

Written by Douglas Johns, Secretary of the Tramway Historical Society Inc.

Presenter: John Shanks  
Session Chair: Peter Kahn

Session Secretary: Terry Verney

### Background

A little over 40 years ago, on Saturday 11th of September, 1954, to be exact, the ceremonial "last" trams of Christchurch made their final journeys into Cathedral Square and thence into, seemingly, the oblivion of the Falsgrave Street carsheds.

Years of wartime constraints followed by postwar austerity measures have left the Christchurch Tramway System in a very rundown condition, and most people were glad to see the tramcars finally go.

Motorists were particularly pleased. They did not have to wait behind the tram every time it stopped to pick up or set down passengers.

The cyclists were pleased. They didn't get their wheels caught in the tracks, and come tumbling to the ground.

The passengers were pleased. No longer did they have to ride in the cold, draughty, rattly boneshakers.

Even the Christchurch Transport Board was happy. It no longer had to maintain the city streets (for the ultimate benefit of motorists) however many feet it was either side of the tram tracks.

No doubt Mrs Knight, of the New Brighton Line fame, would have rejoiced greatly, but she had long since passed on.

But not everybody was happy. There are always a few who don't go with the flow. And so these diehards did the only thing possible - they formed the Tramway Preservation Association, the forerunner of the Tramway Historical Society.

### The Tramway Historical Society

The Tramway Historical Society had aims, it had commitment, and it had a single-minded purpose -- a tram would one day run again in a Christchurch street. And it did!!

In the August school holidays, 1964, Christchurch celebrated Papanui Tram Week. The ultimate had been achieved. A tramcar - horse drawn - ran in public service on a section of still exposed tram tracks in the Papanui Shopping Centre.

People rode the horse tram in their thousands. The Police had to provide traffic control. At the end of it all, the fledgling Society, little known until then, became a well known preservation group in Christchurch.

Initial tramcar restoration by the Society was carried out in an ever-expanding corner of the old Christchurch Transport Board workshops. Later this work was moved to our tram barns at Ferry Mead, where most of you will be familiar with our operations.

### The Tourist Tramway Project

It will surprise many of you to learn that the idea of a Tourist Tramway for Christchurch is not new.



In 1982, the Christchurch City Council decided to turn parts of High Street and Cashel Street into a pedestrian mall. The Society thought it would be a great idea if tram tracks were included in the redevelopment, on which a horse or steam tram could operate on special occasions. The suggestion was made, but nothing ever came of it. We were way ahead of time.

Way back in 1973/74 Cathedral Square had been redeveloped as part of a package of enhancements to the city at the time of the staging of the Commonwealth Games. This redevelopment resulted in a certain amount of criticism, provoked mainly by the congregation of nefarious characters with less than pure motives in some corners of the Square.

Now in New Zealand the best way to find a solution to a problem is to refer it to a committee. This time-honoured tradition was duly upheld and the so-called "Bishop's Committee on Cathedral Square" was formed, chaired by the Anglican Bishop of Christchurch. Being a good committee it called for submissions. Like all good tramway societies the Tramway Historical Society responded by suggesting that the Square could become the focal point of a tourist tramway, complete with the then newly restored Boon 152.

Again the suggestion was not taken up, but somewhere along the line the germ of the idea settled and lay dormant, but not forgotten. It took root and emerged in 1990, when the Christchurch City Council convened "The Tourist Transport Sub-Committee". And this time they did have trams on their minds.

This Committee called for proposals on inner-city tourist transport, to which the Society responded - it was getting quite good at doing submissions by now. All submissions had to be personally presented to the Committee. Only one submission was for real trams. The others all sought to operate look alikes, battery buses, or cardboard cutouts, all without the benefit of proven technology.

The Society was fortunate in presenting its submissions last. Our presenter was thus able to commence with the telling and dramatic words "Gentlemen I can offer you the real thing ....". And the real thing was chosen. After such a start, the question was never in doubt.

The progress on the building of the Tourist Tramway has been well documented in various publications, and is not part of this paper.

#### The Tramway Historical Society's Part In The Project

In retrospect convincing the Christchurch City Council that it should build a tourist tramway was, from the Society's point of view, probably the easiest part of the whole exercise.

One of the most fundamental aspects was the provision of the tramcars themselves. It goes without saying that if you are going to have a tourist tramway, then there must be tramcars. Whilst this Society had tramcars which it could make available, we by no means were the only possible source of tramcars for the Tourist Line.

Fortunately the Society was able to demonstrate that the tramcars it had were eminently suitable for the job and the ones which should be used.

Use of the Society's tramcars did present some problems for the Society, not only in respect of the tramcars themselves, but also in respect of how the Society should undertake any work needed on the tramcars, and how the Society should protect itself in regard to contractual obligations and the flow of income that the tramcars would produce.

The following areas of concern needed to be addressed:

- a) Which tramcars?
- b) Work needed on the tramcars
- c) Safety requirements
- d) Would we operate the Tourist Tramway?
- e) How the work needed would be done
- f) Protecting the Society from the Tax Man

So let us look at each of these items in a little more detail.



### Which Tramcars

The Society had a number of possible contenders for the Tourist Tramway. We had three large electrics, two small electrics, one single decker trailer, two double decker trailers, and one steam tram that could be made available.

The steam tram, nice though that would have been, wasn't really in contention. Although coke may be reasonably readily available on this side of the Tasman, it cannot be obtained at anything like reasonable cost in New Zealand, and the amounts required to run "Kitty" in daily service would have made the operation too costly.

There is only one, and can ever only be one (!) "Kitty" so that in the event of breakdown or servicing requirements, the service would have to cease until she was back in service.

In New Zealand we have a phenomenon called "The Clean Air Society". They work themselves into a frenzy just thinking about smoke, let alone actually seeing smoke. Now although when "Kitty" burns coke no smoke results, she does exhaust steam through her funnel, and to a Clean Air enthusiast, that is much the same thing.

So taking all in all, "Kitty" will have to remain at home (special occasions excepted).

This left us with the electrics to run on the Tourist Tramway.

The original concept for the Tourist Tramway was for a single line running between Cathedral Square and the Museum. This was mainly on reserved track in a pedestrian mall. As such only one tram would be in use at any one time, and this type of operation would have admirably suited Boon 152, being a two ended car, with Dunedin No. 11 providing backup. The Council commissioned a consultant's report on the proposed tramway, and as a result of the recommendations contained in that report the Tourist Tramway grew into an inner city circle requiring three electric cars and two trailers.

This requirement involved the Society in a complete rethink of its running fleet. Not only had it to provide the city fleet, but it also had to maintain its Ferrymead operations. To make life even more interesting Brisbane 236 suffered a motor failure at this time, and the quotes to have this fixed were quite daunting.

After much deliberation it was decided to make electrics, Brill 178, Boon 152 and Dunedin 11 available together with Duckhouse Trailer 115. It was decided that the second trailer would be Dunedin Horse Tram No. 18. This had been under restoration for some time, and would now be completed as dual horse/electric trailer. It was withdrawn from use in Dunedin in 1903 and hasn't carried a passenger in 90 years.

### The Refurbishment Programme

With the exception of No. 18, all of the tramcars had been in use at Ferrymead for varying lengths of time, some since opening day in 1968. Obviously there would need to be quite a bit of refurbishment work done to bring the cars back to pristine condition after years of seven days a week running.

All this sort of work costs money - big money when there is a deadline to work to, and the deadline makes necessary the use of paid full time labour.

I am sure I will strike a sympathetic chord with everyone present when I say that tramway societies don't have that sort of money sitting in the bank waiting for something for it to be spent on. We certainly didn't.

So when we got down to negotiating with Council representatives on our part in the overall scheme we said "yes we would supply trams in the necessary quantities, but someone else would have to pay for the cost of refurbishment". Council agreed, and included the cost of refurbishment in the set up costs which would eventually be recovered from the commercial operator.

The next step was to ascertain what the actual cost of refurbishment would be. Now all of you will know that this sounds easy until you actually sit down and put it on paper. It's a bit like trying to get a hard and fast quote on having the engine of your car overhauled - you can't get anybody to commit themselves. It's always a case of if this or but that ... Working out the cost of a tramcar refurbishment is just the same. The only difference is that the figures are a bit bigger, and the risk of getting it wrong is, accordingly, directly proportional !!!



A great deal of very hard work was done by Murray Sanders and his team, and eventually we came up with what we thought the cost would be. We gave ourselves a bit of a shock in the process, the figure being much higher than most of us ever expected.

In retrospect we were probably a bit light in our estimates, but not badly so. If we ever do this exercise again, we will add quite a bit bigger margin for contingencies just to make sure. Certainly when we "opened the trams up" we found some things we didn't expect, and therefore hadn't costed, but at the end of the day, even after their time in the city, we will have overall better trams as a result.

It was very evident at the outset that to undertake the refurbishment programme within the time frame required would mean that the Society would have to use full time paid staff, and all the costings were made on this basis. The use of such labour saw the Society embark on a new era, and the implications of this will be discussed later under "Doing the Work".

### The Safety Requirements

Right at the outset the Society contracted to supply any trams to best restored museum standards. We were very aware that trams had not run in any street in New Zealand for 30 years, and that regulatory requirements then applying would not necessarily be the same now. Part of the agreement with the Council specified that any costs involved in complying with safety requirements were the responsibility of the Council, and would be costed at commercial charge out rates.

It was also made a condition of the agreement that any such modifications must be incorporated in such a way that they did not destroy the heritage nature of the tramcars, and must therefore be capable of being removed before the cars are returned to Ferrymead, in a manner that leaves the tramcars as historic exhibits.

In the event many safety related items needed to be incorporated. These included such items as continuous head lights and stop lights, indicators, electric windscreen wipers, ancillary and automatic braking systems, (not to mention such operator requirements as sound systems and skates rather than wheels on the trolley poles).

### The Operator

As part of the original submission made to Council of tourist transport options we considered whether, if a tramway was chosen, we should be the operator.

There was considerable debate - some of it quite sharply divided - and much sharpening of pencils to produce a range of figures to cover a number of operating possibilities.

Three basic possibilities were open to the Society. We could undertake the whole operation ourselves, we could enter into some type of joint venture or company like structure with someone else to operate it, or we could simply lease the tramcars to a commercial operator.

There were two major stumbling blocks to operating the tramway ourselves or jointly with others. These were the lack of venture and/or setting up capital, and the inability to sustain any operating losses, especially in the early years of operation. Our estimates for the set up costs for the original plan (just the line from the Square to the Museum) were in the region of \$100,000. The figure for the expanded operation would be considerably higher. And those figures do not include the refurbishment and safety related costs referred to above, which total over \$400,000.

Like the Hare and Tortoise we settled for the lease option. It may be slower, but it is much more certain. We know what rental we will get on an annual basis, and so we can plan ahead for the future. The risks of operation have been left to the entrepreneur. At the end of the day we could, if we had operated the City Tramway ourselves, have placed our heritage tramcars at risk through the operation not living up to expectations. This could have resulted in the receivers selling our tramcars to pay the debts.

### Doing The Work

As I mentioned earlier it was necessary to employ full time paid labour to achieve the refurbishment work within the time allotted.



This is not the first time that the Society has had the advantage of paid labour.

One of the more enlightened Governments in the 1970s had instituted employment promotion schemes to help try and overcome the then growing numbers of people who found themselves out of a job as our economy contracted. Through the kind offices of the Ferrymead Trust the Society was able to make use of a pool of workers under these schemes, and substantial amounts of restoration work were done on Boon 152 and Dunedin 11. All labour under these schemes was cost free to the user, who also received a small contribution to the administration costs and materials.

Unfortunately our use of this pool of labour did have some disadvantages. In particular the productivity was low and there was very little, if any, contact between the workers and the volunteers working on the same project. As a result the volunteers tended to shy away from any involvement in those parts of the project in which the paid workers were involved, so that there was not a "harmonious" working atmosphere.

We had to be very careful that we did not allow this situation to arise with the funded refurbishment programme for the City Tramway tramcars.

Two paid staff were required, one woodworker, and one engineer, and to ensure that the best people available were obtained advertisements were placed in the local papers seeking suitable applicants. Society members were encouraged to apply, but Society membership or experience was not a pre-requisite. We hoped, through the possible employment of outsiders, to bring new skills to the Society.

There were a number of attributes we wished our employees to have, principally:

- be first class tradesmen
- have proven employment record
- have a sympathy with heritage preservation
- be prepared to teach skills to members
- work a 40 hour week to include Saturdays.

One of the problems was we could only guarantee a years work, and understandably those with proven employment records could be a little reluctant to leave their jobs to work on trams for a year, with no assurances of employment beyond that time.

We received 26 applications and interviewed 12 of these. About a quarter of the applicants were Society members.

It quickly became apparent that while "outsiders" may well have contributed new skills to the Society, the already on hand skills of members clearly outweighed those possible benefits.

And so two of our members left their previous occupations and became New Zealand's first fully professional fully paid tram restorers. We had set up a new industry. Even our Accident Compensation Insurance Scheme does not have an occupational class for tram restorers. (We, like good conservators of money, chose the nearest, but cheapest, occupational class which was the repair of motor vehicles. After all a tram was a vehicle with a motor, and they were being repaired!!!)

What tipped the balance in favour of employing two of our members, quite apart from them being jolly nice fellows, was that little something that tram enthusiasts have. That something that shows they can do things that non-tram enthusiasts simply look at and shake their heads.

The employing of workers from within our ranks has meant that other volunteers have worked very harmoniously with them thus ensuring that the best possible job has been done within the time available.

I would like to personally acknowledge the tremendous assistance that I have received from Graeme and Larry, which has greatly lessened the administrative burden that such a large project could so easily have become.



### The Tax Man Cometh....Or How To Organise Your Affairs To Make The Maximum Use Of The Benefits That Flow Your Way.

Our Society is essentially a volunteer driven Society. Most tramway museums are. As volunteers we were taking on a number of contractual obligations of some magnitude. It was necessary to protect the Society in the event of things not working out. Most of our Committee Members felt that there was a need to set up a "Commercial Wing" as it were. The problem was, what would be the best organisational structure - a separate Incorporated Society, a limited liability company or what?

As Oliver Wendell Holmes once said "Property has its duties as well as its rights". Or put more simply if you derive a benefit from something, the tax man is bound to become interested.

The Tramway Historical Society is an incorporated society under the provisions of the Incorporated Societies Act 1908. Section 61 (34) of our three and a half inches thick Income Tax Act 1976 says that income not exceeding \$1000pa gained from trading with outsiders is exempt from income tax. If you earn over \$1000pa the tax liability is 24% on the first \$30,875, and 33% thereafter.

