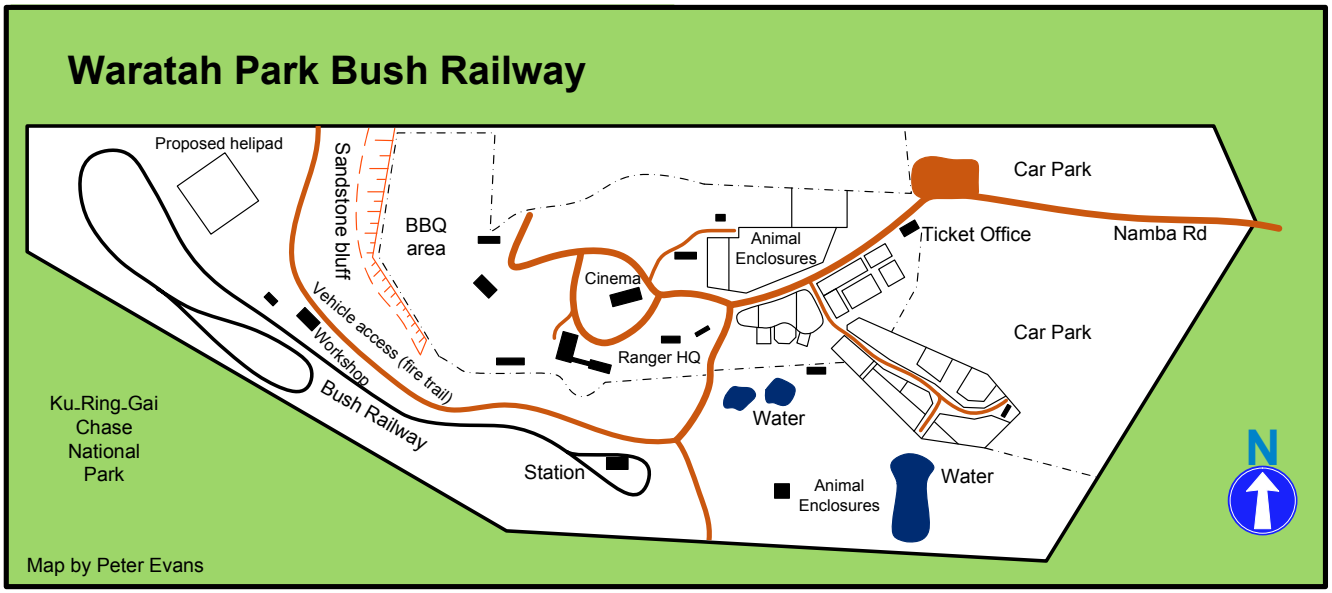
Field Reports

Please send any contributions, large or small, to fieldreports@lrrsa.org.au or to P.O. Box 21, Surrey Hills, Vic 3127.

Waratah Park Bush Railway
Duffys Forest, NSW.
610mm gauge (see also LR 175 and LR176)
I am involved with a group that is doing some bush regeneration work at Waratah Park (where the television series 'Skippy' was filmed). I have been doing some research into the park when it operated as a 'theme park' after the television series was completed.
The park featured a Bush Railway which ran for a number of years. In 2003 the railway was dismantled and the track, locomotives and rolling stock were sold to Peter Evans in Newcastle for the development of a private railway in the Hunter Valley. The locomotives and rolling stock included Motor Rail 'Simplex' 4wPM 11035 of 1965 (re-engined), John Dunlop B-B DM number 8 of circa 1977 (also re-engined), three passenger carriages, and some wagons.
There is not much left of the former amusement railway at Waratah Park, but you can see roughly where the track went along some sections along the line. All that really remains is the railway station and the loco workshop. There is a small section of track cemented into the floor of the workshop.
Brett Miller.

The derelict station and loco workshops of the Waratah Park Bush Railway.
Both photos, Brett Miller, 5 May 2013.



The remains of the Magnet Tram bridge over the Arthur River, north east of Magnet, Tasmania.
Both photos Mark Kendrick, 19 March 2013

Magnet tramway and mine
Waratah, Tasmania

610mm gauge (see also LR 231)

I spent a couple of days towards the middle of March 2013 exploring Magnet and drove whilst videoing the former track bed from Waratah to the mine, not really a viable track to drive unless you don't mind scratching your 4WD due to overgrowth. Waratah is located 7km off the Murchison highway, and was the site of the Mt Bischcoff tin mines. The site of the former meeting of the Magnet tram with the Emu Bay Railway branch from Guilford was located where Waratah airfield now is. For those interested in following the tramway, the access point is 2.2km southwest of the town on Waratah Rd. Turn right at the Waratah council rubbish tip, and the tramway formation can be followed from behind the skip bins. The track is dark and dank until it levels with the Arthur River. Historic photos show the hillsides bare of trees, but 70 years of regrowth has made it difficult to pick out locations where photos of the train were taken.

