

## **Tram car 26; why did we do it (the way we did it)**

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With a title like this you probably think I am going to tell you about the period to which the tram was restored.

That was a part of the story but here we have a bigger lesson we have learned.

A look at the process for restoring Christchurch Stephenson Double Deck tram 26.

These are my personal thoughts and not necessarily those of the THS or the HTT.

### **The Beginning**

The THS in its formative days held a wish to acquire for restoration an example of every type of Christchurch tramcar body still in existence.

The flagship of the electric fleet would be a Stephenson Double Decker Electric car if one could be obtained. Two remained in existence. No. 24 was at Ashburton in a poor state and 26 at Haketere partially entombed in a holiday house.

Because of the poor state of 24 a decision was made to salvage parts and demolish the body with a hope that 26 could one day be obtained from its covered storage.

The parts from 24 were lost in an arson at Ferrymead where the remains of three trams and a trolley bus were lost.

In 1986 negotiations finally came through and the remains of 26 were to be extracted and the holiday house rebuilt. By this time 26 had lost a third of its remaining body.

The idea of the Double Decker as a flagship grabbed the imagination of many members and supporters and the THS was able to mount a sizable work program to extract the body and bring it to Ferrymead for restoration.

Part of the deal to win the plan was for the missing portion of the house to be rebuilt. This was achieved through the resources of members and friends who toiled over a number of weekends to complete the task.

### **The decision to start restoration.**

The historic photographs of the Christchurch double decker electric trams followed by a couple of double deck trailers conjured up an air of romanticism. With the hope of Ferrymead developing into a major tourist attraction with visitors to be taken on a 'journey back in time' the top deck ride would just make that experience.

With the body of 26 to hand and the completion of Dunedin 11 not too far away there would be volunteers to work on the tram but not very much money to pay for it.

A grant was sought from the Tourist and Publicity Department resulting in funding in 1987 of \$75,000 to kick off the project.

In 1988 Barry Marchant was looking for another project to volunteer on after completing the restoration of Stephenson horse tram 43. The other volunteers had gone onto a tidy up of Brill 178 after 16 years service

### **Lets get on with it.**

The tram was moved into the barn and stripped down to determine the structural state of the tram.

What did we have?

An underframe with two thirds of the salon remaining.

Some tram components from around the world that may have been useful in restoring the tram.

A grant from the Department of Tourism and Publicity of \$75,000 and a bit of interest earned from those funds.

A single volunteer with the determination to commence the restoration.

## **What wasn't there?**

The top deck structure, stairs, a third of the saloon, end canopies.  
Trucks and all original mechanical equipment.  
Wiring and other electrical fittings and equipment.  
Seating, doors and many smaller internal fittings.

**You don't have to be mad but it sure helps!!!!**

In 1987 the THS had been restoring trams for about 23 years.

One Kitson steam tram  
Four horse trams or steam tram trailers  
Five Electric Cars  
One cable grip car

We thought we were pretty good at the task by that time.

During that period the restorations were solely for operation at Ferrymead and had involved basic restoration of wooden bodies with rot cut out and replaced and trucks from various sources fitted underneath, controllers etc. fitted and out they trundled and they continued to give good service at Ferrymead.

## **Now to get down to the thrust of my presentation.**

The restoration started without any structured plan and stumbled along over 20 years before we got to operate the body on the tracks at Ferrymead.

Without any formal plan there was no proper assessment of the condition of the body to determine its suitability for restoration. There was no firm idea of the period to which the tram would be restored.

There was \$75,000 dollars in the bank but no idea of what the restoration would cost.

There was no list of parts required to complete the restoration.

## **Restoration under way**

Initially work involved rehabilitation of timbers that had rotted and minimal expense was incurred. Interest from the grant money meeting the cost of materials.

No thought was given to the physical state of the repaired areas and their ability to last. A lot of effort went into the wooden structure repairs only to be discarded when new rules came into play for possible city operation.

Volunteer efforts went on for about eight years putting together a reasonable portion of the body as well as fabrication of a pair of replica Peckham 14D5 maximum traction trucks.

Still there was no real vision of the period to which it would be restored. And there wasn't a budget or an inventory of work required.