Now I am sure that most of you would not like the prospect of an average just over 28% or \$24,000 of the rentals earned from leasing trams disappearing into the tax man's pockets. We certainly didn't - after all we could spend it much better than he could!!

So we had to protect ourselves from two angles. Firstly we had to protect ourselves from any liability that could arise that might see our tramcars being seized to meet contractual obligations, and secondly we had to protect ourselves from the ravages of the Inland Revenue Department.

Clearly the existing Society structure was inappropriate. The Society owns the trams, and the tax implications - which may well have rendered the income from our existing tram and bus operations liable to tax - did not give us the security we needed.

Setting up a limited liability company did not answer all our problems. It solved the problem of the possible forfeiting of our trams if it all went wrong, as the company would not own the trams, but would lease them from the Society for the purposes of refurbishment. A company certainly wouldn't solve the tax problem. It only made matters worse. There was no certainty of being able to set up a company with charitable status, and company taxation in New Zealand is a flat 33%. Even if the Society owned all the shares in the Company any dividends paid back to the Society would not carry tax imputation credits from which the Society could benefit, as the Society wouldn't be paying tax. I believe that similar considerations would apply in Australia with regard to franking credits on dividends.

But like all problems, there has to be an answer somewhere. And after a bit of research we came up with the answer - form a charitable trust to lease the tramcars from the Society, refurbish them, and on lease them to the commercial operator. The hallmarks of a charitable trust are that it must be for charitable purposes - and a museum qualifies, it must promote activities for charitable purposes - and again a museum qualifies, and it must distribute its income for charitable purposes - and the Society, as a museum is a willing recipient for such distributions.

A charitable trust cannot be wound up without a court order, even if it is bankrupt, so we had a double protection there. And above all a charitable trust is tax exempt.

So our "commercial wing" is known as the Heritage Tramway Trust, incorporated under the Charitable Trusts Act 1908.

To protect the Society, the Society has the right to appoint the Trustees of the Heritage Tramway Trust. The Society has decreed that the Trustees of the Heritage Tramway must include the Society President, Vice President, Secretary, Treasurer and two other Society members, thus ensuring forever that the aims and objectives of both entities remain with a common purpose.

### Conclusion

The last two years have seen a very successful transition from a totally voluntary operated and "staffed" organisation to one that encompasses a "commercial" arm that is nevertheless firmly directed to advancing the



aims of the Tramway Historical Society. Great progress has been made, and with the impetus provided by being involved in the Tourist Tramway Project, this progress is assured for years to come, as the funds so generated are poured back into full time restoration work with a professional staff.

Resources remain the most important asset of our Society. Resources does not simply mean such things as equipment, trams, the ability to restore or operate. It has a much wider importance in being able to take opportunities as they arise, to see through the administrative problems that may arise, and to chart a way for the future.

The Tramway Historical Society has been able to undertake the vast majority of all aspects of this project from within the resources of its own membership. They have written the employment contracts, negotiated the refurbishment details, negotiated the lease details, and provided the administration and accounting functions necessary to operate what is quite a respectably sized small business. The only outside professional help has been in the area of the legal vetting of contracts and the preparation of the Trust Deed itself.

We look forward to the next few years with great anticipation and interest.

At the end of the Speaker's address, the time available for the session had expired. Therefore it was not possible for any discussion or questions/answers on the subject.

### **DEVELOPING SOCIAL ACTIVITIES - DISCUSSION SESSION**

Session Chair: Carolyn Dean

Session Secretary: Ron White

Several Museum members described social activities conducted at their respective places.

Ballarat: Has no regular activities because of travelling time constraints on working days. Regular Melbourne - based meetings have been abandoned, but there is a regular A.G.M. picnic day.

Wellington: Has film evenings and member barbeques as well as two dinners a year - Christmas and the Tramway Closing anniversary.

SPER: Used to have monthly information/social meetings but these lapsed because the people attending were also working regularly at the Museum site. Drink - driving laws have had a dampening effect and marital bliss had replaced midnight to dawn slide shows. An annual dinner is held and social events shared with kindred bodies.

PETS (Perth): Makes an effort to involve spouses and families (eg Hotham Valley dinner trips). Sleepover weekends are held monthly at the Museum site for work parties.

Haddon: The Museum Rep suggested combined social events.

Hobart: Museum conducts monthly meetings and visits as well as an annual dinner. A Christmas fun day is held with features such as trolley rides and jazz bands. Some camaraderie exists among the wives.

Adelaide: Reported that there has been no strong social program. Barbeques are held after the AGM and special events. Social events are occasional rather than regular.

Bendigo: Most members live in town and the most successful events are day trips in the Museum bus involving families. There is a Social Committee.

TMSV: Believes it may have had too many social events in the 70's. Perhaps 'fringe' members might be used to run the social program.

#### **Other questions and comments:**

Annual dinner seen as appropriate in involving wives in social activity.  
Does the current small business atmosphere kill off social activity?



Does the membership make-up affect the social atmosphere?

eg. all male memberships, married membership

The bunkhouse at PETS and the Bungaree house (Ballarat) are focal points for social activity

Suggestion to offer our facilities to kindred bodies for social activities

### TELL US YOUR HISTORY

Presenter: Colin Seymour

Session Chair: Ron White

Session Secretary: Bill Cox

**Some history reported is better than no history at all!**

#### Some Suggestions

- |                         |                      |                       |
|-------------------------|----------------------|-----------------------|
| * Newspaper clippings   | * Official records   | * Museum records      |
| * Other records/reports | * Employee Magazines | * Local reminiscences |

[Editor's note:- This presentation was illustrated by overhead projection and exhibits]

#### Introduction

My name is Colin Seymour. I am the President of the Australian Electric Transport Museum at St Kilda in South Australia.

I have been the "Museum News" correspondent for 'Trolley Wire' since April 1983. I have also supplied a number of feature articles to 'Trolley Wire' since December 1983.

The purpose of this Presentation is to encourage museum members to contribute short local historical articles to journals such as 'Trolley Wire' and 'Tramway Topics'.

My concern is that because of the high standards of historical articles and publications by writers such as the late Ken McCarthy and David Keenan in Australia and Graham Stewart in New Zealand in particular, there is a reluctance for other people to contribute historical articles to tramway journals.

I will suggest that:

Some history reported is better than none at all!

Short "less professional" contributions will at least give us a glimpse into the various local tramway histories.

I will suggest various ways to provide short articles with minimal effort while still achieving acceptable journal standards.

So let's look at some suggestions.

#### Newspaper Clippings

The first one is Newspaper Clippings. Most Museums have some sort of an archival collection of newspaper clippings gathered over the years. Just a reprint of an article can make interesting reading in itself.

In Adelaide the MTT actually kept huge scrapbooks of any newspaper correspondence about them.

There are many great stories which can be almost reproduced in entirety for minimum effort. For instance, there's the wonderful story from June 1918 of the runaway Prospect tram. Here's a piece from one newspaper:

"Read a small section from the relevant article - refer Appendix A Scrapbook 5/6/18, Pages 299,300,304.

As you can see, the reproduction of this article, not only captures a funny story, but captures the wonderful language on the day.



If you don't have copies of newspaper articles, try your local newspaper office or library. Use historical dates as a starting point.

It takes a long time to sift through 50 odd years of newspaper files, but you only have to start looking to come across an interesting article.

In Adelaide, we are also fortunate to have a scrapbook put together by a member of the Tramway Band from 1909 to 1925.

I was able to use this information to write a recent article for 'Trolley Wire'.

The New Zealanders have produced some wonderful reading for 'Tramway Topics' by reproducing various newspaper articles.

### Official Records

Another source of articles are official tramway records. Some Museum's have large collections, while others only have bits and pieces. But even documents like old annual reports can provide interesting information.

### Museum Records

When we talk about old records, don't forget your own Museum records - after all, some of us have been going longer than some Tramway systems.

Even old Museum newsletters can provide interesting information.

### Other Records and Reports

This includes various reports about trams by other organisations or people or publications as distinct from official tramway records.

A few years ago, a visitor to St Kilda who had worked for the MTT during the Green Goddess trolley bus experiment in the early 1930s donated his speech notes from a presentation he gave at the time about the trolley bus experiment. The notes include many diagrams and technical information. An edited version of this is currently being turned into a Trolley Wire article.

### Employee Magazines

Many tramway authorities produced employee newsletters or magazines. In Adelaide, the MTT began publishing 'Among Ourselves' in 1946.

This was a period in Adelaide when many of the first employees of the Trust when it was formed in 1907 were retiring after 40 years of services. The magazine captures their reminiscences of the early electric and the horse tram days. There are many stories in this journal which make fascinating reading. At least one article could be devoted to humorous tramway employee stories.

### Local Reminiscences

And don't forget some of your local identities, or tramway employees, or even some of your Museum visitors. The memories may be fading, but you can often check on dates and locations. Another person may be able to confirm the tale. The main thing is that you qualify your article with words like: "as recalled by ..." or "according to".

Now I'd like to mention a little something which can really add to certain articles - sketch maps. How many times have you read about a particular tram line, or a museum, but cannot picture where it is in relation to a central point.

Once again, I believe that some sort of map is better than none at all - just a simple sketch to give us a better understanding. Of course, for more detailed historical works, a professional map is essential, but for short magazine articles, a sketch map can really help.



Conclusion

So there are many fairly easy ways to provide us with a few pages of your history.

But I must make one very important point. Always get your article checked by one of your museum experts. A few obvious errors can really detract from a good story.

So how is it? Just give us a few pages of your local history. Just tell us your history, so it's not lost forever. Remember:

Some history reported is better than none at all!

Editor's Note:- Mr Seymour's paper also included a quantity of Attachments. It is felt that they cannot be included as part of this publication due to the constraints of space reasonably available in this volume. Anyone interested may care to contact the Presenter direct.

Questions

Lewis Nyman: Position re Copyright in reprinting old articles.

Answer: Acknowledge where information arose but print in any case. Use supplemental data if it comes to hand which may amplify/clarify an earlier article.

Richard Gilbert: Suggests trade union publications can provide input from former employees. Make use of maps to clarify location of story as published.

**TRAMWAY OVERHEAD**

Presenter: John Beckett

Session Chair: Peter Hyde

Session Secretary: Tony Cody

I understand that the talk is limited to 30 minutes which gives the opportunity for an extremely superficial account of the subject and little possibility of exchange of information.

The subjects to be treated (at about three minutes per subject!) include:

1. Safety. Disconnecting supply and grounding overhead at substation. Grounding overhead at work point. Verifying safety and conditions of tower wagon. High visibility clothing of workers, safety gloves, safety helmets. Traffic diversion/warning signs and markers. Safe practices when working on tower wagon. Effects of fatigue and stress.
2. Display of vintage and modern fittings. Remanufacturing vintage fittings in the interests of cost saving and authenticity. Problems with using/reusing brown porcelain insulators. Display of "preferred" span wire construction.
3. Display of HO gauge demonstration unit showing general construction methods which are applicable to full size.
4. Video showing tensioning, crimping, height adjustment, use of fan grips, setting of frogs, setting offsets, centring wire etc., etc.
5. Sources of supply of materials, fittings, tools.
6. Problems with reconciling technical versus historical interests.
7. Bibliography and sources of useful information.
8. Brief open forum for contribution of information and ideas.



After the talk (or preferably "exchange") the presenter is willing to take interested parties out on the tower wagon, demonstrate the 7 1/4 gauge tramway (which has all the problems of full size plus a few of its own), and engage in discourse on overhead, all outside the formal Conference sessions of course.

#### Additional Notes By The Session Secretary, Tony Cody.

Tramway Museums should have access to a qualified electrical engineer overseeing work and also, a licensed electrician on site can be helpful for other electrical work.

No standards exist for wiring tramcars, but useful information can be gleaned from SAA wiring rules.

The Bendigo Trust inherited a very run-down system from the SEC. The system had been rehabilitated in the 1930s, but little further was then done until closure. The SEC retained responsibility for maintaining the overhead for some time after 1972 but, with the increasing burden of repair to a worn-out infrastructure, it was later glad to hand over this responsibility.

The Bendigo Trust commenced an upgrade of the overhead. A stock of about 1km of unused trolley wire was available and the Council also commenced installation of new concrete poles along part of the tram line. The new wire was strung from these new poles at an increased height. A height increase was desirable as problems with high and over-height vehicles had taken place. During this replacement work an SEC worker suffered bad burns from contact with a live span wire. No intermediate insulators were in this span wire and the insulation in the old-style ear was found to be defective. A replacement of similar span wires commenced but has still to be completed.

When new trolley wire was sought, it was found that the original 0.126 section wire was no longer available. A supply of 0.2 section trolley wire was located and 1km was acquired. This heavier wire was erected with fewer than expected problems in the area near the depot wye. Over a period of around three years the Trust hopes to replace all the trolley wire as there has been a continuing problem with collapse of the overhead on the southern portion of the line.

Various authorities have advised on the safety of the wiring replacement procedures (most especially the Department of Labour and Industry) and some aspects have since been tightened up.

Live-wire working is not now used in Bendigo. Overhead grounded at two locations including one at the point of work whilst the operation is in progress. Wire is still treated as if it were live despite these precautions. Section insulators have been found to be untrustworthy due to leakage in damp and humid weather. Additional precautions include bonding across primary insulators during work and grounding of the tower wagon.

Some other points of safety include the wearing of the appropriate clothing, fixing things properly rather than adopting a quick fix, not allowing the use of boxes or other items to achieve a higher level on the tower and always be mindful of the effects of fatigue on the workers.

A selection and brief discussion of overhead hardware followed. This included an example of the many defective insulators that have been replaced with the preferred types of new insulator. The traditional cap and cone type of hanger was found to be too expensive to acquire new. However the standard Melbourne hangers have been adapted as these are cheaper and quite effective. Standard Melbourne frogs have been adopted for similar reasons. It has been found possible to re-manufacture ears from the scrapped ears removed from the old overhead.

Equipment for handling the wire and fittings included specialised tools already in stock or purchased as required. For smaller wire jobs, cheaper commercially available wire tensioners and cutters have been found useful.

Editor's Note: At the end of the Speakers address, the time available for the session had expired. Therefore it was not possible for any discussion or questions/answers on the subject.



## NOTES ON VIDEO PRODUCTIONS OF THE SYDNEY TRAMWAY MUSEUM

Presenter: Don Campbell  
Session Chair: Barrie King

Paper prepared by: Dale Budd  
Session Secretary: Dave Critchley

The overall history of the Museum's video productions is one of progressive development, using confidence gained from early productions to commit greater resources to achieving higher quality, and therefore increased sales on later tapes.

The story began when Roger Piper made his film available to the Museum. No editing of the film was permitted - and no editing was feasible on the video. Richard Youl did the transfer, shooting "off the wall" with a domestic video camera, and added some of his own film. There was no commentary, and the sound track consisted of the sound of Sydney suburban trains.

