with ample capacity, and circulating and air pumps, both the latter motor driven.
1 Spray cooler and pond.
2 Boilers, one large enough for ordinary capacity, the other in reserve for overloads, and during times of cleaning.
2 Chain grate stokers, and superheaters would be installed, as well as an economiser.
2 Feed pumps, and all piping and other boiler room accessories.
Brick chimney and flues.
The building would be of a very economical design.

The total cost of such a plant erected ready for operation would be £32,500. This price includes an amount for commission for designing, and a contingency fund. The price taken as the cost of power, and used in the tramway estimate, is sufficient to cover the cost of generation, with interest and depreciation.

STATION FOR TRAMWAY, MOTORS FOR PUMPS AND STREET LIGHTING

This plant would in all essential points, be similar to the above, only the units would be three in number, instead of two and interchangeable. The generating units would be 350 kW each, and driven by engines as aforesaid specified. The electrical units, however, would be three wire machines, so that any machine could be used on the tramway load, or on the lighting or power load. This would give one machine for operating the tramways, and one for the lighting and power load, while one machine would be held in reserve. This plant would have to run continuous, while the former plant would only run during the tramway service operation.

The machines would be so designed that they would give about 600 volts on the tramway load, and about 480 volts across the outers of the three-wire direct current system, when so operated.

The total cost of such a plant, erected ready for operation, would be £39,500. This price includes an amount for commission for designing, and a contingency fund. The actual cost of operation per unit with this plant, even with the increased output, but taking capital expenditure charges into consideration, would not be much less than the former plant. In other words, if the tramway were charged the actual cost of production, including capital, interest and depreciation, the tramway system would not gain much. The other side of the question is different, and depends on a good many factors. The charges the council now has to bear for street lighting, and for electric pumping that has been given as the gross amount of pounds sterling per annum would seem could be reduced. The amount paid, or is to be paid, including interest charges and depreciation for the above plant, is £8610. The £4300, however, includes lamp renewals, outside transmission losses, interest and depreciation on mains, etc. if the tramway should be charges what it would cost to produce current, as in the first station, then the lighting and power would benefit.

This station is not a flexible one, to meet the future power requirements, but might be utilised for other power and lighting that might be required by the council.

POWER STATION
For Present and Future Requirements

This station at the outset must be put down as not justified by the council's present requirements, either for tramway, or power and lighting loads. The possibilities are such that the write deemed it prudent to bring the subject to the Council's attention, as some solution of the power and lighting problem might eventuate.

The station contemplated would be on the same sight *(sic)* as first suggested, and would consist of two 500 kW turbo units. The voltage of the machine would be 2200 volts, three phase, 50 cycles, and with or without transformers, electric current would be economically transmitted to almost any point in and about Toowoomba. With the plant the city would have a station that would make for the future in an industrial way. The tramway and such other direct current load would then be supplied from a sub-station, located at the proposed car depot in Herries Street, and fed with alternating current from the main generating station. This distribution system would be low in capital expenditure, and the losses in transmission could be brought to a minimum.

The plant as estimate on is as follows:

2 – 500kW, 3-phase, 50-cycle, 2200 volts turbo alternators.
2 Condensers, circulating and air pumps, etc.
1 Spray cooler and pond.
3 – 250 kW, 3-phase, 50-cycle 500 volts direct current converters, with transformers and converters of the induction regulator type, so that the direct current could be varied from 48o volts to that required for the tramway work.
Complete switchboard for power station and substation
3 Boilers, any two of which would be capable of supplying one generating unit, the third boiler to be in reserve.
Boilers to be fitted with chain grate stokers and superheater.
1 Modern economiser.
Boiler feed pumps, piping and all other accessories required.
Power house building, of an economical design.

The total cost of such a plant erected, ready for operation, would be £62,400. This price includes an amount for commission for designing, and a contingency fund.

The cost of operating this station for the tramway, street lighting, and power load, would be about £10,470 per year, including capital, interest and depreciation, and the cost per unit of power would be high for the present load. However, if the railway workshop load could be secured, and a few other large consumers, the future would be assured for Toowoomba, in the nature of a cheap, electricity supply. The cost to the tramway would then be reduced for power, increasing the nett annual returns of the service.

SUMMARY

The following briefly defines the costs of the various schemes:

The cost of an undertaking for the purposes of a tramway only would be:

Tramway …	...	...	£143,752
Power station	…	...	32,500
Total	…	...	£176,252

A scheme covering the demands of the tramway, pump motors, and street lighting, would cost:

Tramway …	...	...	£143,752
Power station	…	...	39,500
Total	…	...	£183,252

A proposition for tramway and power for present and future requirements would cost:

Tramway …	...	...	£143,752
Power station	…	...	62,400
Total	…	...	£206,152

The cost of the construction of the tramway has been carefully gone into, every point in regard to revenue has been carefully considered, in the light of the car recommended.

The operating costs should be arrived at in operation. The power position has been given more consideration than in an ordinary case, and I have reviewed, not with the idea of bringing any contentious matter forward, but with the idea of meeting the facts as they now exist, and with the conception of future requirements, that sooner or later will have to be faced. It is the writer's opinion that tramways are absolutely justified for Toowoomba, as they will pay, and enhance every ratepayer's property, and give to one and all that mode of conveyance that is now generally accepted as being the most modern and convenient to all concerned.

I have the honour, Gentleman,
To be,
Your obedient servant,
F.A. McCarty, Mem. A.I.E.E.

From *The Sydney Morning Herald*,
Monday 7 July 1879, page 7:

CITY IMPROVEMENTS
The steam tramway is progressing rather slowly, on account principally of the wretched weather, and in part owing to the unusual labour required to form a good foundation in Elizabeth-street near the Haymarket. It is, however, being substantially constructed, for the space between the rails, and a little way outside them, is well pitch-paved, and care is being taken to have the foundations reliable. The gradient up to Liverpool-street is very steep - 1 in 19. About half the line has been constructed, and Mr. Payton, the officer in charge, says that the whole will be finished in two months' time.

Originally published in the Herald, Melbourne, 28 September 1949

THE STORY OF MY TRAMS

By H.H. Bell

Who retires this week {September 1949] from the Chairmanship of the Melbourne and Metropolitan Tramways Board

From 1915, when I was appointed one of the original members of the Hawthorn Tramways Trust, I have been associated continuously with the street transport industry of the metropolis, and I am the only surviving member of the first Melbourne and Metropolitan Tramways Board, appointed in 1919.

Now that I am in my closing days as chairman. it is something to recall that I have seen the annual revenue grow from £1,471,000 to £4,052,000. Equally interesting is the change in the rolling stock. In 1920 we had£ 1125 cable-cars and dummies and 165 electric trams. On June 30 last [1949] we had 733 trams and 332 buses.

Paying passengers carried advanced from 194,000,000 to 338,000,000. But the most striking difference from those early days is to be found in the operating expenses, which have jumped from £1,026,000 to £3,560,000.

During this term I have initiated such things as early transport on Sundays, all-night transport, formation of a stores department, construction of a large, central bus garage and a workshop capable of housing and maintaining a large bus fleet, foundation of a uniform factory, extension of the Preston workshops (the best of their kind in the world), acquisition of the patents of the PCC tram of the United States (the first of such trams is now under construction).