### **Restoration suspended**

A new exciting project to bring trams back to the city commenced in late 1993 requiring the refurbishment of 3 of the existing fleet, minor overhaul of a third electric car and restoration of a horse tram to run as a trailer on the city system.

This project absorbed almost all the energies of the Society and HTT but Barry continued on with 26.

In 1995 the THS decided to restore Christchurch 1 for possible city operation. Soon after with the need to build a truck for Number 1 the tram barn needed rearranging to expand the engineering workshop.

As the remains of 26's body were already dismantled into components it was packed up in a corner in 1997 and left until 2002.

By 2002 the Heritage Tramways Trust had completed restoration of Christchurch Tram No.1 and had completed a major body reconstruction for the THS on London Double Deck Bus RT3132 and was left cash strapped.

There were major debts due to cost over runs on those projects and the only funds available for restoration was the residual value of the Grant for Tram 26 so the project was brought out of storage to be restored by the professionals assisted by volunteers.

## **Standards of Restoration**

Changes in Rail Transport Regulations and the possibility of future city operation meant that the restoration had to meet new standards. Patched up timber may not provide the strength to survive a mishap with a heavy motor vehicle so we had to review the work previously done. We also needed to consider modern engineering practices and ensure we made the vehicle as robust as possible.

Previous restorations had been undertaken to provide as much heritage detail as was known but here we had a tram where so much was missing and there was limited information available. A major challenge was set to find out the detail so we could make the tram as authentic as possible.

The advent of professional tram restorers at Ferrymead and the results from restoring Christchurch Number 1 had seen the bar lifted as far as presentation and quality of workmanship.

## **The challenges along the way**

More than three quarters of the tram was missing.

None of the original documentation relating to this class of tram was able to be found. Some original tender specifications were available but they didn't necessarily reflect the final build as supplied.

Most of the missing information was gleaned from photographs particularly a post card supplied by Annette Sowman.

We had no idea what the final cost would be and without budgets there was limited opportunity to seek further substantial grant funding. Funding would become a major hurdle towards the end.

Time was also a challenge with a number of estimated completion dates passing with substantial work to still be completed.

Finding crafts people to replicate some original materials also presented challenges. In a number of instances the manufacture of

components had to be undertaken by modern means rather than the way they were made in the early 1900's.

Personalities also came into play and presented some challenges as paid professionals and volunteers tried to mix their skills to move the project forward.

## **The restoration take II**

Second time around, a lot of structural timbers were replaced with new material to beef up the strength to allow the car to mix it with traffic in the streets. Some steel was also added to add strength where original timber joints had failed.

Work continued on the saloon structure still without any real vision as to the final style. The saloon didn't change in appearance during the cars service life so the vision wasn't essential at that time.

Decisions were made to determine the style of the final result. The decision was for the car to end up as it was around 1906 with windscreens and safety hoops and rails to protect passengers from the trolley pole.

## **Recycling**

The new Peckham 14D5 trucks put together in the early nineties had been put under Boon 152 when it was refurbished for city operation in 1995.

To complete 26's restoration the well worn trucks from 152 required a major rebuild. These trucks had been built by volunteers and operated at Ferrymead for 13 years.

In the period of operation some issues had been noted with alignment of the frames due to manufacture with very basic equipment at Ferrymead. The trucks were completely stripped and the side frames straightened and all important mating surfaces machined to allow for truer assembly.

A Jig had to be made to allow the truck frames to be assembled true. Virtually every hole from the previous assembly had to be welded up and new ones drilled in the correct places.

Modifications were also made to the brakes. Experience on the city tramway had shown some inadequacies with the design in modern traffic.

Fortunately for this part of the process we had found some funds to pay a draughtsman to draw up plans moving on from the original partial plan found in the CTB archives.

## **Road Blocks**

As we moved through the restoration process situations arose where there wasn't an obvious solution.

The design of the stairs required significant research and then it was trial and error to get them right. The wire mesh guards with complex curves adding yet another dimension. Safety considerations also raised questions and thoughts were given to trying to modify to meet modern conditions but they impacted in other areas.

A single broken bracket on the platform floor gave a reference point. A mock up was made and after a number of modifications we had a template for the real thing.

Over the years we had used up most of the clerestory glass salvaged from Stephenson cars. To make 26 look the part we were down to either using second grade pieces or finding someone to replicate it.