Titled "Trams", this pioneering production, done at minimal cost, demonstrated that there was a market for tram videos. About 160 copies were sold. It was then decided to use Jim Powe's film as the basis of further productions. Approximately 2 1/2 hours of film taken by Jim was transferred to tape professionally, but the transfer proved to be of poor quality, with flicker and other problems. Accordingly the material for Sydney Tramway Memories reel 1 was again transferred by Richard Youl, shooting "off the wall", with an off-the-cuff commentary by Don Campbell. The cover or slick was a colour photocopy, and sales amounted to a couple of hundred.

For reel two we paid for professional transfer using a competent and sympathetic production house, Systems Electronics. Very limited video editing was done, to save cost of the video editing suite. There was also a policy decision to "leave everything in", and not eliminate shots which were duplications.

The commentary was researched and written, and was pre-recorded by Don Campbell, for later dubbing onto the video. This was a technique which was not very satisfactory and was not repeated (although it is commonly used in professional productions). The commentary works better if the person speaking can see the scene on video which is being referred to - and also it enables any timing problems to be corrected on the spot through re-recording of the audio.

For reel two we paid for music for about half the production, leaving the old silent film without any accompanying music or commentary. This was done partly to save money, and partly because it seemed an appropriate technique - but it is not one which would be repeated. Again the slick was produced by colour photocopying.

Continuing strong sales led to a decision to further improve the production standard for reel three. We added a professional commentator and the cover or slick was produced by full colour printing. The production cost of reel three was around \$2000. The aim of the increased production standard, including the cover, was to get the video into the ABC retailing network, and this was successful. The ABC has continued to be a major outlet, currently selling around 100 copies per month of 'Shooting Through!'.

Reels one, two and three exhausted the film taken by Jim Powe, together with a contribution from Ben Parle and some historic footage from the State Transit Authority. It was concluded that there was not enough other film available, showing different lines, to justify a fourth tape in the Sydney Tramway Memories series. The easiest step forward was to re-issue reels one and two, bringing each of them up to the same standard as reel three and thus getting them into a wider retail market, principally through the ABC. This was done, with considerable success. The historic black-and-white sequences in reel two, which included extraneous material such as football matches and displays at Sydney Showground, were shortened slightly, and background music was added to all of reel two.

Sales of these three tapes generated substantial funds for the Museum, running into several thousand dollars. The quantity sold of reel three is around 600, with the others not far behind.

In considering what to do next, the key request was for a video which would cover the whole system on one tape. There appeared to be two main options. One would have been to produce a short tape of about half an hour, with highlights from all available film. Such a production would have needed a clear story line, perhaps on the history of the Tramway and its contribution to Sydney. It would have probably needed extensive new material such as interviews with individuals. In brief it would have been a much more complex production



than the previous productions or the eventual alternative. It would have required considerable scripting and a fully professional film maker's approach.

The alternative - which eventually led to *'Shooting Through!'* was chosen not just because it was easier, but because it was believed that most people who buy tram videos get them because they want to see the trams in locations within which they are familiar - perhaps where they lived as a child, or where their parents lived. So it seemed sensible for the combined film to show every possible line.

By this time we had expanded our retail outlets slightly, to include some rail/tram enthusiast industry outlets, but notably also Grace Brothers. We learned from sales through the ABC shops and Grace Brothers that the tapes were of interest to people other than hard-core tram enthusiasts.

We received some helpful advice from Grace Brothers in planning *'Shooting Through!'*. They alleviated any concerns that the finished production would be unattractive because of being too long. In fact they said that length is a virtue: tapes shorter than an hour do not sell well, even if price is matched to length.

We were told that video prices were coming down. Whereas a price of \$39.95 might have been acceptable a couple of years ago, many tapes are now available at much lower prices. Grace Brothers and the distributor emphasised the importance of putting all the material on one tape, rather than selling a pair of tapes, because some retailers will not take tapes packaged as pairs; and they also encouraged us not to worry about the reduced quality of images made from 8mm film: purchasers do not mind lower image quality on historic material. Our Grace Brothers adviser also indicated that, contrary to our initial thoughts, trams had equal or greater appeal than steam train videos - because trams run along streets, and past buildings, with which people are familiar.

The decision to use a distributor was difficult and complex. Instead of having copies run off the master tape and distributing them ourselves - with a very handsome profit margin - we would be handing over the master tape to the distributor, who pays for the production of the copies and then distributes them, paying us a royalty on each tape sold. This royalty is much less than the wholesale or retail mark-up - but the distributor places the tapes into a very much wider market. In effect we were trading off a larger profit on a small number of tapes against the advantages of much wider distribution. Of course we would make the normal retailer's profit on tapes sold at the Museum or through our mail order list, which currently runs to some 250 names. Sales of *'Shooting Through!'* are currently around the 2,000 mark, of which retail sales by the Museum account for about 450, so the benefits of the wider market achieved by use of a distributor are obvious.

It is interesting to record that when showed the partially completed tape to a number of distributors, we found that they were competing with their offers to handle the tape for us. It was not a case of persuading someone to do it, it was a case of picking the best offer.

We recognised that use of a distributor would have other benefits. The effort they put into promoting the tape would provide publicity for the Museum, increasing visitor numbers. So far our distributor, VDI, has spent in excess of \$10,000 on promotion of *'Shooting Through!'*: it has been used as a prize in competitions run by newspapers, it has been prominently featured in catalogues and it was endorsed as a merchandise item for the City of Sydney sesquicentenary. None of this would have been achieved without the use of a distributor: the Museum simply does not have the resources to make these things happen. Further, the distributor is selling the program overseas - not just to tramway enthusiasts but to a wider market. Again, the Museum could not have undertaken this activity.

Turning to the production of *'Shooting Through!'*, a number of key decisions were made. First we would gather all available material from both amateur and professional sources - the latter including the newsreel collection and other film from the National Film and Sound Archive. We obtained Roger Piper's film again, and had it transferred to video professionally. Second, we would do a full editing job - a time-consuming and therefore costly task. The editing of *'Shooting Through!'* on video took seven full days, at a cost of about \$1,000 per day. The result of a full day of editing is about 20 minutes of finished tape. The beginning and end of every shot has to be identified, and every shot has to be assessed for brightness, colour and sharpness, with appropriate adjustments being made.

Another important decision for *'Shooting Through!'* was to vary the style of music, especially having regard to the overall length of the tape. We chose piano music by Scott Joplin, which is out of copyright, and paid for professional recording by a professional pianist. The decision was made to issue a map sheet with the tape. It was decided that the closing sequence should provide a strong promotional message for the Museum, and the



shots at the Museum were professionally filmed. The total production cost for 'Shooting Through!' is in excess of \$12,000. The return on this will come partly from sales and royalties and partly, as already mentioned, through stimulating visits to the Museum.

There is also a potential for the tape to earn royalties from its inclusion in the library of Film World Research: organisations seeking to show street scenes of Sydney in bygone days will be able to use extracts from 'Shooting Through!' for which the Museum will receive fees.

What would we do differently if we were starting again?

The answer is: not much. I am sure that our approach, of learning to walk before we ran, i.e. by starting off on a shoestring and building up, was the sensible course.

Advice for other museums? Don't be perturbed if all you have is 8mm film. If it is of good quality, i.e. correctly exposed and steady, then it can be satisfactorily used as the basis of a video promotion. Conversely there is no need to waste money on editing such material on one inch video tape. This is expensive overkill for the image you can get off the film. 3/4 inch equipment is entirely satisfactory, and comes at a much cheaper price in terms of editing time.

It is essential in preparing the commentary to have a detailed knowledge of the scenes being shown. Especially when you are working from film which is unedited, or with a variety of film from different sources, it is essential for editing to be able to recognise locations and put them into a logical sequence.

How to get started? An essential requirement is adequate source material: you should be thinking of a finished length of not less than one hour. Production of videos requires someone interested in and knowledgeable about films and film making (or video and video making). Such knowledge is essential to turn enthusiast material into something acceptable for a wider public - which is necessary if satisfactory sales are to be achieved. This person must develop the concept for the production. As mentioned earlier, there also needs to be someone with a detailed knowledge of the locations to be shown. Incidentally and importantly, scenes should not be chosen or edited so that they show only trams. In editing 'Shooting Through!' we deliberately included scenes showing people, cars and other motor vehicles - because they add to the interest of the tape for many viewers. It is important to identify a competent and friendly production facility with 3/4 inch editing equipment. Finally, you need lots of spare time to commit to the job.

What you do not need is a lot of money. Production of tapes to the standard of the *Sydney Tramway Memories* series, which is very acceptable for widespread retail distribution, is not necessarily an expensive proposition.

In conclusion, it is appropriate to acknowledge all those who have contributed to the development of the Sydney Tramway Museum's video tapes. Richard Youl's experimental production of Roger Piper's material was a pioneering effort without which the later and more ambitious productions would never have been attempted. Jim Powe, apart from contributing the film which provided the basis for the *Sydney Tramway Memories* series, also provided helpful advice on the standard requirement for retail sales, both in the technical aspects of video production and in the presentational aspects, such as the use of a full colour printed cover. Alan Phillips of Grace Brothers and Geoff Wylie of VDI, our distributor, also provided guidance which as already mentioned was extremely helpful. And finally it is important to thank all those who contributed to the film from which the videos have been made. Without their generosity in making their film available, none of our videos would have seen the light of day.

### Questions

Barry King: Enquired as to how SPER coped with copyright.

Don explained that SPER sought initial material that was original or out of copyright (eg Scott Joplin 'rags' in 'Shooting Through!') though copyright of about \$700 was paid through the National Film and Sound Archive for material reproduced from Cinescope Newsreels.

Les Stewart: Asked was there a critical cost analysis done on the videos.

Don answered that the early videos, Trams and Sydney Tramway Memories 1-2-3, had been produced and distributed by ourselves. Early dubbing had been done cheaply through a Religious communication outfit and relatively large profits were made per individual tape. However, as we had a limited distribution network the overall result was not as spectacular.



To use a distributor meant lower profit margins with royalties and sales mark-up from SPER's own sales being the main income. However, this is compensated for by the much wider distribution network including major retailers, hobby shops, tourist outlets and interstate, and more recently international, distribution.

## **AXLE BOX BRASSES AND CAST STEEL WEDGES - WEAR, CAUSES AND REMEDIES**

(As Experienced By The Perth Electric Tramway Society Inc)

Presenter: Bob Pearce

Session Chair: John Pennack

Session Secretary: Martin Grant

Editor's Note:- This presentation was illustrated by overhead projected slides and samples.

The tram is a vehicle generally powered by electricity and supported by a single truck or two bogies. The truck consists of two axles and four wheels while a bogie tram consists of two bogies each of two axles and four wheels. Both trucks and bogies have one or two motors and assorted brake gear. Each axle has two axle boxes, one at each end of it, where the axle passes through the frame of the truck or bogie and the frame of the truck or the bogie actually sits on the axle box. The whole weight of the tram is carried on the bearings inside the axle box. Therefore, they form a most integral part of the running characteristics of the tram.

The tram may be perfectly restored to operating condition in a museum, but forget the axle boxes, and, though the tram may go, it won't for very long. A strange burning smell will emanate from below the floor, a loud torturous scream will rend the air and passengers will cry out in alarm and jump off in droves. In short, if the axle boxes are not well cared for then give up trying to run trams.

Now, all tramway systems experience the problem of axle movement, either laterally or rotationally (in addition to the normal turning of the axle), when the tram car is in motion, whether along street or enclosed track (such as in Melbourne or Bendigo) or on open track (such as in most museum environments including Perth).

This movement is caused by the axle to which the wheel sets are attached, being forced to move as the wheels move within the confines of the two rails, and by the movement of the motor which is connected to the axle by gears.

Because rail is not perfectly straight, nor is it perfectly aligned in smooth radius curves, and it does not matter how much effort is applied to attaining those ideals, the wheels will be forced to move from side to side as the tram moves along. This will cause the axle to move laterally, while rotational movement occurs every time power is applied to the motor and the wheels turn.

The rotational movement to which I refer, is not the normal turning of the axle that occurs when the tram is moving, although that in itself will be the cause of some of the problem in any case, but the additional stress that occurs when the tram motor is put into, or out of, power.

The axle will move or jerk and it is that which causes the axle box brass to try and move in sympathy with the axle. Naturally, the axle box brass will always try and turn in sympathy with the axle when it is moving in any case but it is the sudden start or jerk of the axle that causes most rotational problems.

I hasten to add that the problem will not occur when the tram is standing still, and as I do not know of any one who will pay to sit in a tram at a museum instead of being taken somewhere, I don't think that that is the answer to the problem.

Ideally, the portion of the axle contained within the axle box has been manufactured and carefully machined to tolerances in accordance with the design specifications.

Gun metal axle box brasses, an excellent load and backing material for a journal lined with white metal, a low coefficient of friction material 1.6mm thick is provided to give long journal life. Cast steel wedges, to keep the brasses in their proper location, are inserted into the axle box to prevent this lateral movement and restrict the effect of the jerking or uneven rotational movement that occurs every time a tram is put into power or the bogie runs over uneven track.



In order to minimise that wear process as well as the build up of heat which is occasioned by the friction of the metal surfaces rubbing against each other, lubricants are used in one form or another.

To ensure the even transference of the lubricant to all surfaces within the axle box, the use of some material, such as wool packing, or, as we are now doing in Perth, poly pads wrapped in 'chenille' soak up the lubricant from the sump of the axle box and carry it to the bearing surface where it is squeezed out by the weight of the axle upon it. This permits the lubricant to flow freely over all of the wearing surfaces.

The poly pad is a sponge like material that soaks up the lubricant while the chenille, which wraps around the poly pad, is packed against the metal surfaces of the axle. This transference of lubricant from the sump to the axle journal through the poly pad, (or wool packing or other material that may be used) is called (by Westrail) 'siphoning'.

One advantage we have found with the polypad is the decrease in the amount of lubricant required for each axle box. We initially kept the level at 12mm below the bottom lip of the axle box, but found that the polypad was so efficient that the whole of the journal, the top of the brass and the wedge plate were covered in oil and was also leaking from the axle box lid.

By reducing the oil level by 7 to 8mm to 20mm below the lip we have found that the same amount of coverage of the journal and the underside of the brass is still maintained, but the loss due to leakage has been eliminated.

Another advantage is the wear factor (amount of use) of the polypad. We, and other operators no doubt, but especially Westrail, had found that simply topping up with oil and not carrying out any cleaning or other maintenance of the wool (or other material used in the axle boxes) invariably led to the destruction of it, and in fact, during these days of austerity, the necessary attention to wool packing by Westrail staff was not done as often as it should.