Despite the valley where the mine and town was situated being revegetated – predominately with Celery Top Pine, there are still some fantastic remains to be found. The enormous overburden/spoil banks still dominate the surroundings. At the mine site, the main adit, and the later lower level trial adit are still easily found, as are uprights from the concentrating shed, brick foundations from the crusher, concrete foundations from the hydro-electric powerhouse and auxiliary power plant. Further relics to be seen include rusty mine skips, a vertical boiler and lengths of rail 'up the gully'.

A small stamp mill was located below the town area, a pair of boots by the site of a workman's hut, while bottles and bricks mark the site of the shops. There is still most of a bridge over the Arthur River and most of the tramway earthworks are still more or less intact.

Mark Kendrick

Powelltown tramway, Victoria.

914mm gauge

The desire to produce a booklet for the Powelltown Centenary based around the pre-construction survey plans recently discovered by the Upper Yarra Valley Historical Society provided a great opportunity to use the information revealed by the plans. However, it also provided a problem. Details such as line curvature, cut and fill details, and bridge heights and lengths were available for most of the mainline to Powelltown and, in less detail, as far the original "dead-end", a short distance beyond Powelltown. What to do about the missing plans and the tramway beyond the dead-end?

We wanted to produce the most accurate map of the line possible so, at the least, we would include the missing sections of tramway survey as accurate plots but without the benefit of the additional information provided by the survey plans. Some thought then went into how the additional information could be collected. Contemporary aerial photographic imagery adjusted for inaccuracies provided the basis for the track alignment.

Inaccurate aerial photography; you might ask. Yes, aerial photographs tell lies! Almost always if the photo shows something it is definitely there. But not necessarily where the photo depicts it. Lens design and possible flaws as well as camera tilt and topographical displacement causes objects to appear on an aerial photograph in different places to where they would appear on a map. The further an item is away from the centre of a photograph the more likely it is that it will be affected. There is software available that will correct a lot of this but knowledge of the lens used for the photography is needed to use the software. For the Powelltown Centenary project another approach was taken.

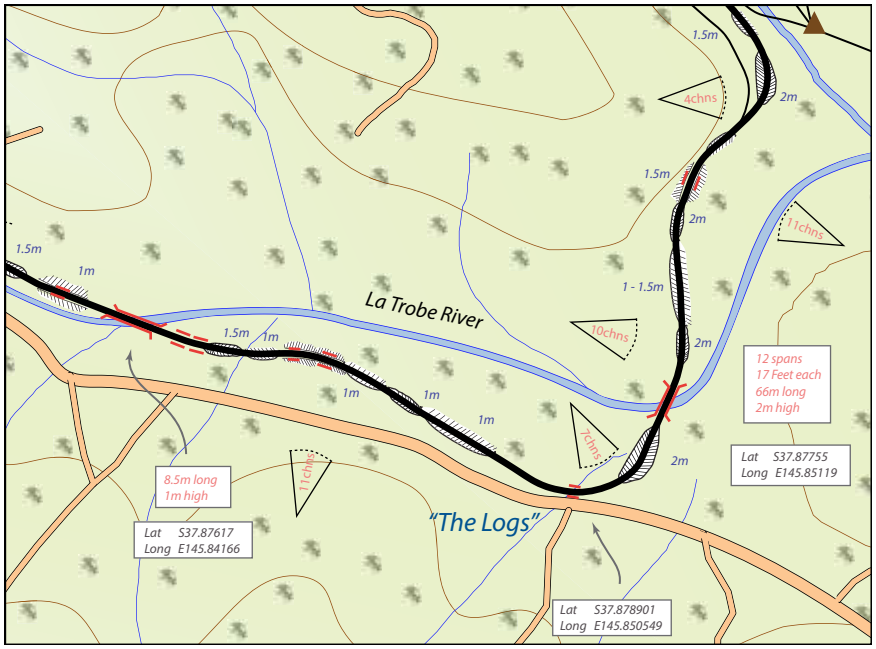
A digital map base which accurately depicted features such as contours, roads, creeks etc. was available for the area and this was used within Adobe Illustrator as the basis upon which aerial photos could be distorted so that all features lined up. To confirm the accuracy of the digital map base a drive was taken along the main road from Yarra Junction to "The Logs" with a GPS unit in track mode. No problems were found. After the Illustrator work we could be confident that the tramway alignment shown on the photographs reflected reality and could be relied upon for precise plotting. It was then a matter of tracing over the alignment (depicted clearly in the 1944 photography) to achieve a very accurate plot of the tramway.

Where curve radius information wasn't provided by the original survey plans these could be calculated off the scanned aerial photography under high enlargement placed within Illustrator using the three point method. Illustrator can provide x and y co-ordinates for each of three points on a curve. Several freely available facilities on the internet allow you to input these co-ordinates to provide you with the radius of the curve. The scale factor was then applied to get the radius of the curve in the tramway at that point.