But from mere suggestion, these things could not have progressed far but for the never-failing support of my colleagues and the skilled working out of the ideas by an enthusiastic band of executives and their staffs.

Other days

Many who do not remember the days when street transport was operated by the Melbourne Tramway and Omnibus Company, working under a lease from 12 municipalities, and by various Tramway Trusts owned by the ratepayers. And nowadays people are apt to assume that the undertaking of the Melbourne and metropolitan Tramways Board belongs to the State.

This assumption is influenced, doubtless, by the fact that the Government's share in the expenditure of the Fire Brigade Board and the Infectious Diseases Hospital is paid by the Tramways Board.

The sum last year was £150,000, which brought up the total paid during my chairmanship to £1,582.000 – an amount which for years to come, would have financed deficits caused by abnormal rises in operating costs.

If the tramways hadn't to pay for the Fire Brigade and the Infectious Diseases Hospital, the recent rise in fares wouldn't have been necessary.

The undertaking, however, in a very real sense, is still the property of the ratepayers. It is they, through their councils, who receive any surplus in excess of £10,000, and it is they who can be rated to make good any deficiency.

Actually, the Tramways Act gives little power over the Board to the Government.

The Government cannot, for instance, order the Board to construct a new line, any more than it can give instructions for the removal of an old one.

It can direct the Board to prepare a special scheme for a new tram route; but even when that is done, even when the Public Works Committee has inquired into and recommended construction and Parliament has passed the Bill authorising the work, there is nothing in the Act which compels the Board to proceed with the project if it does not see fit to do so.

Fortunately for the Board and the success of its operations, political interference has been negligible.

I know of no other transport undertaking which does more for its employees.

During the war years, and particularly the last four, the public was not aware that it was only the skill and adaptability of our technical staffs which enabled them to have that daily transport which was their need.

It was not a matter which could be publicised; but I can say now that at one stage the supply of spare parts for our buses was exhausted. No one knew when more

would arrive, and we had almost half of our bus fleet immobilised.

Using parts

We simply had to get some of the idle vehicles on the road, and we managed it, by using the parts among the other vehicles as required.

When that was being done, our mechanics at both central and Preston were responding in the highest degree to our call for spare parts. They demonstrated what Australian workmen can do when the necessity arises, and thanks to their energy and skill the number of buses out of service soon fell to the normal level and the transport situation was saved.

I can give another striking instance of the ability of Australian workmen to rise to the occasion. Before the war we had occasion to invite tenders for a particular component. Only one offer was received at 33 per cent more than the previous price.

We judged we were in the grip of a ring. I was not disposed to be "squeezed," and on my suggestion the Board decided to ask our workshop manager to submit a tender, just as if he were in business on his own account.

The proposal received stubborn opposition from an unexpected quarter, opposition which turned into ridicule when the manager offered to make the component at much less than half the price quoted by the private firm concerned.

His performance was even better than his promise, for the component was made at a few pounds less than his estimate, to our great content. We have made that part ever since, and in doing so have save thousands of pounds.

As the years have gone, we have become more and more self-supporting. We even make our own furniture.

Through the Uniform Factory, we give the staff better garments at prices much lower than we used to pay private firms. The foundation of the factory is quite a story.

After the Commonwealth Clothing department gave up making for us just before the war we were dissatisfied with the service from other people. With some misgivings we decided on having a uniform factory of our own.

The result? We saved £7000 in the first year alone!

I would conclude by referring to something which is both useful and ornamental, and of which I am proud – Wattle Park.

Hector Hercules Bell

When the Hawthorn Tramways Trust bought the park, it was an unsightly and useless piece of land covered with rank grasses and diseased trees.

Not until 1926 were we able to start work. Diseased trees were rooted out and thousands of wattles planted, and many varieties of shrubs.

Amenities

As the years went on we built a curator's lodge and a chalet, even nesting boxes for the birds, children's playgrounds, a cricket oval, a nine-hole golf course.

Now the park is, I assert with confidence, one of the most beautiful in Australia.

Some months ago a charming old lady was shown into my room. She said she desired to thank me for all the enjoyment the beauties of the park gave her, and he handed me a cheque for £100 for a clock. The clock is now there.

I like to think of it in the years that I shall not see, ticking away countless hours of enjoyment to many thousands, a symbol of a dear old lady's gratitude and of my own connection with a lovely sanctuary.

HERE AND THERE
AUSTRALIAN AND OVERSEAS NEWS

ACT election result assures light rail for Canberra

The election for the ACT Legislative Assembly on 15 October 2016 resulted in the return of the minority Labor government, for a record fifth term. As before it will rely on Greens support.

The election campaign was marked by a ferocious anti-tram campaign on the part of the Liberal opposition. Throughout the government's previous four-year term the Liberals had strongly opposed light rail, with the support of *The Canberra Times* newspaper. The Liberals had stated that they would "tear up the contract" for the first line, signed in May 2016. The consortium which will build and operate the project is led by Leighton subsidiary Pacific Partnerships. Construction is headed by John Holland, a subsidiary of Chinese company CCCC. Spanish firm CAF will supply the 14 trams and Germany's Deutsche Bahn will be the operator.

It was acknowledged by both parties that light rail was the key issue in the election. The Liberals' roadside placards on numerous streets around Canberra conveyed a variety of vehement anti-tram messages.

In the event the electors were not persuaded by the negative campaign. The Liberals suffered a swing against them of more than 2%. Construction of the first line from the city to the town centre of Gungahlin in northern Canberra, now in its early stages, will continue; services are scheduled to begin in late 2018. Planning will now be undertaken for the second stage, to cross Lake Burley Griffin and link the city with the southern district of Woden.

Information about Canberra light rail is at http://www.transport.act.gov.au/light-rail-project

Canberra's light rail project, a major issue in the recent election in that city, is set to proceed. Dale Budd

Examples of the anti-tram roadside placards which were prominent throughout Canberra during the recent election campaign. Dale Budd

Rozelle

The former Rozelle tram depot has been transformed into a unique shopping and dining centre under the name 'Tramsheds,' It opened for business on 22 September 2016 and houses Sydney tramcar R1 1995 as part of its decor.

Sydney R1 1995 is displayed on a short length of track within the centre. Greg Travers

A side view showing the entrance to the tram's dining area.
Roy Howarth

The tram's interior has been fitted with longitudinal seating and tables for dining.
Greg Travers

Inner West light rail struggling to keep up with peak-hour demand

Commuters travelling on Sydney's Inner West Light Rail line during the morning peak hour are still struggling to get on board, despite more services being added earlier this year.

Passenger numbers on the 12.7km line have more than doubled over the past three years, with morning and afternoon services unable to keep up with rising levels of demand. The struggle to board trams has left some commuters looking for other ways to get to work. The trams are also used by students attending schools such as St Scholastica's and Sydney Secondary College Blackwattle Bay, both in Glebe.

Observation of trams passing through Lilyfield on the morning of Wednesday, 24 August found that the 8.15, 8.23 and 8.31am services were packed and could not carry many more passengers.