This led Westrail to developing the idea of using some other material to replace the wool skeins used at that time. This was based partly on the fact that regular attention to cleaning the wool and repacking it into the axle box was fairly labour intensive and time consuming, and with the changeover to polypads, such process would not be required. Also, as can be seen from the sample and the slide, to remove and replace the polypad is extremely simple. Most importantly, however, the amount of contamination is almost non-existent compared to wool or other material (such as cotton waste) used in packing axle boxes.

Our introduction to the polypads came about because our museum was looking for a cheap and reliable source of wool. While enquiring at Westrail, I was told that they had changed over to polypads some time before, but there was some wool still available in the store which we could purchase at a price (the going price that Westrail had paid). With the rapid changeover to roller bearings from conventional axle bearings, polypads and chenille were available in large quantities from the salvage office at Midland Workshops (Westrail). As a result, with a sample for the council meeting to look at and for Noel Blackmore to evaluate, and taking into consideration the price differential between wool and polypads, we obtained most of the available stock from the salvage office and have now started a programme of progressive change from wool to the polypads.

At present, all axles of W2 393 have been done and one axle of 426 (the original trial car) as well as W2 368. When the bogie exchange takes place as part of the refurbishment of bogies for W2 329, polypads have been used instead of wool. W2 329 has run for 40,000 kms with polypads and no need to replace - ie four years compared to about three years to clean/replace wool.

The cost comparison between wool and polypads is as follows:-

Wool purchase price \$100/kg (100 skeins/kg - 1989 prices).  
 Four skeins/axle box (.4kg/axle box \$4) = \$16.00  
 Polypads approx \$2.00 each (1/axle box) = \$8.00

However with all metal to metal surfaces where one or both surfaces move against each other, and no matter in what way it is used or what preventative action is undertaken, there will always be wearing of the surfaces in contact with each other, and it is no different to the surfaces inside the axle box.



The usual effect of this wear is to cause the erosion or wearing down of the white metal, which then exposes the gun metal to the axle. Under normal conditions, the axle brass is removed for machining and realigning with white metal before the gun metal brass is exposed.

However, during the period of time that the brass is in use in the axle box, not only is there wear to the white metal, there is also wear to the end of the brass, which is caused by the lateral movement of the axle. This may continue to a stage where the white metal or brass is not effectively restricting the lateral movement of the axle within the axle box, usually indicated by excessive hunting or flogging of the wheel sets as the tram moves along.

As the clearance between the journal end flange and the brass increases, so does the wear rate, because the mass of the tram forces the axle to move sideways and the brass is worn more. As the unrestricted clearance gets larger, so the movement increases and the wear will proportionally increase in a logarithmic scale. This will then place ever increasing stresses on wheel flanges, and through them, the track.

Inspection of the axle box brass usually shows that the white metal surface has been worn almost, or completely, away. Also it is possible that the size of the brass has been reduced by such a degree that it is so far out of design tolerance that an excessive amount of rebuild is needed to bring it back to design specification.

Using large amounts of white metal to build up the end of the brass is not successful because the white metal, being very soft, will eventually be squeezed out by the movement of the axle. Remember that the white metal is a very soft material, consisting of some 75% lead.

The usual remedy is to remove the old brass and replace it with a new unit, and if necessary, also replace the cast steel wedge securing the brass in position.

By looking at the slide, it can be seen that the greatest amount of wear is both on the bearing surface and more importantly at each end of the brass, although more so at the leading (outside end) edge of the axle. This circular wear is directly caused by the fact that the axle is not snug within the box and is rubbing up against the end of the brass. Hence the lateral movement of the axle is causing the wear.

To replace the whole brass unit is a costly exercise and for a long time, our resident electrical and mechanical supervisor Noel Blackmore, had been searching for a solution that would not only solve the problem of the wear, but also would be relatively cost effective, bearing in mind the limited financial resources of the Museum.

Noel knew that the old Perth Electric Tramway used Brill bogie and wheel set equipment and Brill had fitted a "replaceable" brass alloy (we are not sure what the brass alloy was) check plate onto the ends of the axle within the axle box and the question was, therefore, would such a device have practical implications on MMTB axle box brasses. Some four years ago, Noel came up with a proposal that would need some trialing but appeared, on paper anyway, to be the answer to the problem.

The Brill check plate sits in a groove machined into the end of the particular type of axle having a check plate journal, while the axles used by the MMTB are "MCB" type axles. Because many ex-Melbourne trams went to various museums, with six coming to Perth plus one ex-Ballarat, all of the trucks under the bogie trams were equipped with "MCB" journals. The trucks obtained from Japan are Mitsubishi built Brill 77E trucks, also with "MCB" axles. Consequently Brill type check plates would not work and to have the axles machined to take them would be a horrendous task, as well as a huge financial burden on any museum contemplating the task. (Note: MCB - Master Car Builders).

Noel came up with a different idea which is based on the Brill idea but has to be necessarily different to comprehend the MCB journal. However, it does the job just as well.

The worn brass requires 8mm to be machined off the worn end to ensure a full and resultant square face. Room was therefore available to fit a replacement phosphor bronze wear plate onto the end of the brass and this became the new wearing surface. The profile of the wear plate is identical with that of the axle box brass. Two screw holes were drilled and tapped into the end of the brass and the check plate was secured into position by 8mm diameter stainless steel countersunk screws and "Loctite" compound.

At first there was thought that a problem may exist with the rotational movement of the axle causing the brass to move and possibly fracture the two screws due to the force of the movement exerting great pressure onto the



wear plate and the screws holding it in place. It was found, however, that the cast steel wedge was long enough to sit directly over the top of the wear plate and restrict any turning movement.

The exercise worked so well and improved the running characteristics of the trams so much, coupled with the dramatic lessening of costs of replacement (re white metalling or new axle brasses), that we have undertaken a program of fitting wear plates to all axle box brasses as they come up for replacement.

The situation now is when the wear on the replaceable wear plate is such that replacement is required, it will become a matter of simply removing the screws holding the worn wear plate in position, and fitting a new unit.

The benefit is that with a new wear plate in position, a greatly reduced clearance exists between the end of the axle and the axle brass, and this prevents almost all of the lateral movement of the axle and the effect is very noticeable on the running characteristics of the tram.

Where it is found that the axle box brass is beyond repair because it is so far out of tolerance or design specification, then a new unit is provided, but it is fitted with a wear plate at the outset of its life within the axle box.

The old unit is not thrown away, however, it is kept until sufficient are on hand, when it is melted down and made into new axle box brasses, which of course also assists in keeping down production costs.

At present, the costs to make a new axle box brass and wear plates are as follows:-

Axle box brass:- Between \$225 to \$260 (own material supplied).

Wear plate:- Between \$50 and \$60 (\*own material supplied).

\*This includes the cost of machining the axle box brass, and drill and tap for two screws.

If a batch of 25 or more replacement wear plates are made, this cost reduces quite dramatically to about \$30-\$35 each, including the correct sizing (journal diameter etc) and final fitting.

We are now investigating the design of a wear plate to fit the inboard end of the axle box brass. This has been brought about because, although the original length of the axle journal was designed to be 177.8mm, we have encountered MMTB axles with an average journal length of 180.9mm with the worst case of 188.9mm.

One reason why the journal lengths are so different to the original design length is because serious scoring of the journal may have occurred due to a hot axle (hot box) or other cause. As a result, the journal is built up with chrome steel or similar and then machined to the designed profile, so that the axle box brass will sit within the standard 3.175mm clearance.

To build up an axle at the inboard end for machining is not recommended because the heat to the area caused by the application of the hot metal, had been known to severely weaken the axle and has been listed in derailment reports as the cause of axle fracture and/or collapsed wheels.

During the course of the machining, the length will be increased, even if only 1 or 2mm each time. But when considering the age of some of the axles in use on our trams in museums today, it is likely that some axles are anywhere between 40 and 60 years old and have probably been machined many times, so it should be no surprise to find the journal length very different to the original size. To measure the journal length (inside the axle box), Noel designed and made this device, which is shaped to fit the outboard and inboard radii.

We found that, although we were restricting movement at the end of the axle by fitting the wear plate, there was still sufficient clearance at the inboard end to allow the axle to move and create additional thrust on "one" wear plate. This has made it necessary to provide an additional wear plate at the inboard end of the axle box brass.

This will increase the bearing length (axle box brass and wear plates) to cover the whole of the journal within the axle box thus a greater load sharing of the thrust forces will be achieved. When this treatment is done to an axle, it is necessary to do both ends at the same time.

W2 393 had new axle box brasses fitted in November 1990 and currently has run approximately 40,000kms. On the November 1994 inspection, it was found that the brasses now require the installation of wear plates. This is expected to cost around \$400 compared with \$2100 for complete replacement of the brasses.



If white metalling only is required, that cost would be approximately \$1200. The re-use of whitemetal can only be done two or three times without re-constitution. If the brasses had already been whitemetalled more than two or three times, then a metallurgical analysis would be required to establish whether the white metal was suitable for re-use. However, as a cost basis, to undergo a full white metal treatment is still some 3.5 to 4 times more expensive than to fit wear plates, assuming that the journal face is still in satisfactory condition. Where it is not, then a replacement brass (fitted with a wear plate) would be provided in its place, bearing in mind that what is done to one end of an axle must be done to the other.

We will advise museums of the outcome of our work if interest to it is shown by those which may be having a problem in this regard.

#### Cast Steel Wedge Plates

We have found that these have had excessive wear on each end of the plate and the 6.35mm bullnose radius was so badly worn to be almost non-existent and also distorted. The axle box end locating lugs were also worn.

The original design length of the wedge plate was 165.1mm, but we found some of ours had worn down to a worst case of 161.0mm. We also found that some had gone out of square with one side being 161.0mm and the other 165.0mm making the wedge plate also a major problem.

To rectify the problem on the wedges that were still repairable, we built up the bullnose by electric welding and then re-machined to the standard 6.35mm radius. At the opposite end, we built up the locating lugs and then machined them back to the design overall length, plus 1.016mm oversize to allow for wear on the upper edge of the axle box.

We then squared the underside face of the wedge plate and machined in flat to maintain full face contact of the axle box brass.

Where these plates are uneconomical to repair or are so out of square as to render them impossible to build up and machine to the required profile, we will replace them with new plates at an approximate cost of \$50 each. The material used to make them will be CMA 1 manganese bronze (a very hard wearing bronze, so hard that it is almost impossible to machine).

Already we have made patterns for these units to be made, along with patterns for brasses to fit MMTB No.1 and 9 axle boxes. We are investigating their use on No.15 axle boxes. We have now also produced a pattern for the manufacture of axle box brasses for the Brill 77E trucks we obtained from Japan.

If other museums are interested in acquiring brasses, or in modifying their existing brasses to take the wear plates, contact us and we will advise prices to have the work done using our manufacturers, thus saving expense in setting up the process with a local supplier in your home area, and we will soon be able to provide brasses for Brill 77E trucks if required.

#### Editor's notes:-

1. At the end of the Speaker's address, the time available for the session had expired. Therefore it was not possible for any discussion or questions/answers on the subject.
2. Photocopies of the overhead projection slides were supplied by the Presenter. Printing advice is that they would reproduce poorly in this publication. Therefore it is suggested that anyone interested in copies should contact the Presenter direct.

### **FIRE PREVENTION - DISCUSSION SESSION**

Session Chair: Bruce Worthington

Session Secretary: Henry Brittain

Fire can be very devastating. Both SPER and Perth Museums have been affected by bush fires although not seriously. In those situations where museum sites are set amongst trees and bush the following safeguards should be put into practice:-



- ensure tracks are kept clean of weeds.
- trees are trimmed back from overhead.
- rails are properly bonded to prevent any sparks.
- keep guttering clean of leaves.

In all Museums the proven in-house source of protection is by automatic sprinklers supplemented by smoke detectors connected to a automatic alarm system at a fire station or else some other place that can respond.

Other safeguards can include:-

- banning smoking in museum buildings and on tramcars.
- inflammable liquids should be safely stored.
- buildings should be spaced apart so that fire cannot spread from one to another.
- fire extinguishers kept in each tram and at conspicuous sites around Museums.
- fire drills held annually for Museum members and run by qualified firefighters.
- avoid use of blow torches, naked flame.
- do welding in open spaces.
- when undertaking restoration ensure that installed electrical fittings are of modern design and construction.

#### Recommendation From Discussion Group

That COTMA develop a code of practice for fire protection, including smoke alarms and that a designated supplier be identified who can advise and supply protection equipment suitable for tramway museums.

### **ARE WE TALKING TO THE RIGHT MINISTRY**

Presenter: Richard Gilbert

Session Chair: Jack Nyman

Session Secretary: Lindsay Richardson

As a tramway museum we should look at ourselves and consider where we stand as a group of tramway enthusiasts.

We should consider: Who do we serve? We, I suggest, serve tourists, people seeking a day out and we are an education resource. We entertain and we educate. We relive memories for older people. We entertain all age groups. We educate the younger generation. We educate other members of the community. Therefore we should regard ourselves as being in the area of tourism and museums. We are not public transport. We should talk to the Tourism Ministry and the Arts and Culture Ministry. There are other areas we should make contact with. Grants and other forms of assistance are available, not only from the areas of tourism and the arts, but Youth, Sport and Recreation, Rural Area Grants, Specialist Grants such as the Tasmanian Government "Tasmanian Research Publications Fund" which is available to publishers of works dealing with the historical context of Tasmania.

There are Grants for Courses, which can be of benefit to museum members to develop skills for the museum. There are labour supply schemes such as the LEAP scheme and the Saturday Community Workers.

We have to broaden our visions and aspects of what our museum is doing in the community. The Transport Ministry does not usually have grant money. It is not set up for that task. The Ministry can be an important resource. After all, it may have, or does still supply, the heart of the collection, that is, the trams, related equipment, or even land. Like Puffing Billy, we acknowledge the history of the equipment, the area it came from and its part in developing the city, but now, it has moved on. It has a new owner, an owner operating in the area of tourism and museums.

As such it is more directly under the umbrella of Tourism and Arts and Cultures Ministries.

Some grants that the Ballarat Tramway Preservation Society has had are:

State Government - The Ministry for the Arts : A Cataloguing Kit.



This kit allows us to preserve, sort and file our archives. These archives can be objects, film or paper. The grant gave us a filing cabinet, acid free envelopes for film and negative storage, storage boxes and folders, labels, pencils, rubbers, rulers and books on cataloguing and listing the collection.

Federal Government - Community Employment Scheme: Labour and materials.

This grant enabled us to achieve considerable progress on reconstruction of the Horse Tram and conduct heavy engineering maintenance of the electric trams. The grant gave us paid labour for a period of months.

