Did we Learn from our Mistakes

Dave Carr – Heritage Tramways Trust

Two years ago in Wellington I told the story of the poorly planned restoration of Christchurch Double Decker tram No26.

I spoke of the lessons learned and how we hoped to take those lessons and produce a much better result with the restoration of our Invercargill Birney.

The Christchurch City Council approved an extension to the tourist tramway route in 2008 with the laying of rails in Cashel Mall during its revitalisation. Final approval for the first stage came in July 2009 with a wish that the extension be operational in August 2011 prior to the Rugby World Cup.

It was recognised that additional tram capacity would be needed to maintain headways on a longer circuit.

THS and its commercial arm the Heritage Tramways Trust identified a couple of prospective trams for restoration. We knew the tramway operator was keen to have more one man trams and the two options we had would fit that bill.

The concept was presented to the operator but with a proviso that nothing would happen unless we were able to fund the restorations. For a commercial activity it was unlikely that funding would be able to be obtained from our usual charitable funders.

Basic costing's were prepared and presented to the operator. From this it was realised that it was only feasible to restore one tram within the timeframe.

Agreement in principle was reached with Christchurch Tramway Ltd putting in real cash for materials and outwork, THS contributing the tram hulk and various components held for the restoration as well as committing volunteer input.

HTT would provide labour funded from the rentals received for the existing fleet as well as some limited contributions of materials.

Payback for the operator would be a rent free period based on the final cost of the restoration.

The decision was to restore the remains of the Invercargill Birney body of tram 15 in the fleet. A four wheeled one man car which would be a useful tram for the city. This would allow the THS to finally have a tram restored from each of the main South Island electric fleets.

To ensure we were producing a heritage restoration as near as possible to the original Brill built tram we commissioned a Conservation Plan to determine what we had and what we could reproduce.

To determine the costs a budget was prepared including parts and labour with a view to using a Brill 21 E truck which would be substituted for the original Brill 79 truck as

we did not have any of those trucks remaining in New Zealand. It was also considered unlikely to have full safety car equipment unless we could source suitable components.

The budget was worked through and presented to Christchurch Tramway whose engineering team concluded that we could build a replica Brill 79 truck for not much greater cost than overhauling the overpowered and non-prototypical Brill 21E replica from Glasgow.

We all agreed that to ensure the project stayed on track and within budget we needed to have a project manager. With a lot of difficulty we found a candidate who had the right credentials and the ability to work the role part time.

We had a plan, we had a budget, we had a lot of the components, we had a project manager and we had a team from THS, HTT and CTL who were committed to take the project to completion.

A tentative delivery date was worked out which would have allowed the tram to be run in at Ferrymead prior to its city debut. This date was set for December 2010 against the protest of HTT who really thought the end of March was more realistic. In fact our labour budget and labour resources were already calculated out to the end of February without allowing for holidays or sickness.

This would allow time for the tram to be run at Ferrymead and bedded in before heading for the city. Operation at Ferrymead would also provide a training opportunity for Christchurch Tramways staff without having to compete with service trams or city traffic.

Regular planning meetings were held with members from all stake holders attending.

There were some trials and tribulations with the Project Manager getting a mind set that he was working for the tramway company who paid his fee rather than the project. He lost sight of the fact that ultimately the cost of the restoration would be borne by THS and the HTT.

By the end of the year we had taken control back to the stakeholders project management group and dropped the project manager.

Apart from a few tense moments the team on the ground got on with their own tasks and eventually produced a tram that everyone can be proud of.

By that time we had realised the extra truck work had pushed the completion date out to 1 April 2011. This still gave plenty of time to bed the tram in before the city extension opened.

We had suffered our first earthquake on September 4 2010 which had cost us another week with lost productivity due to loss of power and water for a few days.

Some of you visited Christchurch prior to the 2010 Wellington conference and saw the results at that stage.

Work progressed steadily through the year and April still remained an achievable deadline. The body structure was completed and painting was undertaken by

professionals over the Christmas holiday period when our staff were having their holidays.

The pipework for the safety equipment pneumatics became a larger task than we expected and we were pushing our completion date out by a month by the end of January. We could still live with that and it was only extra labour funded by the tram rental. All the materials had been purchased and were on hand for fitting.

Then on 22 February 2011 the earth got very angry just beneath Ferrymead. The devastation in the central city meant the closure of the tramway indefinitely and a consequential cessation of rental payments.

The lack of income for the tramway company also resulted in a suspension of funding for further purchases of materials for the project.

HTT continued to plug on using most of our cash reserves to pay the staff whilst we worked toward the commencement of an outside contract. The involvement of volunteers carried on as well and in fact intensified. Everyone wanted to see the project over the finish line but we were hamstrung without funds for materials. Small amounts were found to allow some parts of the project to carry on.

So close yet so far away. A requirement of about 10,000 dollars would be needed to complete the project along with a few months labour.