A Transport for NSW spokesman said 90 additional services were added in January. More trams have enabled the frequency of services to be increased from 10 to 8 minutes in peak times, and this has allowed an extra 3700 people to use the line each day. However, it is apparent that further action will be required if capacity is to meet rising demand.

Speaking to an *Inner West Courier* reporter, commuters said solutions could include more peak-hour services or the provision of additional trams. This would be in line with plans for the new south-east light rail line that will have trams double the length of those running in the inner west.

Rail, Tram and Bus Union division secretary Chris Preston called on Transport for NSW to boost funding to Transdev for delivery of the service. "Even one extra tram is a step in the right direction," Mr Preston said. "There needs to be more funding for some additional services."

The Transport for NSW spokesman said improvements to services were being considered. "We will continue to investigate long-term solutions to enhance the capacity of the Inner West Light Rail, which include improvements to infrastructure," he said.

Despite requests, the spokesman did not provide any recent statistics for passenger use since the new services were added in January.

Action for Public Transport secretary Jim Donovan said solutions were needed sooner rather than later. "With the amount of development in the inner west there is no way patronage is going to stop growing," Mr Donovan said.

Lightning damages East Troy Railroad car

Volunteers with the East Troy Electric Railroad, which operates over a 7.5 mile line in Wisconsin, were a bit shocked after lightning destroyed the interurban line's communications tower, damaged a trolley car filled with passengers and fried computer equipment on Saturday evening, 23 July 2016.

East Troy President Ryan Jonas reports that lightning hit a radio tower mounted on the roof of the railroad's two-storey brick depot, cutting it in half, before melting wires and damaging computer and telephone circuits in two of the railroad's buildings.

The electricity surge then travelled through the depot's electric substation and into a trolley wire that led to former Sheboygan Light, Power & Railway No. 26, blowing light fixtures in the car and damaging the its roof. The car was filled with guests on a charter at the time, but no one was injured. The all-wooden car was built by the Cincinnati Car Co. in 1908 and was last restored in 2005.

"I tell our members that we've restored a lot worse," Jonas says of the car, with electric fire damage and a one-foot hole in the roof.

Volunteers worked with fire-fighters checking equipment through the early morning hours on Sunday before getting just enough systems back on line to serve customers on a regular schedule during the day. Jonas says the lightning strike is unfortunate, but that it would not affect operations long term.

The railroad was also hosting its first-ever night photo shoot on the Saturday evening. More than 20 photographers and volunteers were about 300 feet away when lightning struck.

Railroad officials let photographers continue shooting a special assembly of Chicago South Shore & South Bend cars but later escorted the guests to the parking lot to safely return to their homes.

Photo by Edward Havens

COTMA

COUNCIL OF TRAMWAY MUSEUMS OF AUSTRALASIA

PO Box 61, Carlton South, Victoria 3053 www.cotma.org.au

Around 60 delegates attended the COTMA conference in Christchurch from 13 to 17 October 2016. While many were from New Zealand museums in Christchurch, Wellington and Auckland, there were also representatives from virtually all Australian tramway museums. A notable overseas visitor was Mikael Lund, Chairman of the Danish Tramway Museum.

Visitors enjoyed mostly good weather, making the most of photographic opportunities at Ferrymead and the Christchurch city tramway. Pre- and post-conference tours enabled visits to other centres including Auckland, where the Dockline tramway in the city's Wynyard Quarter was partially re-opened on 9 October and the Western Springs Tramway at MOTAT brought out some gems from its collection. Here are some pictures from an enjoyable and interesting few days.

Former Melbourne SW6 881, modified and in a new colour scheme, seen on the re-opening day of part of the Auckland Dockline tramway on 9 October.
James Duncan

COTMA 2016 conference delegates observe the Tramway Historical Society's track cleaning car, in use in Ferrymead township on 15 October. Dale Budd

Four historic vehicles meet: Auckland trolleybus 210 at left (dating from 1930), Wellington 103 at right, and Christchurch trams 26 and 1 in the centre.
Dale Budd

Christchurch No. 1 leaves Ferrymead township for the THS trambarn. Dale Budd

The Kitson steam motor and double-deck trailer on the loop in Ferrymead township. Dale Budd

At the rail/road crossing on the Ferrymead tramway, two trolleybuses wait while No. 1 proceeds towards Ferrymead township. Dale Budd

Former W2 244 in its bright new paint scheme in Cathedral Square. Christchurch 178 is behind. Dale Budd

The Kitson stem tram crosses the road; former Wellington trolley bus 103 waits at left. Dale Budd

Wellington 47 and Melbourne W2 321 in operation at MOTAT, Auckland on 8 October. Mal Rowe

BALLARAT

BALLARAT TRAMWAY MUSEUM

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

Dave Macartney and Warren Doubleday

Operations

Record rainfall during September put our tramway to the test. The pits at the depot were flooded on 14 September and again on 2 October as the water table steadily rose. The new drainage installed near St. Aidans Drive withstood the first onslaught, but the October deluge, 38mm in 24 hours on a sodden catchment, saw the lake burst its banks and, once more, short working had to be implemented.

Our Function Tram, Cuthberts 939, was hired six times between July and September for a variety of social groups and individuals. A 70th birthday surprise party on 24 September saw the guests assembling around 7:00pm for drinks and nibbles while the guest of honour, who lives locally, was picked up at home, blindfolded and driven around until she was totally lost, then escorted into the shed via the back door, the blindfold was removed, the brass quartet struck up Happy Birthday, followed by the trolley song, with the tram and guests departing into the night.[1]

[1] The Oakland Motor Car Company based in Pontiac, Michigan commenced production in 1908. It was acquired by General Motors in 1909. The production of the Oakland, named after the state county, continued until the Great Depression in 1931.

A more orthodox charter took place on 1 October, with car 671 for the Oakland Car Register. The group also inspected the fish hatchery next door, while at the back of the shed a marvellous assembly of these classic vehicles was parked. Ever the entrepreneur, Peter Waugh had set up his button badge making machine in the depot, and by the time they got back from their tram

No. 14 tackles flooding along Wendouree Parade near St. Aidans Drive, 27 May 1963.
The Courier, Ballarat, BTM Collection

Left: The Oakland Button badges, made up on the day for the Oakland Register visit.

Australia's first tramway fatality

It is often stated that Isaac Nathan, a musician of some note, was the first tramway fatality in Australia when on Friday, 15 January 1864, Nathan fell when alighting from Sydney's Pitt Street horse tram and was crushed beneath it (see TW December 1981, page 19). Nathan, however, was not the first fatality. On Sunday, 26 April 1863, a six-year-old lad, Thomas McGowan, fell beneath the Pitt Street horse tram and had his right leg and left foot crushed. He died in the Infirmary on Monday, 4 May 1863. The Coroner's report on this accident can be read on page 5 of *The Empire* (Sydney) for Thursday, 7 May 1863

Flooding of Wendouree Parade on 4 October was very minor compared with 1963.
Warren Doubleday

No. 40, ready to run out on 19 September for the 45th Anniversary of the closure of the SEC's Ballarat system.
Peter Waugh

With a good complement of passengers on board, No. 40 waits in Wendouree Parade for the photographs of the occasion. Peter Waugh

Starting to reassemble No. 18's 21E truck, 4 October 2016.
Warren Doubleday

The new scissor lift in use, to change display boards around in the depot, 27 September 2016.
Peter Waugh

ride, two types of Oakland badges were prominently displayed on the sales counter! They quickly sold out.