Local Government - Ballarat City Council: Cash amount to house Tram No. 14.

The Ballarat Council considered that their grant of a Tram from the SEC would be better utilised if the tram were housed at the Tramway Society Depot. The Council granted a monetary amount equal to what it would cost the Council to house the tram at a Council site.

In fact, the BPTS has had no direct grant from the Ministry of Transport. The Ministry can, of course, be the greatest benefactor by making an initial grant of vehicles, equipment or land, but once received we need to look at other areas to restore, develop or preserve our granted equipment from the Transport Ministry.

You will inevitably ask what steps do we take in our new field of regarding ourselves as a museum. You can join another organisation, Museums Australia, either at the State branch or the Federal branch, or both. The State and Federal branches produce a magazine newsletter which not only lists coming events and articles on particular museums, but also lists some grants that are available.

Getting sponsors for a particular event at your museum. The local business community can often be obliging for some reciprocal advertising. Our 21st year celebrations saw the bread and sausages provided for our public barbecue breakfast. We ran advertisements for these two firms in all our brochures and advertising for the weekend. The Road Construction Authority supplied the truck that delivered Electric Supply Company Tram No. 12 as part of their donation of the tram that was on the site of the Ballarat ByPass Freeway.

Sponsors can be sought for open days, displays, a particular event or a restoration project, exhibition, conference or a course.

### Multiple Heritages

Make contact with other museums in your district. The trams were part of the community. They were not just there on their own. A local museum may be able to provide your museum with further details or information about tramway history in another aspect. Your museum may also help that particular museum. The trams were once part of the community, now the museums have to be a community.

Involve the community in you museum. There can be permanent displays of a fellow community group, or well publicised particular days of a special event such as:

Car Rally/Tram Calvacade, Fashions and Transport, Food and Transport.

Speak at local fellow interest groups. I spoke at the Ballarat Vintage Car Club and fascinated the audience with our archival tram tape; they loved the cars in it!

### Sourcing Grants

Join Museums Australia. Join your local tourism region. Join your local historical society. Go to seminars, be seen, be known, Lobby - Rub shoulders. Don't just be on your museum site. Be part of your community.

### Ballarat History Fair

This popular yearly event concentrates on a particular aspect of history each year. Recently the theme was transport - we took our Horse Tram. It was a great drawcard at the entrance, and we had a sponsor to truck it there and the entire exercise cost us nothing. We also took part in the fair by having a display stand of photographs, models and sales supply.

Advertise yourself as part of the community.

In Victoria no one knows who 'Steamrail' is, but in Western Australia everyone knows who 'Hotham Valley' is.



Recently, I went to the Nyora Hotel after a day of working on the tourist railway there. The publican said that I was the first one from the railway that had come over and spoken to her. She wanted to advertise the railway and the locals often talked about the railway that ran past the front but they hadn't heard from anyone to be able to tell them anything about it.

We are all in the competitive market place. Our hobby was set up by us to enjoy our interest but we must have a wider vision.

Force yourself into it - to survive!

Maybe COTMA should join Museums Australia. Our Conference programme would have been placed in the 'Whats On' columns of their national magazine. People of importance may have read about it. Its a case of rubbing shoulders, and being outward with information and news about the Australian tramway museums. Our museums are rich in social and technical history and yet they are not exactly the topic of conservation of people directing and selling tourism and culture.

We have to lobby for our cause. We have to seek out the right Ministry and the many other areas of available resources and funding.

### Questions

John Radcliffe: Need to know as many Ministers of Parliament as possible

Trevor Burling: Need to know whats going on in Regional and Local authority bodies.

Vote of thanks by Jack Nyman

## **SOCIETAL IMAGING - LEAFLETS, POSTCARDS AND GUIDEBOOKS**

Presenter: Bill Scott

Session Chair: Chris Andrews

Session Secretary: Richard Gray

The first contact many future visitors have with us is by the published word, as leaflets, postcards or guidebooks. These then, are noteworthy means by which we can generate increased interest in our societies.

Accordingly, how we show ourselves in these areas can make a difference to our viability. The successful formula seems to be, ancient equipment in superb condition combined with modern advertising. Any form of the printed word, whether it be a free leaflet, a paid for postcard or guidebook, is a form of advertising.

The public is constantly bombarded with advertising material, such as magazines and books, for which the publishers have often gone to great lengths to give them maximum appeal. None of us has a budget to match many of these offerings, yet our efforts have to be noticed amongst the plethora of paper.

This is the challenge we at Ballarat are aiming to meet as opportunity and funding permits. The more of the imaging we can carry out ourselves, the less the financial cost to our societies, or the more attractive we can make our presentation. This is especially so of guidebooks where there are many pages to design and layout, combined with relatively low or short print runs. The usually high costs of pre-press work is thus spread over fewer copies.

There may be an avenue for sponsorship to aid with financing. However, it appears that securing finance in this manner is more likely if a presentable and previously published work is shown at the time of the request to assist with an updated version. A Catch 22 situation!

### Leaflets

The first of the three images to consider is the advertising leaflet, given out in large numbers and without charge to the recipients. We made ours clearly readable with a positive message. One two sided sheet of 4" x 8 1/4" (10cm x 21cm) was fine. Anything larger would only increase costs unnecessarily.



The weight and stiffness of the paper was made sufficient so that the leaflets would remain upright in display stands and not droop like weeping willow trees, which would be a most distressing sight and not a good image for the Society. Do not use brown ink for printing on leaflets as it is a dead colour.

An illustration on the front gives a welcoming impression, particularly if it is a tramway scene with human interest rather than a close-up view of a tramcar, as if on static display. We remembered that the leaflet is for the general visitor and not tramcar buffs.

### Postcards

Postcards are also a form of advertising, either to purchasers at any location where they are on display, or when visitors send or show them to others around Australia and overseas. The main difference as compared to leaflets is that, ultimately, the visitors pay for them plus any postage involved rather than our societies.

Therefore, and especially as postcards are more likely to be held onto than leaflets, taking good care in their preparation is highly desirable. The composite postcard with several illustrations is preferred by some purchasers who regard it as better value for money. One illustration with several focal points, such as three different type of tramcars, is a variation on this theme. This latter variation will cost less to produce as only one scanning charge is payable as against one for each individual view on multiple scene cards. We found that a border around a postcard gives a finishing touch.

The name of the society's line, or its location, should be displayed somewhere on the front of the card and not confined to the back only. Some outlets will not handle a postcard on which the subject or its location is not named on the front.

As postcards are small items, very clear photographs are preferred and ought to be made from colour slides. Companies producing postcards will print a number of different designs at once on a large sheet. This spreads the printing charges considerably, thus reducing individual costs.

The last card we published was a standard range one at 142mm x 97mm. Postcard sizes vary slightly between manufacturers, probably according to the dimensions of their printing equipment. Cards being small items, slight differences in sizes can be noticeable, so that a supplier who prints nearer to the actual standard size of 143mm x 100mm would be preferred.

Another popular postcard is the Continental with an actual size of 177mm x 118mm, though again, there can be slight variations between manufacturers. The public has accepted their higher retail price of 60 cents, as opposed to 40 cents for a standard card. However, in our specialist arena, market research may be advisable before introducing the larger and higher priced postcard.

### Guidebooks

Guidebooks complete the trio of basic promotional material for organisations such as ours. The comments about postcards being, ultimately, self financing advertising, apply equally to guidebooks.

For our, "Ballarat's Heritage Tramway", the first consideration was how much we could charge our visitors for it. From this aspect all other decisions flowed. We then looked closely at page size and considered that B5 trimmed would give a pleasant shape and about the largest size which visitors could handle on our tramcars without inconvenience, which would otherwise cause them to become more or less creased or crumpled. Visitors do not usually board the cars with large bags or document cases!

To gain maximum impact for illustrations we bled off the photographs on all the outer edges of the pages. This procedure increases the area of the views to a surprising extent, as this increase occurs around their borders. The improved impact is considerable.

At the point of sale, first impressions are vital, so a glossy rather than dull finished cover and paper stock was chosen to enhance the illustrations. A half rather than full gloss finish was selected to give life to the illustrations, yet without being too reflective for reading the text. Additionally, the cover was laminated to give it increased durability.



A paper weight of about 130gsm would ensure images on the other side of a page do not show through. For the relatively short run we made, of 3000 copies, the difference in cost between cheap and good quality was a small sum measured as a percentage of total printing expenses. The same comment applies to the card cover, which on our book weighs 250gsm.

The most fruitful areas we found for reducing costs were in pasting up the booklet from the galley proofs supplied by our typesetters, proof reading and how we prepared our colour illustrations for the colour separations.

The cutting, pasting and page design were handled by ourselves, though it was sufficient for the positioning to be made by sight only. The typesetters then easily produced the typesetting accurately by computer for final proof reading by us, before transfer to the film makers.

If the page laying out is to be left to the typesetters, one has to more or less accept their interpretation of your instructions or meet, perhaps, substantially increased costs.

Colour, at least on the front cover, is essential these days for booklets to be noticed at a point of sale amid the many other publications on offer, including on a society's own sales counter. We preferred to have a significant number of colour views in the text as well.

Colour views as slides are scanned individually, though colour views as prints can be colour separated collectively, if all are the final size and colour density for publication. The colour prints can be prepared at a competent one hour Kodak Express service, or similar. The savings we made were substantial for our 15 colour views, equivalent to about 30% of total outlay for the film making process.

Typestyle can be a matter of choice though we avoided the rather plain sans serifs. We found that a mere one point increase in the line spacing of the text made the pages look much more readable, rather than a sheer mass of type, which is disconcerting in a guidebook.

Finally, a quick note on the guidebook contents. We seem to have found a suitable formula, at least in the opinion of the National Trust in Victoria. Of our book they said, "not a big tome, lots of illustrations and does not overwhelm with technicalities".

We hope that our associates in the tramcar preservation field will find some benefits for themselves among our discoveries.

Editors Note:- At the end of the Speaker's address, the time available for the session had expired. Therefore it was not possible for any discussions or question/answer on the subject.

## **RAIL SAFETY LEGISLATION IN NEW ZEALAND**

### **IMPACT ON VOLUNTEER HERITAGE RAIL OPERATORS**

Presenter: Les Stewart, President, National Federation of Rail Societies, New Zealand

Session Chair: Dennis O'Hoy

Session Secretary: Bill Kingsley

At the 1990 Conference in Wellington, N.Z., Roger Toleman of the Ministry of Transport outlined the proposals for the overhaul of the tramway and railway safety regime in New Zealand. This covered the:

- the need for licensing
- Safety Audit Model
- Steam Boilers and Overhead Electricity Supply
- Transitional Arrangements
- Accident Investigation
- Transport Corridor Management



A further two years elapsed before legislation was passed and on 1st April 1993 the following acts came into force:

- Transport Services Licensing Amendment Act (No. 3) 1992
- Transport Accident Investigation Commission Amendment Act 1992
- Railway Safety and Corridor Management Act 1992

### Overview

- \* **Legal Framework**
  - Licensing
  - Safety Plans
  - Accident & Incident Reporting & Investigation
- \* **Content of Safety Plans**
  - Quality Systems
- \* **Issues for Volunteer Groups**
  - Paperwork
  - Auditors Vs. Inspectors
  - Organisation Structure
  - Potential Cost
- \* **Summary**

We are now 20 months into the new environment. While existing operators have had to comply with licensing requirements and accident and incident reporting from the beginning, a period of three years has been allowed for the development and approval of the most significant element of the legislation - safety plans.

Today I intend to provide a brief overview of the legislation, look at what is involved with safety plans and safety audits and review the impact of this on volunteer groups such as yourselves.

### Licensing Requirements

- \* Transport Services Licensing Act requires all operators to be licensed.
- \* Neither a revenues earning ploy nor a means to limit the number of operators.
- \* Identifies all operators to be covered under the Safety Audit regime.
- \* Licence issued only when the operators safety plan is approved.
- \* All operators as at 1st April 1993 have three years to have their safety plan approved.

All rail operators are required to have a rail service licence. Rail Service Licences are neither a revenue earning exercise nor a means to control the number of operators. They cost nothing and provided the management is of good character and you have an approved safety plan anyone can get a licence.

The Rail Service Licence is a registration mechanism by which the Land Transport Safety Authority can identify who is covered by the legislation. The LTSA administers the legislation within which the safety systems are established and have a responsibility to ensure all operators have a safety plan which is regularly audited.

Any rail service operating at the time the legislation came in force has until 31 March 1996 to develop and gain approval to a safety plan.

### Safety Plans And Audits

- \* Transport Services Licensing Act requires all operators to have an approved safety plan.
- \* No safety plan - no licence.
- \* Safety plan defines how the operator plans to build, maintain and operate their tramway or railway in a safe manner.
- \* Once approved, the operator's compliance with the safety plan is audited by an independent safety auditor.
- \* Land Transport Safety Authority may request supplementary and special safety audits.

As defined in the Transport Services Licensing Amendment (No 3) Act, a safety system sets out the "...standards, practices, and procedures" the operator proposes to follow in order to ensure the safety of persons



likely to be significantly at risk of death or serious injury through the operation of a rail service vehicle. We will look at the content of a safety system in more detail later.

Once approved, as a condition of being granted a Rail Services Licence, the operator must operate their railway or tramway in accordance with the system. Compliance with the system is audited annually by an independent auditor approved by the LTSA.

The LTSA also has the authority to order supplementary audits if it has reason to doubt the safety management of a particular operator.

#### Accident And Incident Reporting And Investigation

- \* Hierarchy of accident and incident reporting.
- \* Operators maintain an incident log:
  - audited by Safety Auditor.
  - Reviewed by LTSA staff.
- \* Notification to LTSA:
  - accidents immediately by phone.
  - incidents by fax as soon as practicable.
- \* Transport Accident Investigation Commission (TAIC):
  - investigates all accidents involving death.
  - other accidents and incidents as it deems necessary.

Railways and Tramways are historically very safe compared with other forms of transport. However, for every death or serious injury there are numerous minor injuries and for every minor injury there are many incidents which could have resulted in injury.

To enable adverse trends to be identified a system of accident and incident reporting has been established. For this purpose the following definitions are used:-

- Accident is an occurrence associated with the operation of a rail service vehicle and results in death or serious injury to a person.
- "Incident" is any occurrence, other than an accident, associated with the operation of a rail service vehicle that places or could have placed a person at significant risk of death or serious injury.

Accidents must be reported to the LTSA and the Transport Accident Investigation Commission by phone within two hours and followed by a written report on or before the next working day. Incidents have to be reported by fax on or before the next working day.