That was the easy bit. Collecting detail of the cuts and fills, line elevations and bridge details meant getting out on the ground. This might not be the easy part but it was certainly a lot of fun! In total five hikes over sections of the tramway between Powelltown and Dowey Spur Road, on the north fall of the High Lead incline, were undertaken.

The walks were conducted with GPS units in background-tracking mode so that data was constantly being collected and recorded about where we were and our altitude at any point in time. This meant that we could concentrate on recording visual details as we went. Each participant was assigned a task. One carried the technology and recorded GPS waypoints of important features. These included start and finish points of cuts and fills as well as former bridge crossings. This person was also in charge of our range finder which was used to determine distances along cuttings, heights of embankments, depths of cuttings and bridge spans and heights. A second "red dot" rangefinder was used for horizontal distances less than 10m.

A second person became the note taker. He recorded the details provided by our range finder against waypoints marking locations. By this means maximum depths and heights of cuts and fills could be collected as well as distances through cuttings. His job was also to ensure expedition discipline! It would be easy to forget to take a waypoint or distance. Working with the technology operator little was overlooked. A third person functioned as photographer and walking laser target! Distances around curves in a cutting could be determined by irradiating the back of our walking target at progressive points around the curve. It may have been my imagination but I thought his hair was distinctly redder in colour at the end compared with the start! The rangefinder can work out to distances of 500m so accurately



A section of one of the completed maps as assembled by Mike McCarthy.

that determining stepped distances around a curve in a cutting was not a problem. The accumulated distances gave us our total length to verify against GPS waypoints for cutting starts and finishes.

The device was also used in a similar fashion to calculate the depth of The Bump tunnel at its maximum. Instead of measuring distances over a series of steps from the summit down to the tunnel entrance, progressive height changes were recorded. This was used to verify what our GPS units were telling us.

The fourth person functioned as our expedition artist (because any decent expedition should have one!) He sketched on a printed copy of the tramway alignment such details as tramway cross sections and any other features and relics worth recording with precision but not necessarily being noted as part of our technology based formal survey.

By this means we were able to collect all the data we needed to extend the detailed mapping out to a point a third of the way down the north slope of the incline leading to Ada No.2 Mill.

What about the sections out to the Ada mills and Starlings Gap, you might ask. It wasn't possible to cover this distance on foot; so much of this detail was collected through layering 1944 aerial photography with Google earth imagery in Adobe Illustrator. By relating the two it was possible to step along tramway formations within Google Earth at 50 metre intervals to collect altitude

The survey party in the bush. From left to right; Mike McCarthy (expedition technologist), Colin Harvey (expedition artist), and Peter Evans (expedition recorder). Photo by Brett Evans (expedition photographer), 26 July 2013.

information for the gradient profiles. Tramway curvature information could have been calculated for these outlying sections as well but we decided to restrict this level of detail to the main locomotive worked sections which ended at Powelltown Bush.
A word of warning about altitudes: They seem to be a moving feast! Mapping in the past has relied to a large degree on barometric devices to determine altitude and could vary from day to day. Precise accuracy was difficult to achieve. GPS units record altitude in a different way. It is calculated from satellite signals. The results can be different to those derived from traditional devices. Without getting into the technicalities, GPS based altitudes above sea level assume the earth is a perfect sphere. It's not! Therefore at sea level in Australia you can get very disturbing altitude readings from a GPS unit! However, a metre is a metre whichever measuring device you use so there is always a relationship between the two methods of discovering altitude. For the Powelltown project both barometric and GPS recordings of altitudes were used and had to be brought together for the final mapping.
The next step was the downloading of the data. The GPS tracking provided hundreds of measurement points for each hike. The altitude data from this had to be cleaned up for obvious inaccurate readings. Waypoints were downloaded to MapSource, a Garmin mapping product, and then a map displaying these was imported into the Adobe Illustrator master map for the tramway and scaled to match. This then placed all the waypoints in context with the tramway plot derived from the 1944 aerial photography and enabled the cut and fill, and bridge details to be incorporated into the mapping with accuracy. Reference was also made to the notes and sketches of our "artist" and early issues of Light Railways which included reports of field trips into this area that gave some detail of bridging etc. Combined it provided what has to be the most comprehensive and accurate record of this tramway that we have had to date.
The altitude information was used to extend the gradient profile over the full length of the tramway.
In all it has been a big exercise but also a very interesting and rewarding one as well. The use of technology, both in the form of software and measuring devices, has improved our scope to produce high quality mapping of tramway routes and remains. What was achieved for the Powelltown Centenary project would not have been possible 20 years ago without the use of very expensive equipment and specialists trained in its use. Today, still with some investment of course, you can achieve much of this yourself. A fascinating and enjoyable walk along an old tramway formation can also be a valuable precision information collecting exercise as well.
Many thanks to Peter Evans, Brett Evans and Colin Harvey for their assistance with the field trips and Phil Rickard for the quality testing of the plotting at the end. .
Mike McCarthy