The 45th anniversary of the SEC closure took place on 19 September, and a re-enactment was arranged. A radio interview was conducted in the morning, and a TV interview around midday, which went to air on local TV at 6:00pm. By the advertised 7:30pm start time, quite a group of curious locals had assembled for the occasion, some 53 brave souls willing to endure a chilly night, with extra Cosy Tram rugs supplied. Deputy Mayor Belinda Coates represented the Council, and carried out the duties expected of civic leaders on these occasions. Member Hugh McElvey had brought along his euphonium, and the tram traversed Wendouree Parade to the strains of Auld Lang Syne, the music competing with the sound of No. 40 in motion. Two of the passengers had ridden on the last car in 1971, and all enjoyed a night out with a difference. The late night national edition of WIN News carried the story as well as The Courier the following day.

Present as well, was the family of Lou Walker, the official last driver of No. 40. Our Facebook page has good photographic coverage of the evening and of the ongoing events.

Around the depot

During July an upgraded security system was installed at the Museum, complete with security tags, recording cameras and alarms. This complements the fire detection system that was reported in the August issue of Trolley Wire. Both systems are working efficiently after the initial unfamiliarity of the staff was overcome.

Around the shed, No. 18's truck was returned to the shed on 27 September, so the reassembly of this car can proceed. The motors have been sent to a local motor repairer for insulation and wiring repairs. No. 26 is undergoing a paint touch up for the forthcoming

summer season. The entire fleet were fitted with new and updated fire extinguishers during September.

The Museum took delivery of a small elevating platform or scissor lift during September, which is already proving to be useful. There are a number of depot building jobs being lined up for this new piece of equipment as well many other projects that require use of a ladder.

Progress on the reconstruction of ESCo No. 12 proceeds with the new seats in the saloon installed and two new doors being constructed to replace ones that were life-expired.

BENDIGO

BENDIGO TRAMWAYS

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

Dan Rutherfurd

City Circle trams

After some initial problems, work is now progressing smoothly on No. 981, which is being rebuilt as a W8 class for use on Melbourne's City Circle. Work currently under way includes repairs to the roof and installation of underfloor equipment including electrical cables and wiring. While this is taking place our carpentry section is applying itself to the car's timber work. However, this will not be installed for some time.

Another Melbourne car, No. 983, will follow 981 through our workshop for rebuilding as a W8 class. On completion, it will be the fifth W8 class tram we have supplied to Yarra Trams. At present, the tram has been stripped back to its frame, with each component being carefully removed and tagged for restoration and reuse where possible. Our engineering staff have begun rebuilding the tram's underframe.

Although 981 and 983 will see service again in Melbourne, this will not be the case with No. 728, one of the original and longest-lived cars in the City Circle fleet. After being hauled by tractor to the Gasworks depot, 728 will soon leave Bendigo on a low-loader en route to Melbourne's Queen Victoria Market where we expect it will be a jewel in the crown.

Bendigo 7 in the workshop.
Bendigo Tramways

Excavation of the High and Violet Streets curve.
Denis Fitzgerald Photography

A thermit weld in progress.
Denis Fitzgerald Photography

Bendigo cars Nos. 44 and 7

Work is progressing on maximum traction car No. 44, which was involved in a minor collision at Easter. The carpentry workshop is currently rebuilding the driver's cab, while our electrical technician has been rebuilding and rewiring both the 600v controller and the 12-volt on-board systems.

Restoration of Bendigo No. 7 is also moving ahead, and we hope to see this 101 year old former Melbourne J class tram gracing the tracks within the next 6-12 months. However substantial funds will have to be raised in order to make the restoration of No. 7 a reality. To help the process along, we are looking to crowd-sourced funding, and will be offering a range of incentives to those willing to donate. These include a limited edition six pack of beer with a specially designed label for each bottle in the pack; naming rights on seats, driver's seats and destination boxes in

The excavated site with replacement track being put in place.
Denis Fitzgerald Photography

The asphalt to the surface being finished off.
Denis Fitzgerald Photography

Try our new Talking Tram app. It's a world first, and we would like you to help us test it.
Bendigo Tramways

the tram; and the opportunity for businesses to advertise on, or in, the tram. As the only J class in Bendigo, No. 7 is bound to become a much loved member of our fleet when it returns to service.

The crowd-funding campaign will go live at the end of November on www.chuffed.org. Make sure to look us up. Your donations will be most welcome!

Infrastructure upgrades and track closures

The weekend of 20-22 August saw the largest infrastructure project undertaken since the beginning of the Bendigo Talking Tram tours in December 1972. For three days all tram tours were cancelled to allow for corrective repairs to several curves at the Central Deborah Gold Mine, the Nolan Street to Bridge Street curve, and the Weeroona Avenue to Caledonia Street curves. During this time, all were completely reconstructed, with some further minor work occurring at the Lake Weeroona pedestrian crossing and Cathedral curve.

From 23 August all trams terminated at Lake Weeroona until further notice because of a spreading of the track in Bridge Street and Weeroona Avenue. We are hoping to undertake corrective works at these two locations in the coming months. The aim is for trams to return to the Joss House terminus as soon as possible.

Talking Tram app

In an effort to make the talking tram commentary more accessible for tourists, Bendigo Tramways has developed a new Talking Tram application.

Launched in time for the September school holidays, the app has been designed to run on a tourist's phone or tablet. Accessible on iOS (iPhone and iPad) as well as on Android devices, the app will deliver the audio commentary through the tourist's device while on board the tram, with various commentaries and language options being available.

Tourists will also have the option to 'review tour content', which will display the text of the tour commentary after they leave their tram. However, the audio option will only play while on board a tram. Other content shows things to do in the vicinity of each tram stop, assisted by the provision of a map, timetables and historical photos. For tourists who do not have their own smart device, iPods can be borrowed from the Central Deborah Gold Mine.

BYLANDS

TRAMWAY MUSEUM SOCIETY OF VICTORIA
38 Piccadilly Crescent, Keysborough, Victoria 3173 www.tramwaymuseum.org.au

From *Running Journal*

Annual General Meeting

The Society's Annual General Meeting was held at Hawthorn Tram Depot on Saturday, 1 October 2016 and was attended by a total of 17 members and friends.

Those present endorsed the 2015-16 Board Report and Financial Statements as presented to the meeting. In accordance with current Board policy, the Society's financial accounts and statements have again been audited by our Honorary Auditor Lance Nickson, who has been subsequently re-appointed for the forthcoming year.

