

**NORTHERN DISTRICTS MODEL ENGINEERING SOCIETY (PERTH) INC**  
**PO Box 681, Balcatta, Western Australia 6914      Track site phone 9349 0693**

**OCTOBER 2005**

**The Society's Ground Level Track & Miniature Vehicle Road is now being built**

If you have been to your Society's Balcatta site recently you should have noticed the steel work on the workshop floor and the concrete ring in the grass south of the steaming bay. These are components of the turntable for the ground level track and are the first items for this railway and miniature vehicle road project to be started.

Stu Martyn has designed the turntable and has begun welding up the turntable beam. It is being built in the workshop primarily from steel which the Society already has on site



The concrete footing for the turntable (Picture by John Shugg)

**NDMES - CALENDAR OF COMING EVENTS FOR 2005**

Annual General Meeting	Society Site, Vasto Place, Balcatta	8.00 pm	Friday 14 October
Site working bee	Society Site, Vasto Place, Balcatta	8.30 am to 4.00 pm	Saturday 15 October
Club Run Day	Society Site, Vasto Place, Balcatta	9.30 am to 4.00 pm	Sunday 16 October
Public Run Day	Society Site, Vasto Place, Balcatta	11.00 am to 3.00 pm Site open 10.00 am	Sunday 30 October
General Meeting	Society Site, Vasto Place, Balcatta	8.00 pm	Friday 11 November
Club Run Day	Society Site, Vasto Place, Balcatta	9.30 am to 4.00 pm	Sunday 13 November
Public Run Day	Society Site, Vasto Place, Balcatta	11.00 am to 3.00 pm Site open 10.00 am	Sunday 27 November
Christmas Dinner and Twilight Run	Society Site, Vasto Place, Balcatta	3.00 pm to late (Dinner at 7.00 pm)	Friday 9 December

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### Your Committee and other Officers

<b>President</b> Dick Langford	9408 0081	<b>Vice President</b> Steve Reeves	9354 1396
<b>Secretary</b> Milton Smith	9444 9183	<b>Treasurer</b> John Shugg	9246 9549
Phil Gibbons	9390 4390	David Hunter	9445 1432
Brian Lawrie	9343 0003	Andrew Manning	9446 4825
<b>Safety Officer</b> Andrew Manning	9446 4825	<b>Librarian</b> John Martin	9448 8843
<b>Publicity and Events</b> John Shugg	9246 9549	<b>Steamlines Editor</b> Dick Langford	9408 0081?

### Your President's Thoughts for the year

by Dick Langford

Your Society has had an interesting and successful year, primarily as a result of the input of many of its Members.

Early in the twelve months covered by this report, construction of our Meeting Room and Workshop building was completed and the new building was officially opened by Councillor Tony Vallelonga, the Mayor of the City of Stirling, on 24 February 2005. This event was recorded with a plaque that has been fixed upstairs inside the building. An article covering this event was also published in Australian Model Engineering (Issue 121). The team of Society Members who participated in the construction of this building have done a great job, and I believe, each participant learnt a lot along the way. Your past President, Ron Date, ably guided us through this complex project. The Society appreciates and thanks you for your fine effort, Ron. Well done.

A couple of weeks before this, your Society celebrated



The NDMES birthday cake, beautifully baked and iced by Noelene Langford (Image: John Shugg)  
Since this exhibition, the number of visitors to our

the twentieth anniversary of its founding.

A steam up, with a barbecue lunch and cake cutting ceremony suitably marked this occasion. The cake was created by Noelene Langford and very capably cut by the Society's oldest, and therefore most experienced, Member, Denis Lord.

I sometimes wonder whether those people who started the Society had visions at the time that coincided with what we have today at Balcatta. Some of the people who attended the Society's first formal meeting on 9 February 1985 are still active Members of NDMES.



Steve Reeves talking to Members about the early history of the Society at its 20<sup>th</sup> Birthday celebration on 13 February 2005 (Image: John Shugg)

This year, the Australian Model Railway Association exhibition at Claremont Showgrounds proved to be a huge success for the Society. We carried more passengers than ever before during the three days of this interesting exhibition. I extend my thanks to everyone who participated in this great event. Without your help, your Society would not have benefited from the event.