TAIC investigate all accidents identifying the cause(s) and recommending any changes required to the safety system of the operator. Often recommendation will be made to all operators in the interest of preventing of another accident.

#### Quality Systems Underpin Safety Systems

##### Land Transport Safety Authority

- Plan: Establish legal framework within which rail operators manage the safety of their systems.
- Do: Provide guidance and support in the implementation of the legal framework. Approve safety plans.
- Check: Monitor accident and incident reporting for adverse trends and review audit reports of rail operators.
- Act: Take action to remedy adverse trends and poor audits, eg. seek changes in safety plans, initiate special audits, withdraw licences.

##### Rail Operator

- Plan: Develop safety plan to meet operator's strategic objectives working within the legal framework.
- Do: Operate the tramway or railway in accordance with the approved safety plan.
- Check: Monitor operations in accordance with the approved safety eg. exception reporting, management reports, internal audits and inspections.
- Act: Take action to remedy faults eg. train staff, adjust maintenance schedules, amend safety plan.



Having looked at the three components of the safety legislation - licensing, safety systems and accident and incident reporting, we will now have a more detailed look at safety systems. It is the safety system that has the greatest impact on volunteer groups.

The basic philosophy underlying the safety system regime has its origins in quality management systems. The responsibilities of two of the three parties, the LTSA and the operator can be illustrated using the Plan, Do, Check, Act (PDCA) Cycle.

The operator who creates the risk takes responsibility for managing that risk, while the LTSA, on the other hand, is responsible for legal framework and ensuring that it is effective i.e. New Zealand has safe railways and tramways.

The other party involved in a safety system regime and mentioned but not specifically covered here is the auditor. The auditor is required to judge whether there is a sound and appropriate safety system in place for the nature of the operation, and to monitor the standards within that system.

#### Contents Of Safety Plans

- \* Organisational Objectives.
- \* Administration Details.
- \* Standards proposed for each aspect of operation eg. track, rolling stock, training etc.
- \* Procedures for ensuring compliance with each standard.
- \* Reporting systems for accidents and incidents.
- \* Management structure responsible for safety, including job descriptions.
- \* Standards of training and experience required by drivers.
- \* Scope of each regular audit.
- \* Name and qualifications of auditor.
- \* Other matters as may be prescribed.

Each tramway or railway is different in terms of scale, reason for existence, nature of equipment, customers etc. Safety plans must recognise these differences and be adapted to suit the need of the operator. For this reason a safety plan begins with the objectives and the key background details of the organisation - location, ownership, length of track etc.

The main body of the plan details the who, what, how and when of safety management on the tramway or railway. The focus is on:-

- management structure including job descriptions (who and when).
- standards and procedures (what and how).

The final part of a safety plan details who the auditor(s) will be and their responsibilities. The auditor's role is to see that the safety system is structured and implemented in a way which ensures so far as is humanly possible, the operation of a safe tramway or railway.

#### Issues For Volunteer Operators

- \* Four areas are of particular relevance:
  - Paperwork.
  - Understanding the difference between Auditors and Inspectors.
  - Organisation structure.
  - Potential costs.

So just what are the implications of a safety system for a volunteer based rail operator?  
Our experience to date indicated four areas of particular relevance:

- paperwork
- understanding the difference between auditors and inspectors
- organisation structure
- potential costs.



### Paperwork

- \* Safety plans have the potential to bring out the bureaucrats in all of us.
- \* The need to maintain proper records has the potential to turn volunteers away.
- \* Groups therefore need to apply three basic principles:-
  - Adopt the Pareto Principle
    - >>the 80/20 Rule.
  - Use the "KISS" Principle
    - >>"Keep It Simple Stupid".
  - Remember the customers
    - >>they pay the bills!

The big risk with safety plans is that the need to maintain adequate records of safety related activities will bring out the bureaucratic instincts in us all and drive members away.

Volunteers and paperwork do not mix well together. Volunteers come along to restore trams and trains, lay track, drive trams and locomotives, not to fill out bits of paper. Paperwork is left back at the office.

To combat this the Federation is emphasising three basic principles:

#### **Adopt the Pareto Rule (also known as the 80/20 rule)**

In respect to a safety plan this means that an 80% safe railway or tramway can be achieved by concentrating on the top 20% of the risk factors. This is not to say that the aim is not for 100% safety but to emphasise the need to be pragmatic - trying to cover the hundreds, if not thousands, of risk factors will create a monster that will eventually put the group out of business.

#### **Use the KISS Principle - "Keep It Simple Stupid"**

The processes outlined in safety plans have to be implemented by members. It is good management to ensure that the skills and efforts of the members are focused on restoring, maintaining and operating trams, locomotives, rolling stock etc. and not spending hours each day doing the paperwork.

#### **Remember the Customer - they pay the bills**

Safety procedures must be customer friendly. Just as a railway or tramway with a poor safety record will not attract customers, tramways and railways that are operated in such a way that customers are inconvenienced, even in the guise of safety, will also have poor patronage.

### Inspectors Vs Auditors

- \* Inspectors check that the physical items comply with appropriate standards.
- \* Audits cover more than the physical items
  - quality of management
  - staff training.
- \* Auditors check the records to ensure the operator
  - carried out agreed actions
  - according to the timetables
  - to the defined standards
  - by the appropriate people.
- \* Auditors will also
  - kick the 'ballast'
  - interview key management.

One of the most difficult concepts that rail groups in New Zealand have had to come to grips with is that of auditing and understanding the difference from inspecting.

Until now we have all been used to an inspectorial regime whereby various inspectors from Government Agencies would visit the site and inspect track, vehicles, boilers, etc. to ensure they complied with the relevant statute. This would ensure that things were safe for at least one day of the year.

While the operator has always been legally responsible for complying with appropriate standards, a safety audit regime forces the operator to be more proactive in safety management. In practice, the operator will undertake



their own inspections according to a timetable agreed in the safety plan. An auditor, who is independent, is required to audit a compliance with the safety plan once a year.

The audit will primarily consist of checking the records to ensure the actions detailed in the safety plan were carried out according to the timetable by the required people and in accordance with the standards set out. This is not to say that auditors will totally ignore the physical condition of the tramway or railway, they will want to "get out and kick the ballast" to satisfy themselves that the paperwork matches with reality. In addition key management will be involved with interviews and discussions.

### Organisation Structures

- \* Volunteer groups are traditionally managed by committees.
- \* Committees are seen to be democratic - everyone can be involved in the decision making.
- \* Safety plans require a clear definition of management responsibility in respect to safety.
- \* Office bearers must:
  - be accountable
  - have clear levels of decision making authority
  - have requisite skills and experience.
- \* Preference for appointments rather than elections.

The changes necessary to an organisation's management structure to ensure there is a clear line of accountability for safety is likely to have the greatest impact on volunteer groups. However, this impact is not on how the group runs its tramway or railway but on the underlying culture of the organisation.

Traditionally, volunteer groups are managed by committees and elected office bearers. The very democratic nature of these organisation gives members the feeling of being in control of their organisation.. Decisions are usually made by committees or at the very least by consensus.

In order to achieve a clear line of accountability for safety there must be a well defined management structure with clear accountabilities and appropriate delegated authorities. The committee is still important but its decisions will be limited to ones of strategy and policy and it needs to stay away from operational matters.

The skills and experience of members holding management positions also become important in a structure accountable for safety. Elections cannot guarantee that office bearers will have the necessary skills or experience nor can they guarantee stability in the management structure from year to year. Accordingly, the trend will be towards a structure based on an elected committee which appoints all office bearers who have responsibility for safety for fixed terms.

The management structures of our volunteer tramway and railway groups will thus change to resemble those of a small company. This will challenge the leadership of these groups to ensure that members always feel they have a say in the running of their organisation.

### Potential Cost

- \* Until now honorary inspectors have been used.
- \* Auditors could potentially cost money.
- \* Remuneration is an issue between the operator and the auditor.
- \* Operator needs to find an auditor, acceptable to the LTSA, who will act in the honorary capacity.
- \* The financial implications place an incentive on the operator to have and maintain a good safety system.

Under the inspectorial regime, most volunteer operators had honorary inspectors - often retired railway or tramway staff who agreed to be an inspector as their contribution to the preservation effort. Under the new regime a number of groups fear that auditors will end up costing a fortune.

However, the LTSA is only concerned with the suitability of the auditor not the financial arrangements between the operator and the auditor. So if the operator can arrange for an auditor to act on an honorary basis there will be no additional costs over the existing system.

Even if the operator has to pay for an auditor, the legislation has been designed to bring a discipline to operating a railway or tramway which means that the tramway or railway management will continually look at



the safety issues. A clear and well set out safety system, with clear evidence that standards are being met means that the audit should be over quickly at low cost.

#### What Does It Mean In Practice

- \* Volunteer rail operators in NZ have a very good safety record.
- \* So what is wrong with current practices.
- \* Safety plans will formalise existing practices.
- \* Opportunity will be taken to improve practices
  - record keeping
  - management
- \* Will become more business like.
- \* Represents a significant cultural change for many groups.
- \* Challenge is to ensure members understand and accept the changes that are inevitable.

So what will all this mean in practice?

We have had a very good safety record over the years so why change?

In reality the new legislation will probably mean little change to daily operating procedures and workshop practices. The safety plans will largely formalise existing practices. However, many groups have already found the process a useful opportunity to review their practices to ensure they meet the needs of their current operations. So there will also be some improvements.

These improvements will mainly be in the areas of:-

- record keeping
- management structures and practices.

The changes required in these areas that will mean a significant cultural change for a number of groups. The challenge for all groups is to ensure that their members understand and accept the changes that are inevitable.

Overall the new regime will result in groups taking a more business like approach to their operations - which can only be good for them and the industry.

#### Discussion

John Radcliffe referred to the International Standard of Quality Management - ISO 9000 guide aimed at all business and Craig Tooke to AS 3902.

Les Stewart emphasised that management groups within the museums must talk to all levels within the workforce.

Dave Hinman and Les Stewart discussed the problems for Auditors who need to be covered for liability and who are auditors - not inspectors. The NFRS is trying to establish a list of volunteer auditors.

### **SKILLS DEVELOPMENT IN THE MUSEUM ENVIRONMENT**

#### **AN OVERVIEW OF THE EFFECT OF RECENT LEGISLATION CHANGES IN NEW ZEALAND**

Presenter: Trevor Burling, Qualifications Convenor, National Federation of Rail Societies, NZ.

Session Chair: Dennis O'Hoy

Session Secretary: Frank Doherty

#### Introduction

As the museums in Australia and New Zealand, and I suppose other parts of the world, began operating, they tended to adopt the engineering standards and operational practices that were established by the Municipal operators from whom they inherited their trams and other tramway equipment, and, where necessary, introduce some variations to fit local needs. Over time, appropriate technological improvements have also been adopted. In this way the museums have managed to progress for three decades building up an impressive record of service and efficiency.

Inevitably other changes or improvements have been introduced over the years and these changes have usually occurred after arrival at a consensus by museum members, or the changes may be the climax of a project led by



the Council Of Tramway Museums of Australasia (COTMA) and/or the New Zealand National Federation of Rail Societies (NFRS).

Members generally feel quite comfortable about such events when they are borne out of a perceived need. This process usually establishes ownership of an initiative well before an engineering standard or new operating practice is introduced.

Conversely changes or new rules that are unilaterally imposed upon museum operators from time to time by the local or state authorities are often less palatable. Regrettably they are frequently an official reaction arising out of an inquiry into a catastrophe that has occurred on a public rail service somewhere. The result is we are often expected to comply with what may appear to be rather draconian and unbalanced directives.

### Development

In the early days of museum development some of the official agencies regarded us as a group of amateurs who were only playing with machinery that we knew little about, and they usually were reluctant to admit that they knew even less. Their view was that we were creating a hazard to ourselves and the public and therefore should be controlled by a strictly regulated inspectorial style of management. Often if compliance with these outwardly imposed standards involved the unplanned expenditure or diversion of limited resources, then the museum members' reaction was occasionally manifest by the display of hostility or passive resistance.

Some of our authorities have not been very good at managing such affairs and consequently the perception of statutory authorities by museum members has frequently been negative to the point where relationships became strained. Whereas in other cases the agencies have been very conciliatory and have used a sagacious approach in these matters. This kind of experience has inspired museum administrators to work with the authorities and helped to facilitate consultation and consensus and the establishment of common standards.

This management style was a little haphazard at first, but changed strategies have been introduced which have fostered a determination on the part of all concerned to work together on these matters and establish a comprehensive risk management programme, recognising that the key element in all of these initiatives is the human resource factor.

Those authorities or Government agencies who have an enlightened view of our position have quickly established a good rapport with the local museums which is to the benefit of all concerned. Whereas others will often tend to be over cautious and limit museums to operating within the boundaries of their own ignorance.

I acknowledge that some of us are not entirely blameless either given that in the embryonic stages of our museums there were occasions when some very enthusiastic members who were keen to get the system going, did things that were at the least rather irresponsible, and some times attracted the attention of the authorities.

The New Zealand and Australian museums have amassed many thousands of hours of incident free operating experience proving that those earlier mistakes were usually made in ignorance and, to our credit, lessons were learned so that the mistakes were not repeated, and furthermore, other groups learned from these unfortunate experiences and acted accordingly. All of this has proven that we are capable of providing a very professionally managed environment for our members to work in, and for the public to visit in safety.

### Skills

Those past experiences have helped us to recognise the need for our staff to be competent in what ever they are doing. I use the term staff deliberately because it is the view of most of our New Zealand museums that a professional business approach is important and from what I have seen in Australia the same approach is evident. This professionalism can only be achieved if we claim ownership of the notion that appropriate training has taken place providing people with the opportunity to learn the skills necessary to carry out the engineering and operational activities of our museums efficiently and safely.

Over the past few years the New Zealand Government has acknowledged this professionalism to the point where we are consulted on a regular basis to express our views on many matters that concern operating standards and training in the museum industry. Particularly if there is a perceived need to introduce changes. It is noteworthy that the NFRS is regarded as an important member of the transport and tourism industries and needs to be consulted on training issues as well.



However I must add that that would not have come about if it were not for the efforts of such organisations as the NFRS and COTMA who have worked very hard to establish the credibility that we now enjoy with Government and other authorities.

#### Members Qualifications

No one is likely to or should be expected to become competent at performing any task without some form of training in the skills needed to carry it out. Even the most menial of duties need a planned approach if consistency and standard procedures are to be maintained.

These principles are well established in the rail transport industry and others and it is this sort of culture that has led to the establishment of common standards for the operation of tramways and railways.

#### New Zealand Qualifications Authority

In New Zealand we have a Government body called the New Zealand Qualifications Authority (NZQA) whose mission is to ensure that there are sufficient people available to industry with appropriate skills and qualifications to provide the necessary labour and professional service needed by industry. This authority has developed a national qualifications framework which contains the core unit standards for training any person in any skill for any part of the commercial or industrial sectors.