At the close of nomination for the vacant Board positions, only five valid nominations had been received. As the number of nominations was equivalent to the number of vacancies, the following members were elected unopposed:

Chairman	Anthony Sell
Deputy Chairman	Andrew Hall
Board Members (three positions)	Michael Fedor, William Fedor, and Corey Robertson

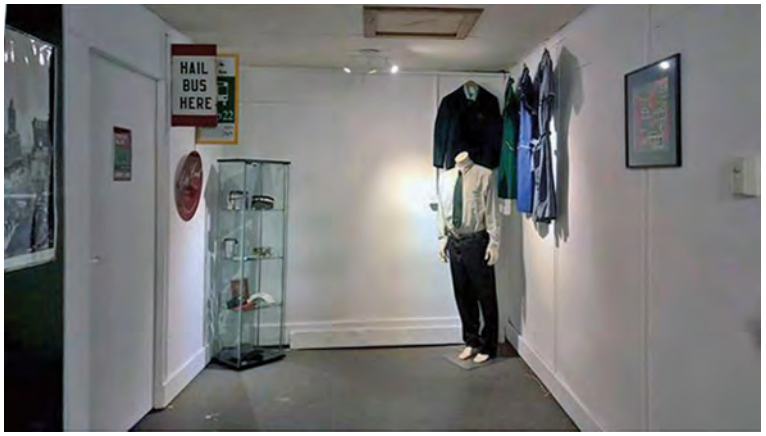
At the conclusion of the meeting members were provided with afternoon tea.

Society administration

At the start of July, a new roster system was put in place to co-ordinate staffing of the museum at Bylands on Sundays. This has proved beneficial and has guaranteed a regular rotation for the volunteers who have made themselves available.

Several months ago, the Society was approached by a promoter who was interested in purchasing surplus W series tramcars for re-use in commercial developments. The promoter has already one such vehicle, former SW5 728 which he had previously acquired from the Bendigo Tramways. This vehicle has now been cosmetically restored in Bendigo for inclusion at the Queen Victoria Market complex as a café. The promoter subsequently visited Bylands and inspected SW5 759 and SW6 963, which have been deemed surplus to our requirements. The Society has now reached an agreement with the promoter for the sale of these vehicles, which includes some other benefits to us. We will finally see the relocation of W3 667 to undercover storage.

We have also been approached by the '568 Incorporated' group with a view to relocating their vehicles to Bylands for storage. This group owns two trams, W2 568 and Adelaide H 368. These two vehicles, plus an additional car, W2 650, privately owned by other interests, were housed in the former North Fitzroy Depot until mid-



Part of the new display area at the rear of the Visitor Entrance Centre. William Fedor

It does not just rain – it pours. A view of 'Lake Bylands' looking from the old railway platform.
Corey Robertson

2008. The three cars were then transferred to external storage at Preston Workshops, where they remained until earlier this year when they were sent for storage, again outdoors, at Newport Railway Workshops. All three cars have suffered greatly due to the length of time they have remained exposed to the weather. The Society Board is presently investigating possibilities for assisting with provision of more secure accommodation for these vehicles at Bylands.

Most Victorian-based readers are aware that the state has experienced some rather extreme weather conditions in recent months. Extreme cold, heavy rainfall, strong winds, and the occasional snowfall do nothing to entice people to venture outdoors. Unfortunately, Bylands has had its share of this weather. We have been unable to open our museum site on a number of Sundays recently due to it being flooded. At times more than 15cm of water has flowed through the site, the depot buildings and the Exhibition Shed. The access roadway to the caretaker's house has been damaged by fast flowing water and the old railway dam in the north-western paddock has overflowed on more than one occasion. The drainage system has been tested to the limit, not helped by 'non-authorised or approved' changes and redirections made by the Mens Shed during their period of occupancy. The Board understands that a costly reassessment and reconstruction of our drainage will now be necessary to avoid a repeat of this in the future.

The Board recently reviewed the frequency of publication of *Running Journal*. Due to increasing costs and the need to further streamline our operations, it has been decided that RJ will no longer be issued bi-monthly, but will revert to quarterly publication.

Member Steven Johannessen has been appointed to fill the casual vacancy on the Board, as a result of the retirement of former member Noel Adams.

Around the Museum

The expansion and improvements to the Visitor Entrance Centre have continued at a steady pace. A new display area has been established in the former 'Members area' between the kiosk and the large future display hall of the Bristol building. Our Marketing Manager, William Fedor has been responsible for the design and decisions on what items are to be displayed, such as a collection of uniforms, posters, prints and other archival material. There are also plans to establish an archives room and members' lounge/library in the annex adjoining the future display hall.

In preparation for the expected removal of cars 759 and 963 it has been necessary to remove the items that have been stored in them for a number of years. At a recent working bee the vehicles were cleared inside and rubbish was consigned to the bin, with spare parts and other useful items moved to the cable tram shed. To reduce further deterioration a large tarpaulin was placed over 963, with 759 expected to be similarly covered in the near future.

A set of B2 type PCC bogies that have been residing on the track outside the Exhibition Shed for several years have been relocated inside at the south end of the shed to give clear access for the eventual relocation of W3 667. Some further tidying up has also been undertaken inside No. 2 tram shed as well as the cable tram shed. The ongoing task of cleaning the trams continues as time and available labour allows.

Our website and Facebook pages continue to generate considerable public interest. We were recently invited to provide a display stand at an open day for the local Wallan Fire Brigade. The stand generated considerable interest, the most common comment being "we drive past all the time but have never called in!"

Many years ago the Society inherited from COTMA a large collection of surplus MMTB 1970s brown and yellow uniforms. Most of the larger items were initially distributed by COTMA to other kindred groups for use as uniforms at their respective operations/museums. The remainder, mostly smaller sizes, proved difficult to re-home. For many years they were stored in a dry, safe environment, but in more recent years, for unexplained reasons, they were spread around various locations, some of which have been unkind to the fabrics. A start has been made on sorting out and cataloguing what is still usable.

FERNY GROVE

BRISBANE TRAMWAY MUSEUM SOCIETY

PO Box 94, Ferny Hills, Queensland 4055 www.brisbanetramwaymuseum.org

Peter Hyde

A range of activities

We are pleased to report that restoration of the Valley Signal Cabin has been completed after more than a year. Restoration of FM 400, Dreadnought 136 and Trolleybus 34 is continuing.

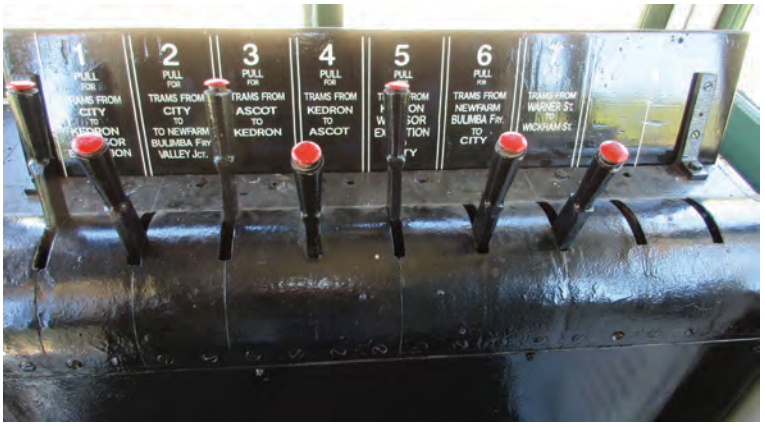
A former CEL (City Electric Light Co) cast iron footpath junction box has been repainted and set up behind the main workshop where it will be used to hold fire-fighting equipment.