We will be seeking your assistance when the materials

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public run days has increased substantially; we have averaged over 100 visitors each day during the last six months. Again, the strong support by the group of Members who participate in these public run days is greatly appreciated. I would like to see more of our Members getting involved in these public run days. They are very satisfying and rewarding days. Thankyou to all those Members who have assisted in the presentation of these public run days.

Our public run days are very important events for the Society. The City of Stirling appreciates the unique facility that we offer our visitors and is responding with strong financial support. Whilst some of our visitors are first time clients, responding to our newspaper advertisements, many are families returning to our site again, because they were very happy with the way in which they were entertained by you and your fellow Society Members. Generally, the only patrons who leave our site unhappy are children who want to stay and enjoy some more train rides!



The part completed turntable beam for the ground level track on the workshop floor  
(Image: Noelene Langford)

The City has also indicated that it will be able to provide funds for the materials to complete the new perimeter fence early next year, provided we erect the fence. This approach is the same as that adopted for the last two fencing contracts.

are available. As we have learnt from the first two fencing projects, this time it should be easy. This is the last section of perimeter fence to be installed and will result in both the BMX site and our site being totally enclosed with palisade fencing. Will the weather be as hot when we erect this fence as it was last time, I wonder?

As mentioned on the front page, our ground level track and road for miniature vehicles project is underway. Andrew Manning's professional submission for a Grant for this project is now with the City of Stirling, with initial informal responses from City of Stirling Officers indicated that our requests are likely to be met. Thanks Andrew for a great job. This project will complete the development plan that the Society prepared in 1985 and make our Balcatta site one of the best model engineering facilities in Australia.

On the social side, our Christmas Dinner, served in our newly completed meeting room at Balcatta proved a very popular function. This was the first dinner meeting the Society has hosted in its new clubrooms. We intend to have a similar dinner function this year and will possibly arrange a Christmas in July dinner next year. Let Members of your Committee know how you feel about these functions.



Denis Lord cutting the Society's 20<sup>th</sup> Anniversary cake on 13 February 2005 (Image: John Shugg)

I would like to see greater variety in the things that we do at Balcatta and your guidance on what we should do will help your committee develop a range of activities. For example, Denis Lord's dynamometer car can be used for a locomotive efficiency trial which we could eventually make a State wide event. Displays of real model engineering, other than railway items would also be popular with our patrons.

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## **Our next challenge**

Construction of the 7¼ inch and 5 inch gauge ground level track and miniature vehicle road is the next big challenge being addressed by the Society. On site work on this project is now under way and is likely to increase in the new year.

This large project will only be successfully completed if all members of the Society contribute. Some 6000 hours of voluntary labour are required over the five years that the project is expected to take to complete. This will be attained if each Society Member contributes only 60 hours each year to the project.

Some of your Society's Members are contributing around 300 hours of their time each year to construction and maintenance activities at Balcatta, through our Tuesday and Saturday morning work sessions. How about you joining them?

### **Working Bee on Saturday 15 October 2005**

This working bee will concentrate primarily on tidying up the Balcatta site and preparing for the ground level track and miniature vehicle road. The following tasks are some that need to be addressed.

The timber and steel at the back of our site needs to be assessed for usefulness and either stacked more neatly and safely or taken to the City of Stirling dump, as appropriate.

There are at least three trees on our site that need to be removed, either because they are diseased or in the way of the ground level track. One of these trees is quite large whilst the others are younger and smaller.

The decking on the rail crossover bridge needs to be replaced; the original timber decking has deteriorated badly over the years and is now a trip hazard. Steel chequer plate is on site for the elevated track side of this bridge and 40mm by 70mm pine timber is available on site for the other side. The steelwork on this bridge is also ready for re-painting.

The gazebo in the picnic area needs a roof to provide protection for our patrons from sun and rain. This roof can be made from formed steel roofing sheets available on site. Before the steel sheeting can be fixed in place, the timber roof framing needs some repair and modification. The floor of this structure also needs repairing to make it safe.

## **Extracts from the Minutes of our September General Meeting**

Two significant motions were presented and passed at this meeting, following Andrew Manning's interesting presentation on the details of the proposed submission. To the City of Stirling for grant funding.

Firstly, the meeting agreed that \$500 should be made available to Ernie Redford to cover the cost of constructing a track making jig for the 7¼ and 5 inch gauge ground level track.

Secondly, the meeting agreed that the Society's request for a grant to construct the ground level track and the miniature vehicle road, and to complete other associated works should be submitted to the City of Stirling and the Department of Sport and Recreation.