This guarantees that the industry groups concerned decide what the standards will be, and ensure that training opportunities are available leading to qualifications for occupations involving even the most menial skills to those requiring tertiary qualifications and that they get meaningful recognition.

This system also ensures that the skills learned in one occupation are transferable to another if appropriate, without having to start from scratch because of a change in occupation. The framework is continually being developed and expanded. At the moment there are about a thousand units registered, and about four thousand waiting for approval and eventual registration.

One of the latest initiatives in this programme is the setting of unit standards for the acquiring of energy and hazardous gases qualifications, including steam boiler operation which is certainly a topic of interest to some of our museum members.

One of the down stream effects of all of this on the museum fraternity is the obtaining of a statutory qualification such as steam boiler certificate or an electrical qualification by those who wish to be involved. This means that museum members who wish to operate locomotives or vehicles, or work on museum installations where such qualifications are necessary, must meet similar standards to those considered appropriate by industry and Government agencies.

In New Zealand qualifications in these areas have always been necessary, but the new system allows more flexibility in acquiring such qualifications, and is competency based rather than emphasis put on time spent as the tea boy working through to the elevated status of driver etc. and mostly based on seniority.

Our old system was something that was conceived in the Victorian steam age which became a rigid culture based on ignorance and mysticism, perpetuated by armies of bureaucrats who tinkered with the regulations or inspection systems following a disaster of some sort or the old superintendent retired and the new one has some different ideas.

We have now entered an enlightened era, and museum managers acknowledge that the changes are necessary and appropriate given that a certain amount of risk is involved in what we do.

It is acknowledged however that not every detail that is required in the commercial sector with modern plant machinery is appropriate in a museum environment. Given that some of their standards would require modification to our vehicles and equipment destroying the authenticity of our exhibits, or require our operators to learn skills that they would never use inside the museum gate.

This difference has been taken on board by members and the authorities concerned such as NZQA and indirectly the Land Transport Safety Authority (LTSA) and the Labour Department. These Government agencies are working closely with NFRS and individual museums to facilitate the formulation of sensible and



workable rules for qualification and operating standards that reflect the needs of the groups concerned, yet establish and maintain similar standards to those required in industry.

#### Government Agency And NFRS Liaison

One of the most significant examples of this consultation and co-operation is the attendance of officers of these Government agencies at NFRS conferences where frank and helpful discussion takes place, to ascertain the most efficient and sensible means of reaching these safe operating objectives.

The museum movement is also committed to these goals, and we are fortunate in that among our ranks we have some members with analytical, debating, lobbying, legal and engineering skills. These people have willingly consulted with various officials and parliamentary committees to ensure that the best arrangement for the whole federation is won.

From time to time they are called upon to interpret what can some times appear to be rather mysterious and complicated language for some of those individuals and groups who are good practical people who just want to get on with their favourite activities without wading through a quagmire of legalese cloaked in shrouds of mystery.

Efforts like this ensure that the training and qualifications required by members do not appear to be an insurmountable hurdle.

One example of the progress made is that we have now registered our needs for steam generation and boiler care qualifications with NZQA.

And the Occupational Safety and Health division (OHS) of the Labour Department (who administer the relevant part of the Boilers Lifts and Cranes Act) are working with us to find workable solutions for groups interested in the acquisition of steam qualifications as they pertain to the museum environment.

Both NZQA and OHS acknowledge that we are a special group doing a high quality job of preserving an important part of our heritage and in order to carry out this function we require appropriate training opportunities in order to obtain the necessary statutory qualifications.

#### Summary

In summary I would like to say that we feel that we have entered a new era in New Zealand, where there is a will among all parties concerned to work together to achieve a result that is for the good of all. Whilst allowing the museums to attain their own objectives without the fear of some agency walking through the gate and closing them down because of an event that occurred somewhere else and has no connection with our operations or how we manage them.

But on the other hand we recognise that if we cause such an agency to pay us a visit because of some act or omission that attracts their attention then we are the masters of our own destiny and it's up to us to maintain the confidence that has been built over the past thirty years, and now enshrined in our legislation.

I feel sure that we will all benefit from this experience and I just wanted to take this opportunity to briefly describe what is currently happening at our end of the track in regard to staff competency helping to build that professional image that the people who pay the bills (the customers) will benefit from, and enjoy sharing our treasures, perhaps returning with others or maybe even join our group.

Long may we be able to tolerate the pain of that incurable disease for which there is no cure but for which there is a brief respite by indulging in just a little more.

#### Questions

Les Stewart commented further on the Safety Standards as far as the Federation is concerned.

Bill Scott: How are our tram airbrakes affected by legislation?

Murray Sanders: High pressure vessels over .5 cubic metres are covered by stringent restrictions over their use.



John Radcliffe commented and asked how it affected people involved in the Education Sector?

Dennis O'Hoy: We do have to have a full time Health & Safety officer. They are involved in the induction of all staff in all aspects of safety. It is not a bureaucratic bundle - it does work.

Dennis O'Hoy then gave an example to demonstrate this.

## RAIL SAFETY LEGISLATION IN NEW SOUTH WALES

### BRIEF OVERVIEW OF THE NEW SOUTH WALES RAIL SAFETY ACT

Presenter: Don Campbell  
Session Chair: Dennis Bell

Paper prepared by: David Rawlings  
Session Secretary: Bob Merchant

The State Government introduced the Rail Safety Act in the latter part of 1993 to regulate rail safety in New South Wales. Unlike earlier rail safety systems, the Act places the administration of rail safety outside the control of the State Rail Authority. The Act covers not only the SRA but all other railway owners and operators in the State.

The Act has been introduced because of substantial changes in the NSW rail industry, including the establishment of the National Rail Corporation, the growing trend to establish commercial short lines on previously disused SRA lines, the introduction of light rail rapid transit systems and the likely introduction of private sector high-speed rail services.

The Act applies to all railways in New South Wales with a track gauge of 600mm or more, including heavy railways, light railways, Tramway and inclined railways, and to monorails. It also applies to any other "railways" which will permit transport systems using the new technologies to be added to the coverage of the Act in the future.

The Act does not apply to aerial cableways and underground mining rail systems, or Amusement Park railways as they are regulated under other legislation.

The *owner* of any railway infrastructure and the *operator* of rolling stock using any railway infrastructure need to be "accredited" under the Act. Owners include leaseholders and managers if they are responsible for the construction and/or maintenance of the railway's infrastructure.

The primary emphasis of the Act is on the development and enforcement of rail safety standards and procedures *proposed* by the owners and operators and *examined and agreed to* by the Director-General of the Department of Transport. This approach is designed to ensure that safety standards and practices will match those needed for each individual railway and will be able to be put into practice.

Any railway owner or operator wishing to gain accreditation has to submit an application to the Director-General. The application needs to identify the principle safety risks, propose safety standards, systems and management plans and provide information on insurance, management and financial capabilities, the infrastructure, rolling stock and other equipment to be used, organisational and staffing structures and any running rights agreements.

The application is considered by the Director-General who decides whether to accept the proposed safety standards and systems and whether the applicant is able to ensure that they will be properly implemented. If accreditation is approved the owner and/or operator is obliged to comply with its conditions and restrictions, subject to penalties of fines and/or, in serious cases, imprisonment. Once accreditation has been issued, it normally continues indefinitely - unless it is cancelled or suspended - until the owner changes or the operator loses their right to operate the railway.

Most terms and conditions imposed will depend on the circumstances of each railway, but some standards set out apply for all railways. These include training for staff in rail safety work, ensuring health and fitness of employees and prohibition of work by those under the influence of alcohol or other drugs.

Enforcement of the obligations imposed on railway owners and operators who gain accreditation involves a combination of self-regulation - including internal safety audits - and routine and random inspections of infrastructure and rolling stock and observations of operations by the Directorate of Rail Safety.



Safeworking staff, including drivers, guards, those responsible for track and rolling stock repairs and maintenance, need to hold a "certificate of competency" issued by an authorised agent.

All serious rail safety incidents or accidents defined as "notifiable occurrences" need to be reported. Owners and operators need to conduct internal inquiries into all rail safety incidents or accidents, and inform the Director-General in detail.

Owners and operators need to submit annual safety reports and annual updates of their management plans to the Director-General.

Application fees and annual fees payable are used solely to help cover the costs of the Directorate of Rail safety. *Sliding fee scales take account of the difficulties faced by some volunteer-based historical railway operators and owners. There is a strong public interest in maintaining these operations. In extreme cases annual fees may be waived or reduced.*

Thus the stage was set for the implementation of legislation which would have a profound influence on all railways in the state. Initially, those railways who had SRA accreditation were granted 'temporary' accreditation until their application had been lodged and approved. The 'big' players, State Rail Authority, Australian National and BHP, had resources to prepare their applications for accreditation, but for the volunteer historical railway owners and operators the preparation of their application was to take some time.

To ensure all aspects of the Act were covered in the application documents, the Directorate of Rail Safety published a set of Guidelines of Accreditation Applications. It set out in some detail the areas of rail safety which had to be considered.

To enable effective determination of the railway owner or operator's capacity to safely maintain and operate a railway system, the applicant seeking accreditation had to demonstrate that the organisation had the capacity and competency to safely maintain and operate the railway.

## DETAILS OF THE GUIDELINES

### **Organisational and Managerial Aspects**

Organisation  
Safety Management Systems  
Running Rights  
Workcover Authority of NSW  
Railway Safety Workers  
Inquiries into Rail Safety Incidents

Management  
Financial  
Private Sidings  
Dangerous Goods  
Reporting Safety Incidents

### **Operational Aspects**

Safeworking  
Special Working of Trains  
Loading Arrangements  
Competency Assessment of Operational Employees

Emergencies  
Safeworking Procedures for Engineering Work  
Instructions to Employees

### **Infrastructure Aspects**

Track  
Structures  
Signalling Systems  
Overhead Electric Train Power Supply  
Workshops  
Infrastructure Maintenance  
Competency Assessment of Infrastructure Employees

Bridges  
Associated Track Structures  
Communication Systems  
Buildings  
Tunnels  
Instructions to Infrastructure Employees



**Rolling Stock Aspects**

Rolling stock submitted for Accreditation	Road worthiness of rolling stock
Rolling stock Outline	Rolling stock Structure
Rolling stock Coupling Arrangements	Bogies
Brake Equipment	Rolling stock Accessories
Passenger Cars	Freight vehicles
Locomotives	LP Gas installation
Intermodal Equipment	Rail tank Cars
Train Examination Procedure	Rolling stock Maintenance
Instructions to Rolling stock Employees	Competency Assessment of rolling stock Employees

Much of the detail required was similar to that required by the SRA, but the areas of routine maintenance (proposed scheduled maintenance procedures, minimum operating standards), issuing of instructions and acknowledgment of receipt of the those instructions (source, distribution, acknowledgment process, records, details of follow up process to ensure understanding) and competency assessment of workers (criteria-curriculum, training, records; assessment - procedure, programme, records) were high on the priority list.

As stated in the paper in the Perth COTMA Conference Proceedings, our only shortcoming was the area of the keeping of maintenance records to provide documented proof that the maintenance is carried out in accordance with predetermined standards.

In order to provide the mechanism for providing records, we first had to prepare the 'predetermined standards'. Although the Rail Safety Directorate would examine and approve the standards, the standards themselves had to emanate from the organisation itself.

Mainline historical operators (3801 Limited, Rail Transport Museum) were able to refer to various SRA documents covering bogies, brakes and safeworking, but our Society had to compile our own standards for trackwork, overhead and safeworking. The safeworking procedures had been in place since the 1970s and had been accepted during the SRA accreditation application so did not pose a problem.

Although not completed, three handbooks have been prepared to support the application. These handbooks are not required to accompany the Application, but must be available for inspection by officers of the Directorate.

**Handbook of Tramcar Maintenance**

Bodywork	Inspection
Lubrication	Traction Motor Maintenance
Controllers	Circuit Breakers
Resistance Grids	Brake rigging
Trucks and Rigging	Maintenance Schedules and Checksheets

**Handbook of Tramway Overhead**

Basic history (for Dept of Transport Engineers)	Design
Construction	Maintenance
Checksheets	

**Handbook of Tramway Track**

Introduction (to detail the differences between tramway and railway)	Design
Maintenance	Construction
	Checksheets

**Summary**

The basic thrust of the Rail Safety Act and Accreditation is self regulation. This demands responsibility, good management and accountability. Accreditation means an increase in paperwork, the introduction of a regime of regular maintenance and an increase of safety awareness. It will increase costs through annual operating fees, although there are indications that historical preservation groups will not be unduly disadvantaged. Insurance costs will also increase in the short term.



On the positive side, official government recognition brings with it a reward for the work put in over seemingly countless years by many volunteers and the historical value of public transport history and preservation.

Since receiving SRA accreditation we have seen the beginning of a culture change within the museum. Tramcar checksheets, which are required to be filled in before and after traffic operations each operating day, have a completion rate of 97%! Most traffic staff are more aware of safety, not only for patrons but for themselves also.

Although some of the other preservation groups have found it difficult to appreciate the need for volunteer museum accreditation, we were fortunate that over twenty years ago Society administrators realised that traffic rules and training were important for the ongoing success of the Museum.

It is believed that other State governments are watching with interest the effect that the NSW Rail Safety Act is having on rail operators, with a view to introduce similar legislation in their state.

The preparation of two applications for accreditation had been demanding, but at the end of the day, very satisfying. It has forced the introduction of procedures and record keeping which will ultimately make safety a way of life. Even if the other states do not follow NSW, it would be worthwhile for all Societies to examine the changes in New Zealand and New South Wales and consider implementing similar procedures.

### Questions

Les Stewart: asked what annual fees would SPER be charged if you don't get an exemption?

Don Campbell: replied he did not know but would try to find out.

Rod Atkins: asked how long it took to prepare for accreditation from first to last?

Don Campbell: replied it took 12 months for the accreditation by the State Rail Authority of NSW but accreditation by the Department of Transport took a lot less time as much of the work has already been carried out for the SRA.

John Radcliffe: asked whether SPER had been consulted on the drafting of the Act?

Don Campbell: replied 'no we were not'. Don outlined the 3801 accident and the legislation was aimed to cover heavy rail. The legislation required each trip to be signed out by a qualified engineer. It was pointed out by SPER that we now ran 17 trips per day and did this require each trip to have a signed trip inspection sheet. It turned out that this was not intended in our case and the Act was modified to cover tramway trips.

Bill Scott: asked if a fee was the required for individual tramcar inspections?