A search of local glass workers finally produced Dorothy of The Glass Room who was prepared to give it a go. Whilst not exactly to the Stephenson pattern the effect is fantastic. The craftsmanship and time caused another concern for Dorothy. Our policy is for all glass to be toughened but Dorothy was concerned that the modified glass may not survive the heat treating process. If we had used original glass it wouldn't have been toughened so a compromise was made not to go through the process.

The trolley standard was another major challenge with nothing able to be sourced from other museums. With photos and plans from Crich we enlisted a pattern maker to produce patterns for casting major components.

These were duly fettled and machined to fit the components together. The standard pole was made by local engineers. When all together the standard looked the part. The easy bit was done but getting power

through the standard required fabrication of all the components in our own workshop.

Fortunately we had the drawings from Crich and we had the trades people who could make up the contactors and spring systems and make the tram work.

## **DERAILMENT**

Like all projects you think you are travelling along fine and then all of a sudden something goes off the rails.

Two weeks before commissioning an issue was discovered with the brakes which could have the brake beam go over centre and stop working.

Because the tram body is a lot shorter than Boon 152 which has the same truck arrangement and brake system, 26 had a lot less space to fit up components. The geometry was different and without revised drawings the part failed.

Fortunately we were able to get Murray Meyer our 'tame' certifying engineer out on the Saturday and by Monday he had produced drawings of a set up that should work. At this time we had to enlist the assistance of Lyttelton Engineering who pulled out all stops to ensure we had the new and altered components for assembly and testing a week later. It worked and we were able to commission our tram.

### **What did we learn from all of this.**

If you take enough time you can complete a major restoration of the scale we achieved.

### **What could we have done better?**

#### **Project Planning**

Planning is essential to achieve a complete restoration in a timely fashion.

When we started No.26 none of us had heard of conservation plans. If they existed in the 1980's they were probably the preserve of major professional museums.

On a number of occasions parts of the project stalled whilst a decision was made on the period or style the particular part was to be restored to.

As the project moved forward we would find that additional parts were needed for a particular area so progress would slow whilst we sourced materials or had parts we couldn't produce made.

Because of some of these issues the project moved forward slowly on a number of fronts. Better planning should have meant a more concentrated effort on a task finishing it quicker than flitting from one task to another as solutions came to mind.

## **Financial**

This project involved chasing funding from start to finish and in the latter stages reserves for other projects were tapped to provide cashflow to complete the project.

To improve the situation a costing sheet should have been prepared and at the least estimates of element costs prepared. This would have allowed a budget to be produced.

With a budget a better idea of funding requirements over the duration of the project would have provided better opportunity to seek grant funding to match the time frame or for particular parts of the project.

The lead times to apply for grants and be awarded funding require forward planning. Considerable preparation of the application is also required to achieve a successful outcome in the competitive environment.

With two organisations involved in the project with very basic accounting systems in the early days and the 20 year time span it was not possible at the end to determine a true actual expenditure.

Good accounting records and the ability to use known costs would make future restoration planning much easier.

## **Time Records**

In the early days of THS restorations a record of effort was kept but changing times saw the restoration of 26 only having paid labour time being recorded.

We have no idea of the effort really put in by dozens of volunteers over the 20 year duration of the project. This presented issues when we decided to hold a lunch for all those volunteers involved up until the day of the initial test run under power.

Again the lack of time records itemised by areas of work means we cannot refer to them to plan future projects.

## **SO WHY DID WE DO IT THIS WAY?**

I suppose the main reason was history. We had always started a project and worked it through to conclusion. Secondly was probably our amateur status and not being aware of things the professionals use such as Conservation Plans.

## **WOULD WE DO IT THIS WAY AGAIN?**

Our current thinking is to produce a Conservation Plan to determine what we have and what we want to get.

We follow this with a budget of materials, labour and money.

We fundraise either in full or for specific steps toward the whole project.

The restoration is undertaken with reference to all of these to minimise delays and surprises and delivers a tram much quicker.

Hopefully I can tell you if it worked at our next conference.

Finally I invite anyone at the conference who hasn't had the opportunity to see Number 26 to let us know you are coming and the team at Ferrymead can take you for a magical ride on the only Stephenson Double Deck Electric tram in the world.