Work has begun on various odd jobs in the terminus area. These include concreting track edges and drains, the latter being left as open holes many years ago when a work-for-the-dole project was terminated. The past few months have seen extensive works undertaken around the Museum grounds. While drains, building maintenance and landscaping are neither glamorous nor particularly photogenic, this type of activity is essential for continuing operation and has consumed the major part of members' workdays over the last few months.

How long can it take to finish a job? The concrete edges finally being laid in the terminus area after more than 30 years! Peter Hyde

Former CEL (City Electric Light Co) cast iron footpath cable junction box. Peter Hyde

Valley Signal Cabin fully restored complete with visitors viewing platform. Peter Hyde



The repainted hydraulic lever frame inside the Signal Cabin. Peter Hyde

Dreadnought 136 'gift wrapped' to keep dust out of its interior while remedial roof work is undertaken. Peter Hyde

Replica Horsecar No. 41, loaded for delivery to Camp Hill State School for display at their Centenary fete. Peter Hyde

We held our night running event on 28 September to commemorate the Paddington depot fire. Phoenix 554 is standing at the terminus waiting for departure time.
Thomas Wyndham

The driver of Dropcentre 341 checks with his conductor before departure on the evening of 28 September. Thomas Wyndham

HADDON
MELBOURNE TRAMCAR PRESERVATION ASSOCIATION
324 Sago Hill Road, Haddon, Victoria 3351 www.mtpa.com.au

Anthony Smith

Restoration of W5 792

Steady progress is being made on the restoration of this tram.

In recent months we have replaced all four of the original drop-centre quarter panel frames. During the fitting of the new frames it was discovered that the top rails of the frames that house the side destination boxes had been positioned incorrectly at the Preston Workshops many years ago. The repositioning of the top rails required dismantling the frames and altering the pillars.

With the new drop-centre quarter panel frames in place, it was decided to fit the side fascia boards. Before doing so it was necessary to fill the old screw holes in the top plate with dowel plugs to ensure that the new fascia boards were well fastened. This work occurred during August.

It was also necessary to manufacture two replacement side destination box fascia plates using one of the old units as a pattern. The next stage of this project will see the fitting of new drip rails along the fascia boards. Some time ago we were fortunate to acquire a large quantity of these drip rail timbers from Preston. More recently, the required number of lengths have been removed from store and primed in readiness for fitting. The angle sections of drip rail for the cabin ends have been sent to Bendigo for final machining as they were in an unfinished state. Once they are back at Haddon they will be fitted to the tram together with the side sections.

Frank Schroeders oxy-cuts old bumper bolts in the process of the removing the cabin floors. Anthony Smith

No. 792 undergoes a through steam clean outside the workshop. Jacqui Smith

In early September the bumpers as well as the cabin floor boards, the end crown planks and the rest of the saloon flooring were removed from the tram. No. 792 was then towed outside the workshop to enable the main frame and body to be thoroughly cleaned. Work is now under way on painting the chassis underfloor members in primer.

Overhead works

In early September the opportunity arose to obtain some steel tramway poles from a local contractor. Upon inspection, it was decided to buy six of them, and these will be used as additional poles on our north and south-west network. The additional poles will enable us to better equalise the strain load on curved track and to improve the alignment of the support spans. However, before we can use these poles it will be necessary to increase their length as they were cut off at ground level when removed. This will be done by welding inserts into the bases of the poles and using pole risers to increase their height. Through the generosity of

Jacqui Smith priming the new saloon floor side bearers for 792. Anthony Smith

Top Left*: Frank Schroeders fits the fascia boards to the south side of 792.* Jacqui Smith

A drop-centre quarter panel frame undergoes final preparations for fitting. Anthony Smith

the St Kilda tramway we have been able to obtain the correct size pole risers to enable this work to occur.

The poles are currently being prepared and their required locations have been surveyed and marked. In recent months we have also been able to obtain a large quantity of serviceable overhead fittings such as ears, section insulators and frog pans for possible use at Haddon or by other museum groups.

Site maintenance

During early September as part of our site maintenance schedule, a number of trees along the north and south-west curves were cut back using our Dodge bucket truck. We have also conducted drainage maintenance to ensure that all the storm water pipes are free from blockages. This work has been timely and we have had no problems with flooding following recent heavy rain.

Tram maintenance

The task of fitting overhauled arc chutes to the K35 controllers in our fleet is almost complete, with L 103 and W2 407 attended to during early September. This leaves only W2 357 to be so fitted in order to complete the program. To ensure long-term supply of consumable items for our trams, we recently obtained a quantity of carbon brushes for DH16 and CP27 compressors from a local manufacturer.

Frank Schroeders trims tree growth near the south west curve. Anthony Smith

Left: *Frank Schroeders measures overhead poles to determine length of inserts required.* Anthony Smith

Anthony Smith fitting a refurbished arc chute unit into the controller of W4 670. Jacqui Smith

LOFTUS
SOUTH PACIFIC ELECTRIC RAILWAY CO-OP SOCIETY
PO Box 103, Sutherland, NSW 1499 www.sydneytramwaymuseum.com.au

From *SPER News*

All Victorian Trams Day

A milestone was reached by the Museum when our first Victorian Trams Day was presented on 18 September. The main purpose of the day was to launch newly restored Ballarat tram 37. The event attracted visitors from far and wide, including enthusiastic patrons from as far away as Townsville, Adelaide, Melbourne, Ballarat, and Canberra. Our hard-working workshop crew arranged for seven trams from the State of Victoria to be available for the event, of which six were in operation. A great deal of preparation had been undertaken behind the scenes by many members to bring the event to fruition.

Inclement weather failed to dampen the level of enthusiasm and indeed added atmosphere to the occasion. Despite the competition from several other transport-related heritage functions taking place on the same day, the Victorian Trams Day attendances exceeded our expectations.

Activities started at 10:00am when Y1 611, W2 249 and Z2 111 commenced operation.

A ceremony took place at 11:00am on the western side of our picnic grounds to launch Ballarat 37. The organiser for the launch, David Critchley gave a speech on the history of the century-old tramcar. Another speech was given by Ian Hanson, the team leader of the restoration. Ian outlined the restoration process and thanked those members who had assisted in the work.

Ballarat 12 in the depot yard, 18 September 2016.
Robert Merchant

E cars 530-531 emerge into the sunlight during the extraction of Ballarat 12 from the display hall for transfer to the workshop.
Martin Pinches

Melbourne cars Z2 111, Y1 611, and W2 249 lined up in the depot on 9 July 2016. These three cars were the first to enter service on the All Victorian Trams day, 18 September. Scott Curnow

About 11:10am, 37 broke through a ceremonial red ribbon and proceeded to the Royal National Park. It was followed by Ballarat 12 – a surprise inclusion – and Bendigo Birney 11, the three cars running in convoy.

Interestingly, the convoy represented three tram types that had run in the city of Geelong. Ballarat 37 operated in Geelong after its purchase from the Melbourne tramways in 1948. On closure of the Geelong system in 1956 it was transferred to Bendigo, then on to Ballarat in 1960, thus achieving its unique status as the only tram to have run in all four Victorian tram cities.