Don Campbell: replied that the SPER inspecting engineer is a member of the museum and does not charge a fee.

John Radcliffe: asked if O-bahns were included in the "rail" modes included under the Act?

Don did not know but would try to find out.

## **GETTING VICTORIA'S PUBLIC TRANSPORT HERITAGE ON THE MOVE** **AN ADDRESS BY: HON ALAN BROWN MP, MINISTER FOR PUBLIC TRANSPORT** **COUNCIL OF TRAMWAY MUSEUMS OF AUSTRALASIA** **12TH BIENNIAL CONFERENCE - BENDIGO**

**Monday 5 December, 1994**

Ladies and Gentlemen, fellow tram enthusiasts,

I am very honoured to be here tonight to address this very important conference on Tram Heritage. I am particularly pleased that Bendigo has been chosen to host the 12th Conference of COTMA as this Government has established a very close working relationship with the Bendigo Tramway Trust. In fact, we currently have a very successful exchange program underway between The Trust and the Met Tram business unit of the Public Transport Corporation. We were happy to lend The Trust our precious Birney Tramcar for Saturday's magnificent "Calvacade of Trams". In return, an historic Bendigo Tram is currently running on the very



successful free City Circle Trams for the benefit of visitors like yourselves. I am pleased to announce tonight that the expression of interest process has been so encouraging that we now intend to invite the five highest rate respondents to tender for the supply and maintenance of on-board announcement technology on our ten City Circle W-Class Trams.

I would like to revisit the area of Heritage Trams later in my address. However, I have been specifically asked by your Conference organisers to provide a brief outline of the Victorian Government's Public Transport reform strategy since the coalition was elected to office a little over two years ago. Without in any way wishing to politicise my comments tonight, you cannot fully understand what this Government has achieved and why it had to be done unless you recognise the absolute mess we inherited in transport. Under the former Labor Administration, Victoria had the worst performing public transport system in Australia. The services were generally unclean, unsafe and unreliable. It was also unaffordable to taxpayers who had to meet the cost of an escalating deficit. Let me give you two examples from the tram area which graphically illustrate my point. Between St Georges Road, Thornbury and High Street, Northcote, in Melbourne's northern suburbs, there was a tram route of a mere 500 metres known as the 'Hump'. In the past, this service was used on average by one passenger per tram run. In fact, the staff generally outnumbered the customers as these trams had both a driver and a conductor on board. This service cost the Public Transport Corporation around half a million dollars a year to operate. It would have been far cheaper for the PTC to have paid for a taxi for each passenger trip. Under this Government, route No. 9 no longer operates and Victoria's taxpayers are \$480,000 per annum better off. Similarly, you would all be familiar with Melbourne's very successful Colonial Tramcar Restaurant. In the past, this privately managed service was forced to carry a conductor on each trip, even though for ten years a fare was never collected nor a passenger helped. The conductor just sat in the back driver's compartment and read the paper or did her knitting. Under Labor, this unnecessary conductor was costing the restaurant proprietors in excess of \$50,000 per annum. One of my first decisions on taking office was to remove conductors from Melbourne's restaurant trams. As a direct result, Melbourne can now expect to see a third restaurant tram on the tracks by February bringing additional jobs and tourist dollars to the State Capital. I am of the view that this is a concept which vintage Tramways like those operating here in Bendigo and also in Ballarat should seriously consider. As an incentive, the Victorian Government would be prepared to provide, free of charge, surplus W-Class trams to Victoria's heritage tramway to establish their own restaurant tram ventures. Problems such as conductors on restaurant trams and tram services that only carry one passenger were just the tip of the iceberg.

By 1992, unless public transport was turned around quickly, its very survival was in jeopardy. All up, the system was costing Victorian taxpayers \$2 billion a year in losses, subsidies and interest payments. In short, the new Government had to transform Victoria's public transport system into a service which customers would use and taxpayers could afford. Consequently, in January 1993, I announced a reform program to create a world-class public transport service and cut its budget subsidy by half in less than three years. The total cumulative savings of the reform strategy by 30 June 1996, will be a massive \$633 million. This is equivalent to an average saving of \$429 per Victorian household. Despite these unprecedented savings, everyone who had access to public transport prior to our reforms will continue to have access no matter where they live in the State. After the January announcement last year I negotiated two landmark agreements with the Rail and Tram Unions which have ensured public transport reform without industrial disruption. For the first time in over a decade, Victoria's public transport system is now starting to become a service once again. The service is much cleaner with private sector contractors removing graffiti within 24 hours of it being reported. The service is safer with Victoria Police now solely responsible for law enforcement on public transport. The service is more reliable with cancellations down to a minimum and punctuality improving all the time. Most impressive of all, the service is significantly more affordable with vast savings for taxpayers as I mentioned before. On this basis, the long-term future of public transport in this State looks secure. There is still much more work to be done before Victoria's public transport 'service' is as good as any in the world but we are well on track to achieving this ambitious goal.

However, public transport is not just a means of getting people from point A to point B. It can also be a valuable heritage and tourist asset to ourselves and visitors to our State. This is very much the case with Victoria's Public Transport Corporation which has the largest and most precious collection of historic public transport rolling stock in Australia. Victorians could be forgiven for being ignorant of this fact as previous Governments have hidden away these public transport treasures in the vaults of the PTC, only rarely brought out into the light of day. It would come as a surprise to many to discover that the Corporation had a fleet of vintage buses hibernating in the 'Batcave' under the Westgate Freeway as well as numerous heritage trams and trains gathering dust in workshops and depots. This vintage rolling stock is in addition to Melbourne's much-loved W-Class trams which only a few years ago were in danger of being scrapped and sold off to American



Amusement Parks. Under this Government, fifty three W-Class trams have been saved to operate as an integral part of the daily Met service with ten of these W-Class trams running on the very popular and free City Circle service. Equally important, all these W-Class trams will be fully overhauled for the first time in decades and sensitively refurbished with long-awaited enhancements such as public address systems and heating. No longer will commuters have to put up with leaky roofs and draughty Melbourne winters as they enjoy a ride on one of the Met's historic W-Class trams. It should be noted that San Francisco's world-famous cable car fleet numbers only 37 vehicles and runs on only 8.5 kilometres of track. On this comparison, Melbourne's 53 restored W-Class trams in their distinctive heritage liveries running on four high-profile tourist routes should soon rival the best heritage tram services in the world. No visit to Melbourne will be complete without a trip on a W-Class tram. But that's not all, the PTC also has a vintage tram fleet of over twenty vehicles, many of which pre-date the W-Class trams. The Government has recently announced its intention to restore these trams to their former glory. Instead of locking them away, we will be contracting-out the management of this fleet to the private sector so they can be readily available for charter for the first time. What better way to celebrate a birthday or carry a wedding party than on board a faithfully restored vintage tram?

Country Victoria will also benefit because V/Line is now offering its fleet of "Classic Carriages" for hire, including the Royal Train which has not been on the tracks since the Prince and Princess of Wales last rode on Victoria's railways. If you wish, a steam locomotive can be used to haul your historic railway carriage on its leisurely journey. The PTC also owns a fleet of vintage buses, some of which hail from as far back as World War II and the 1956 Olympics. As recently as last Friday I personally handed over eight of these vehicles to organisations on a complimentary long-term basis for suitable tourist purposes. My good friend, Andy Hall from the Tramway Museum Society of Victoria, is now the proud custodian of two of these buses for use at the TMSV's Bylands Museum. Andy knows all about driving buses as he is also an employee of mine driving for Met Bus in Melbourne's southern and western suburbs. Victoria's public transport heritage doesn't stop at our rolling stock. The PTC also has a responsibility for heritage infrastructure that can range from railway stations to tram poles. In recent months sixteen historic Melbourne tram shelters, including the Batman Avenue Tram Terminus, have been refurbished for the benefit of our customers.

If you visit Melbourne after the Conference you can see for yourself that Flinders Street Station, the jewel in the crown of our great city's rail system, is being refurbished and repainted in its heritage colours. When completed by Christmas, we plan to floodlight it for all to see. I also take personal pride in the fact that the Victorian Railways "Honour Board" from the Great War is now cleaned up and back where it belongs in the foyer of Transport House. It had inexplicably been left behind when the former railway's headquarters building in Spencer Street was sold for redevelopment in the late 1980s. On Remembrance Day, for the first time in many years, we even conducted a service at the Honour Board in conjunction with public transport war veterans. I have also recently named the new Elizabeth Street Tram Terminus after the late Sir Robert Risson. As many of you would be well aware, Sir Robert was chairman of the Melbourne Tramways Board for 21 years and the man who deserves full credit for saving our city's trams. Once again, this demonstrates this Government's respect for those who have made Victoria's Public Transport System one of the greatest in the world. In my public transport portfolio, we recognise that the past should and must be preserved.

However, it should not be forgotten that the needs of our customers and taxpayers are paramount. There will be occasions where operational and/or financial considerations outweigh heritage concerns. In most cases, workable compromises can be negotiated. A good example of where the Government has helped strike the right balance is the PTC's recent offer to the South Gippsland Tourist Railway to run services on the railway line from Nyora to Leongatha. This is the first time a tourist railway has been allowed to lease an operating railway line with full responsibility for the management and maintenance of 41 kilometres of track. Once this is achieved, the local tourist railway will be able to give travellers an unparalleled view of the scenic delights of South Gippsland. There is no reason why more tourist and vintage rolling stock cannot operate on the road and public transport infrastructure. We can retain our public transport heritage without turning them into museum pieces. What we need are "Living Museums" where people can experience first hand the thrill of a steam train ride and the joy of a vintage tram trip. Along these lines, it is proposed that the historic Hawthorn Tram Depot will be leased to the new private sector manager of the PTC's vintage tram fleet to provide an authentic home for this precious collection. Non-profit transport preservation groups such as "Puffing Billy" and heritage tram bodies have shown what can be done to restore and operate our transport heritage. It only takes imagination and cooperation with the private sector and heritage groups to do for the PTC's historic trains, trams and buses what the Government is doing for the State as a whole:



**AFTER DINNER SPEECH TO THE COTMA CONFERENCE, BENDIGO, 1994**

Presenter: Geoffrey Claydon

I had spent all my life in Europe. Then, a quarter of a century ago, tired of the tranquil pleasures of such places as Berlin and Sarajevo, I determined to break out and see the rest of the world. Naturally I chose, as my first country to visit, Australia.

Now it is true to say that in selecting Australia, I did so with just a touch of apprehension. I had observed that on the cricket and rugby fields Australians appeared at times not always to show the deference due to the former colonial power. Then again, I had been given to understand that the British were called "Poms" or "Pommies". Although I didn't know the origin of these expressions, they didn't altogether convey quite the impression of respect and dignity which was clearly called for. Furthermore, my apprehension turned to alarm when even before setting foot in the place, news of my pending visit had got out among the tram fans here and I got the message back that "they don't want a stuffed-shirt Pom coming to tell them what to do!"

But the day came for me to embark on my journey. I attracted curious glances from commuters on the London Underground as I set off on a frosty February morning in 1969, dressed in a natty light-weight suit and straw hat. My point of arrival in Australia was Brisbane, since I was aware that the Tramway there was due to close the following April. The temperature was a humid 38 degrees. The contrast between this and chilly London, plus jet lag, meant that I had not felt inclined to eat anything before attending my first meeting. This was with George Baker, the Workshop Superintendent at the Brisbane Workshops at Milton.

My travelling companion was Dr Jim Jordan, who at that time worked at the Chiswick bus works of London Transport. George Baker had also worked for London Transport, so the meeting was convivial. When over, George said, "How about a drink?" Given the temperature, I readily fell in with this idea. We picked up the Deputy Manager *en route* - a chap called Warwick, whose surname I've forgotten. Then to a bar - my first visit to an antipodean pub! I was asked what I would like to drink. Cautiously I replied, "What do you drink?" "Rum and coke" came the response. Now I had tasted Coca-Cola one desperate day in Paris and had made a mental note never to renew my acquaintance with it. However, I thought it courteous to go along with the suggestion. On tasting the drink, it hardly touched the sides: it was delicious. "Have another" urged our hosts. Then another, and another. Gradually, Jim and I were permitted to stand our rounds. And so it went on till closing time - all on an empty stomach!

On leaving the bar, we piled into Warwick's car, which made its unsteady way back to the centre of the city for us to be deposited at our hotel. This chanced to be a temperance hotel in Queen Street. Not merely was it not licensed to sell intoxicants; it was run by a temperance league! I staggered up the steps and demanded my room key in slurred tones while clinging precariously to the reception desk. Then, to the horror of the management, I insisted on being taken up in the service lift. So ended my first day in Australia.

We went on to visit Ballarat and Bendigo, then still run by the SEC. We saw the legendary Basil Miller. He was the only Australian I have met who used the expression "fair dinkum", an expression which according to British mythology all Australians use all the time. In Melbourne, we had the great privilege of meeting General Sir Robert Risson, who took us to lunch at the Australia Club in William Street. With its stuffed leather chairs and port, it was just like being back in England.

We were conducted around Melbourne by Dudley Snell, who was many years later to die in sad circumstances while installing the Tuen Mun tramway in Hong Kong. I remember him saying, when Jim Jordan wanted to go to the bus works, "You don't want to go to that nasty smelly bus works, Mr Claydon, do you? Let's go to the nice clean Preston workshops". Then, on another occasion, as we were bowling along in a chauffeur-driven car, he tapped the chauffeur on the shoulder and told him to keep off the part of the road surface maintained by the Tramway, so as to avoid wearing it out!

And so I fell in love with Australia. I could say the same about New Zealand; another wonderful country. But tonight I thought it right to concentrate on Australia.

It has therefore been a very great pleasure to be in Oz again and at a COTMA conference. The accommodation here at the LaTrobe University campus has been excellent. Speaking of accommodation, I don't know whether you have been sharing yours. Certainly I have. I share mine with the photocopying machine. It has a fair number of visitors. I see dear old Dennis O'Hoy there, affable as ever. Yesterday, I was having a great shower.



I had just reached that moment when you're groping for a towel, when the door whammed open and a cheery guy said; "Just come to check your meter, sir!". I looked around, wondering what depraved Australian practice this was. Then I found that he had come to record the reading on the photocopier!

Seriously, though, it has been both an instructive and an enjoyable experience to be here. Apart from the excellence of the arrangements provided by the Bendigo Trust - even laying on a derailment for our diversion - on a personal note I have deeply appreciated the warmth of the reception shown to me. I have also admired the efficiency of the COTMA organisation and the sense of dedication on the part of the participants. This has been no binge. With an organisation and attendance such as we have seen here, you can look forward to the future with every confidence.

So I think it appropriate to give you a toast. I ask you to join with me in a toast to COTMA - long may it prosper.