We battled on piece by piece as volunteers made the tram operational and by 28th of October 2011 the tram was able to be run for a trial around the Ferrymead circuit. We still didn't have doors or most windows and there was still a lot of internal fit out to be completed.

Work has continued and on completion of the project for Otago Settlers Museum we had some more funds available to put the staff back on complete the job. However repair work on one of the city trams damaged in the earthquake has taken priority as it isn't eating into reserves.

We are almost there and should have the tram complete except for signwriting in about a months time.

DID IT WORK FOR US

The planning that went into this project certainly helped us to keep on track.

Knowing our budget certainly helped to plan and negotiate funding.

The detail from the conservation plan gave good guidance as to whet period we were to restore it to. Research for that plan also involved visits to Melbourne and Bendigo to work out what was needed to bring the tram back to life. Having other existing trams to refer to certainly made completion of the conservation plan easier.

From the information we compiled it was relatively easy to work out a work plan even if it didn't suit the project manager.

I believe that the planning was worth it and certainly helped keep us on track until the funding was curtailed.

The project Manager should have added value to the project but in this instance all it did was cause division and could have destroyed the project. The choice of candidate is extremely important and there need to be clear guidelines regarding the role.

The joint venture worked well for funding but came unstuck with some cost over runs on labour and then the loss of income due to natural disaster but could work again in the future.

The planning on this project laid a firm foundation that allowed the Heritage Tramways Trust to plan and deliver almost on time but on budget the restoration of Roslyn Tram No.1.

This project was undertaken for the Otago Settlers Museum and saw the body of New Zealand's first electric tram car restored for display when the museum reopens in December .

The Restoration Project

The project presented some real challenges once it was decided to replicate a complete Birney Safety Car.

There was a shortage of components to make the tram as authentic as possible but thanks to our friends in COTMA a number of pieces were sourced from Australia to make the jigsaw more complete.

Those pieces that couldn't be found had to be made.

The Body

The conservation plan gave us direction with our reconstruction of the tram body. The construction was researched to maintain the heritage integrity we strive for.

The steel body remains from number 15 had suffered from the ravages of time as it had sat down on the ground in Southland.

The panelling had rusted to a point it could not be repaired and the T steel framing had also been badly rusted. Some of the larger steel sections of chassis and structural parts were suitable for restoration.

T steel was sourced from the UK and a jig was made to lay out the body sides at Andy Rowe's workshop. Andy produced the components and Brian Fairbrass from HTT drilled thousands of holes in the Tee steel and panels then bolted the sections together. These fabrications were transported to Ferrymead and finally assembled.

As we wanted to replicate the riveted structure some debate developed as others wanted to look at possibly cheaper Huck Bolts which did not look the part.

Our Project Manager did some research and came up with a conclusion that it would take 15 weeks to rivet the body and the timeline wouldn't allow that. However heritage won out on the basis that HTT/THS would undertake the work with the project picking up the material costs and with a combination of paid and volunteer labour the work would be done.

We sourced Rivets from the UK and bought out total stocks of some local suppliers. Special tools were required to shape the rivets to the original profile.

Fortunately the rivet importer is a Heritage man involved with traction engines and he had suitable pneumatic riveting guns and an LPG fired forge to heat the rivets. He assisted for a day to ensure we were on the right track then we were left to it.

The whole body was riveted together over a period of about 12 days within a month as the components were available for riveting.

So much for the 15 weeks. It wouldn't have happened as easily had we not had a number of volunteers to heat and carry the rivets whilst our HTT staff operated the rivet guns and dollies. The volunteer team also worked ahead of the riveters taking out the bolts that had held the body sections in position so rivets could be put in their place.

Brill 79E Truck

The push for authenticity resulted in a proposal to create a replica Brill 79E truck for the tram but there would be some differences to the genuine thing.

CTL advised they could get some suitable axle boxes from Australia at low cost. THS had a Melbourne No1 Truck that could be the donor of motor and axle sets. A little over powered compared to the original with two 40hp MV101 motors but we could make it work.

The side frames were made by profile cutting the hornway's and welding steel bar between them to set the wheelbase.

All the remaining fittings for the truck had to be either fabricated or patterns made and then cast in steel.

The CTL proposal was accepted without checking the numbers by HTT as it was said to be not much more expensive than our proposal to overhaul the Brill 21E. However a

little shock came along later when it was revealed that the labour to assemble the truck had been omitted. HTT decided that we were too far along to back track so we would provide the labour as an extra contribution to the project.

This blew the budget but in hindsight the resulting truck really makes the tram look authentic.

BIRNEY SAFETY CAR

The desire for authenticity resulted in a separate project led by Dave Hinman to source the components needed to create the safety controls.

We were very fortunate to already have arranged to purchase surplus controllers from Bendigo.

One item that was under estimated was the amount of time that it would take to install the pipework for the brake system and emergency controls. We had a plumbing diagram which helped us to price that part of the project but the work involved in assembling was something else.

Prepared By

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