### **Wagga Wagga Invitation Run, 5 & 6 November 2005**

The Wagga Wagga Society of Model Engineers has invited all Model Engineers to its 17<sup>th</sup> Annual Invitation Run. If you are planning a trip to the eastern side of Australia, you might like to include a visit to this picturesque track in your itinerary.

### **CANMOD Convention, Christchurch, New Zealand, 5 to 9 January 2006**

This interesting New Zealand national convention is held every two years at one of the country's club sites and is a great reason for visiting New Zealand. The venue for this next convention is a very new track which has been built in Christchurch over the last two years.

In addition to the on site activities a range of steam train excursions and other visits have been arranged.

### **Articles for Steamlines**

Your Editor needs your support with articles on your model engineering achievements, interesting places you have visited or other topical subjects for inclusion in future editions of steamlines.

Try your hand at writing (remember you learnt how to do it at school and hand written articles are acceptable) and let other Society Members know of your activities.

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## VICTORIA'S NARROW GAUGE RAILWAYS

by Dick Langford

During the late 1880's and early 1890's, the Victorian Government decided that it could reduce the cost of providing the railways that Victorian people were demanding at the time by building narrow gauge rather than the larger 5 foot 3 inch gauge railways it had so far constructed. The final decision, made in 1894, by the Parliamentary Standing Committee on Railways provided four delightful 2 foot 6 inch gauge railways located in some of the more interesting scenic areas of Victoria.

The Victorian Government thought that these railways would be cheaper to build and operate than wide gauge lines. However, in 1898, the Railways Commissioner at the time, John Mathieson, thought differently. He commented: *"With respect to the narrow gauge lines which have been authorised, I desire to state that in my opinion they will be found to be very costly experiments. The estimated saving in*

*cost of construction is relatively so small that it cannot possibly compensate for the delays in transit, transfer charges, additional cost of handling, and the general inconvenience necessarily involved in breaking the gauge on such branch lines."*

Mathieson's predictions were soon proved to be right. All four lines showed recurring annual deficits which steadily worsened, in particular as commercial motor vehicles and cars became more common. However, we are truly fortunate that the Victorian Government did not accept Mathieson's advice which, of course, was based on a strong understanding of the issues and decided to save a few pounds. If Mathieson's advice had been followed we would not have these wonderful narrow gauge railways today.

The four narrow gauge railways that were eventually built were:

Railway	Length	Opened for traffic	Maximum grades and minimum radius curves
Wangaratta to Whitfield	30.5 miles (49 kilometres)	14 March 1899	1 in 80; one four chain (80.5 metre) radius curve.
Ferntree Gully to Gembrook	18.25 miles (29 kilometres)	18 December 1900	1 in 30; many four chain (80.5 metre) radius curves
Colac to Beech Forest	29.75 miles (50 kilometres)	1 March 1902. Extension to Crowes opened on 20 June 1911	1 in 30; many four chain radius curves, some two chain radius curves
Moe to Walhalla	22 miles (35 kilometres)	3 May 1910	1 in 30; many two chain (40 metre) radius curves



Two NA Class locomotives haul a train over the Monbulk Creek trestle bridge (Photo: Dick Langford)

With all four lines closed by the Victorian Railways after 30 June 1962, 63 years of narrow gauge railway operations ceased in Victoria. The Victorian Railways Commissioners clearly hoped that this would be the permanent end of narrow gauge railway operations in Victoria. However, they were soon to learn that this would not be the case. A young Melbourne newspaper reporter, David Burke, convinced the Railways Commissioners that they should organise a farewell trip on "Puffing Billy" as the Ferntree Gully to Gembrook line was affectionately known. Through the publicity

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gained in the childrens' section of the Melbourne *Sun* newspaper, which was edited by David Burke, requests for tickets on the proposed farewell trip on 11 December 1954 were overwhelming. Over the next few months many more train trips were run and in April 1955, a gentlemen's agreement between R G Wishart, the Commissioner for Railways and five Melbourne businessmen that any financial losses by the railways would be covered, on-going train trips continued. This agreement was followed by the

formation of the Puffing Billy Preservation Society and further agreement between the Society and the Victorian Railways saw the start of today's successful operation of this wonderful railway. Sections of two of these interesting lines are now being operated as tourist attractions: recently, the Walhalla Goldfields Railway has commenced operating over part of the original Moe to Walhalla line, between the Thompson River and Walhalla.