Ballarat 12 and Bendigo 11 in the depot yard await their cue to join Ballarat 37 on its trip to the Royal National Park on 18 September. Scott Curnow

Philip Bertram gives Ballarat 12 a clean on 17 September. Ballarat 12 is still in the condition it was in when withdrawn from traffic in 1971. Ian Hanson

The crowd gathers in rather damp conditions to hear the speeches and witness 37 break through a ribbon to officially re-enter service. Dale Budd

Ballarat 37 is about to break through the thin red ribbon to mark its re-entry into service on 18 September. Dale Budd

Where are all the people? They are all behind and to the right of the photographer taking photos! Ballarat 12, Bendigo 11 and Ballarat 37 at the Royal National Park terminus on September 18.

Robert Merchant

Melbourne cable grip car 322 in Cross Street. The poster mounted on the car depicts its appearance before restoration.

Dale Budd

Danny Adamopoulos and Mike Giddey concreting the side strips on Army Hill on 8 October.
Martin Pinches

A concrete truck straddles the 'four-foot' to deliver its load of concrete on 15 October 2016.
Martin Pinches

Ballarat 12 saw service in Geelong as their car 27, after being sold by the MMTB in 1928. It was transferred to Ballarat in 1936 where it was renumbered 12. This car had the distinction of being built in Sydney by the Meadowbank Manufacturing Company for the Prahran and Malvern Tramways Trust in 1915.

The Bendigo Birney car was imported new from the United States in 1924 for use in Geelong as car 14. It was sent to Bendigo in 1948 where it was renumbered 11.

The seventh tramcar on display was former Melbourne cable car dummy 322. Many favourable comments were made by our visitors about the photos which showed the condition of the tram prior to work commencing on its restoration.

Cars 12 and 37 both required intensive work to prepare them for the day. The workshop team made a very determined effort some months ago to make Ballarat 12 operational. Last minute work was required to fit new weather blinds for Ballarat 37. Thanks are due to Tony Cliff of Bendigo Tramways for locating a manufacturer of the canvas material required for the weather blinds. Tony also made up brand new leather straps and other items for the restoration of 37. The car received reconditioned destination boxes fitted with calico rolls from all three former SECV tramways joined together.

Such was the success of the day that the event may be repeated in the future. Perhaps confusing for the public was the sign at the entrance proclaiming 'Sydney Tramway Museum' when in point of fact there was no Sydney tram to be seen!

Track and associated work

The concreting of Army Hill has been expedited by the purchasing of some concrete thanks to generous donations. This, and the return of Corrective Service Order (CSO) workers after some requirements of the Department of Corrective Services were satisfied, has

The Central Coast Hogs bikie gang enjoyed a visit to the museum on 11 September.
Barry Tooker

allowed a change in procedure which speeds up the work.

Previously we set up the two eight metre lengths of formwork on each side of the track and we would concrete the two side strips independently and then fill in the 'four-foot' later.

Due to the length limit of the delivery chutes on the trucks, it typically took two separate pours to reach the end of the formwork before it was reset uphill. Now we are ordering five cubic metres of paid concrete to do the side strips for the full length of the formwork, using CSO workers with barrows to place it beyond the reach of the delivery chutes.

David Canini was hired on 9 October to carry out earthworks at the North Terminus area, including the backfilling of a long trench conveying electrical and communication conduits and a water pipe. The pipe is now connected, assisting the cleaning of the concreting gear. The pits and conduits are for future underground electrical supply to the No. 3 substation.

David placed a large quantity of broken concrete in the 'four-foot' of the track to be concreted. This will make our poured concrete go further. On 15 October six and a half metres of surplus concrete arrived just after we had finished off five metres of purchased concrete. It was a very busy day indeed.

A new palisade fence and gates have been erected along the Museum's Pitt Street frontage.
Robert Merchant

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

Colin Seymour

Air testing bench

Work has advanced on the development of this testing facility with a new work bench established next to the electrical section. An air manifold has been set up on this bench to allow for the testing of multiple devices while an air reservoir has also been connected to the system. A switch has also been included allowing for the power operation of air compressors under test. Compressor governors can also be tested either by air only or by electrical connection to the compressor. Safety valves and air gauges can also be tested while the system can also be expanded to include other pneumatic devices.

To move air compressors around the workshop easily, a number of specially designed pallets have been made for use with both GE CP and Westinghouse DH compressors.

Driver training day

A motorman training day was held on Saturday 30 July with technical expertise provided by Jack Pennack and Kym Smith. Subjects covered during the day included:

- General safety issues and the theory of air compressors, including their control components.

Birney 303 being serviced on the new pit on Road 6 on 26 July.
William Adams

The new work bench with the air manifold and compressor governor being tested.
William Adams

The new roof material being applied to Bib and Bub car 14 on 26 July. William Adams

This was followed up with a demonstration of the new compressor test bench.

- Defensive driving and obligations in the event of a reportable incident.
- Use of the new pit where Kym demonstrated the operation of the components that comprise a tram's braking system.
- Use of W7 1013 for emergency braking trials.
- Checking drivers' estimates of their speeds using a GPS device.
- A 'skid school' that gave drivers experience in braking under wet and greasy conditions. The works car was used for this exercise

Track and overhead

Over winter, six sleepers were laid between poles 8 and 9, with nine being laid between poles 12 and 13. Six steel sleepers were welded in position between Pole

Leyland double-deck trolleybus 433, formerly owned by Christopher Steele, is now displayed on the northern side of the Trolleybus shed. AEC double deck trolleybus 417 is displayed behind 433. Colin Seymour

Leyland double-deck trolleybus 433 as seen from the front of Green Goddess experimental trolleybus 216. Colin Seymour

F and the Road 7/8 switch, with a further three being welded in position under the Road 7/8 switch.

With just two or three more track days before summer, we would welcome assistance in undertaking our track and overhead projects. This would help speed the completion of the various tasks we have on hand.

Radio publicity

Ashley Walsh from ABC Radio 891 visited St. Kilda in July and travelled to the playground on the 'Bib and Bub' set. He witnessed the 'skid school', described above, and interviewed Kym Smith, who provided sufficient material for three segments broadcast over three weeks on his Sunday morning program. This is valuable publicity as his program attracts a large audience.

Bib and Bub progress

Installation of the roof lining of No. 14 has commenced as part of the car's restoration. This work is being undertaken in the body shop.

Bus shed

Storage of vehicles in the bus shed was rearranged during August to accommodate the late Christopher Steele's double-deck trolleybus 433 and to prepare Canton 488 and AEC 623 for transport to the National Railway Museum at Port Adelaide where they were displayed over the weekend 15-16 October. Our intention is for double-deck trolleybuses 417 and 433 to be viewed externally by the public, with no interior access being permitted.

WHITEMAN PARK

PERTH ELECTRIC TRAMWAY SOCIETY (INC)

PO Box 257, Mount Lawley, Western Australia 6929 www.pets.org.au

Michael Stukely

Annual General Meeting

The Society's 35th Annual General Meeting was held in the members' room at the Carbarn on Sunday, 31 July. The following office bearers were elected: President, Allan Kelly; Vice-President, Michael Stukely; Secretary, Robert Pearce; Treasurer, Tony Kelly; Membership Secretary, David Brown; Councillors, Garry Barker, Ric Cheeseman and Roy Daley.

In the 12 months to 31 March our four available trams ran a total of 9,389.2km (the 2014-2015 total was 8,391.2 km, also with four trams). The mainstays of the tram fleet were W2 329 (4,305.6 km) and W2 441 (3,595.2 km), and there was again significant running by Fremantle 29 (912.4 km). In just four months since it entered service in December 2015, WAGT (Perth) E 66 ran a very respectable 576km.

New Carbarn project

Following completion of the new three-road Carbarn structure (see *Trolley Wire*, August 2016), installation and testing of the three roller doors at the eastern end to enable track access from the main line was finished on 1 September. Northwest Shedmasters formally handed over the completed shed to the Society on 7 September.

Preparations are in progress for the laying of track for the three new carbarn roads. This requires relocation of the mainline points and realignment of the access track to the Lindsay Richardson Carbarn so that it is clear of the three new sets of points to be installed. Work has started on realigning the lower hardstand fence alongside the track in this spot.

Track professionals visit Whiteman Park

Following discussions and two site visits to Whiteman Park by Michal Golinski, Regional Lead at Brookfield Rail, a volunteer team of the company's track workers undertook a steel sleeper replacement program on the PETS main line over two days.

On 16 August, a nine-man team led by Dave McLeish, a Brookfield Rail Track Supervisor, assembled at the north end of the tramway passing loop ready to commence their task on the section northwards towards Red Dam.

Testing the roller-door motors installed in the new Carbarn on 31 August. Lindsay Richardson

Three members of the Society's track team moved ahead of the Brookfield team and extracted the timber sleepers that would be replaced with steel sleepers. The two teams moved along steadily with the PETS team working hard to stay ahead, applying our tried and proven use of the bucket tractor and wire rope in the extraction of the old timber sleepers. At midday, the two teams enjoyed lunch provided by Brookfield Rail at the Village Cafe. The work then continued until 3:30pm when the Brookfield team returned to their base at Kwinana. A tally for the day's work showed that 45 sleepers were replaced, having been gauged, secured to rail and fully packed up on the underside.

On 17 August the two teams assembled just north of Red Dam under an overcast and rain-threatening sky. At about 10:30am steady rain began falling and then it became very heavy, which resulted in Dave calling a halt and deciding to terminate work for the day, having noted that 31 sleepers had been replaced between Red Dam and the cattle grid that morning, giving a total of 76 steel inserts over the two days.

As it was still raining, it was decided to bring W2 329 to the worksite to transport the two teams to the Village Cafe for lunch. Afterwards, a visit was made with 329 to the Village Junction Station and then back to the worksite where the Brookfield team transferred to their vehicles and left for their home base.

The end result of the work completed over the two days was a huge benefit to the Society. We extend our appreciation to Brookfield Rail for their very generous and valued assistance towards the upgrading of our track.

Ballarat 31

Following the repairs and re-profiling of the badly worn wheelsets from single-truck tram Ballarat 31 (see *Trolley Wire* August 2016), the Brill 21E truck frame was sent out for sand-blasting and priming, and was returned in August with an excellent result.

*Springtime at Whiteman Park: W2 329 arrives at Mussel Pool on 20 September. In the foreground, under the gum trees just a few metres from the tram stop, there is a colony of native Pink Fairy Orchids (*Caladenia latifolia*) in full bloom.* Michael Stukely

Nick Tsiaglis watches failed timber sleeper removal by the tractor and wire rope, operated by Trevor Dennhardt on September 3.
Lindsay Richardson

Traffic operations and service cars

There were again very good levels of patronage over the two-week July school holiday period, with trams operating as usual on seven days per week. Patronage is always highly dependent on fine weather, and we were fortunate to have some outstanding days in Perth in mid-winter. Visitor numbers were also good in August and September.

Melbourne W2 329 was the main service car from June, following the withdrawal of W2 441 from regular service pending the replacement of worn wheelsets. Perth E 66 and Fremantle 29 each ran on several days. Our Traffic Rosters Officer, Allan Kelly, does an excellent job in ensuring that all shifts are covered, and our thanks as always go to all of our traffic crew members.

The Park's internal radio communications system was upgraded to digital format in July, resulting in significantly improved radio reception across our tramway. The radio system is an essential component of our safeworking.

General

Refurbishment works by the Wednesday team on Melbourne SW6 891 and W6 998 as well as Adelaide H 371 have continued, in preparation for their recommissioning for regular service at Whiteman Park.

Nick Tsiaglis (left) and Trevor Dennhardt pull a replacement steel sleeper into position on 3 September.
Lindsay Richardson

The Brookfield Rail volunteer team replaces failed timber sleepers with steel sleepers north of the passing loop and Triangle on 16 August.
Lindsay Richardson

The first section of track north of the passing loop following the replacement of timber sleepers with steel by the Brookfield Rail team, seen on 3 September.
Michael Stukely

Body repairs and repainting of 891 were completed and it is currently undergoing mechanical work together with the installation of air horns. Roof canvas repairs to 998 are being carried out by Graham Bedells, while Fraser Douglas has completed repainting the window frames and body sides where required. A remaining task is the lining-out on the east end apron and the application of car numerals at that end.

Roof canvas repairs to W7 1023 were almost complete in August ready for final roof painting, as part of its conversion to a works car (see *Trolley Wire*, May 2016)

Following the excellent progress achieved in the intensive program of replacing deteriorated timber sleepers line with steel sleepers, plans are being made to acquire additional used steel sleepers to enable the replacement of all the timber sleepers on our main line. At the track maintenance day on 3 September, four members replaced another 10 sleepers, continuing north towards the cattle grid where the work done by the Brookfield Rail team ended (near pole N10).

Roy Daley and Ric Cheeseman have moved the sleeper exchanger machine into the Noel Blackmore Tram Service Centre to enable the fitting of the replacement parts, supplied to us at a very generous discount by Gemco Rail. Roy and Ric have also located a 2.5 tonne lifting-capacity forklift which is to be purchased for use in the Spare Parts Shed. Thanks go to Lindsay Richardson who has agreed to fund this from the Geddes Trust.

Ian Kelly, a PETS electrician, repairs light fittings on 7 September. Lindsay Richardson

Noel Blackmore repairs a part from a brake valve on Adelaide H 371 to correct an air leakage problem on 7 September. Lindsay Richardson

A periodic Compliance Inspection focusing on track maintenance was carried out by the Office of the National Rail Safety Regulator (WA Branch) on 13 July, with a good result. W2 329 was used to convey the two officers to various sites along the main line. The Rail Safety National Law came into effect in WA on 2 November 2015, following the passage of enabling legislation through the Parliament of Western Australia.

Ric Cheeseman (left) and Roy Daley remove a part from beneath the sleeper exchanger (not yet commissioned) on 7 September 7. Lindsay Richardson

Night operations at the Brisbane Tramway Museum on the 28 September marked the commemoration of the Paddington Depot fire in 1962. It is 5:45pm and Baby Dreadnought 99 and Combination 47 are at the terminus, ready for operations to commence.
Thomas Wyndham

Springtime at Whiteman Park: On its way to Mussel Pool on 16 October, Fremantle 29 approaches the Workshops Road crossing after passing through Farmgate Curve. The nearby hillside is carpeted with yellow Everlastings.
Michael Stukely