Garratt locomotive G42 at Menzies Creek station on the Belgrave to Gembrook line  
(Photo: Dick Langford)

### **The Wangaratta to Whitfield Line**

The first narrow gauge railway was built in the King River Valley in north eastern Victoria and was opened for traffic on 14 March 1899. This railway commenced at Wangaratta, which was located on the main Melbourne to Albury railway, and followed the King River upstream for 30.5 miles (49 kilometres) to Whitfield. The terrain was fairly flat and the railway did not require major earth works, bridges or tunnels. The maximum grades were 1 in 80 and there was one curve of four chain radius (88 yards or 80 metres). All other curves were of much greater radii. The King River valley provided very fertile soil and was farmed extensively: among the more popular crops were tobacco and potatoes. Today, farming activities in the valley include wineries.

### **The Ferntree Gully to Gembrook Line**

The Ferntree Gully to Gembrook line was the second to be opened. This is the most well known of Victoria's narrow gauge railways and one of the more interesting. It originally ran from Upper Ferntree Gully, which was the terminus of one of Melbourne's suburban commuter lines, east to Gembrook where extensive timber milling operations had been established. This railway was the shortest of the four, being just over 18 miles in length. The country through which it passed was much hillier than the King River valley so some substantial bridges were required. These were all timber trestle bridges and some were built on curves. The line was closed by the Victorian Railways on 30 April 1954

after a substantial landslide blocked the line at Selby in August 1953. After a number of special train trips organised by David Burke, a reporter with Melbourne's Sun newspaper, proved to be very successful, the Puffing Billy Preservation Society was formed. Over the next four years trains were operated from Upper Ferntree Gully to Belgrave. However, in 1958, the Victorian Railways decided that it would rebuild the railway from Upper Ferntree Gully to Belgrave as an extension of the 5 foot 3 inch gauge electrified line from Flinders Street in the centre of Melbourne. This meant that if Puffing Billy was to continue operating, it would have to run east from a terminus at Belgrave. The landslide problem had to be solved if this was to occur: the Selby landslide site is only about two kilometres east of Belgrave. With a lot of help, in particular from an Australian Army Royal Australian Engineers Regiment, the landslide was partially cleared and the track relayed on a new formation nearby. On 28 July 1962, the line was re-opened from Belgrave to Menzies Creek, a distance of 8?? Miles. Trains ran on this short section until the line was re-opened through to a temporary terminus at Lakeside, on the shore of Lake Treganowan on 18 October 1975.

The final section of the line, through to Gembrook, was re-opened on 18 October 1998. Substantial forests of mountain ash existed to the east of Gembrook and for the first fifty years or so of the twentieth century, timber mills were established in this country. 3' and 3'6" gauge tramways fanned out from Gembrook to service these mills. These tramways extended over twenty miles from Gembrook. Some fascinating steam and petrol powered locomotives were used on these tramways.

The Upper Ferntree Gully to Belgrave section of this line was the first railway line in Australia where trains operating in both directions were protected on single track by automatic electrically operated signals. The 3.5 miles of track between Upper Ferntree Gully and Belgrave was divided into two sections and a passing loop was provided about half way along the line at Upwey. Three position, upper quadrant semaphore signals were used with electrical interlocking. The signalling system was brought into operation on 2 December 1921 and allowed an increase in the number of trains that could be run during the busy Christmas New Year holiday period.



G42 leaving the Monbulk Creek trestle bridge  
(Photo: Dick Langford)

### The Colac to Beech Forest Line

This line was also built to access stands of valuable timber, located in the Otway Ranges between Colac and the Bass Strait coastline of Victoria. The section from Colac to Crowes was opened on 1 March 1902 and the line was later extended to Beech Forest, this extension being opened on 20 June 1911. The northern portion of the line traversed rich dairy country whilst the southern section climbed into the Otway Ranges. An 18 span timber trestle bridge 345 feet in length carried the railway across the Gellibrand River. This bridge had 19 fifteen foot spans and 3 twenty foot spans.

The railway was 430 feet above sea level where it joined the wide gauge line at Colac, climbed to 890 feet over a ridge at Barongarook, dropped to its lowest height of 207 feet where it crossed the Gellibrand River and then climbed to 1750 feet at Beech Forest.

At Crowes, trains traversed a balloon loop to change direction for the trip to Beech Forest. This avoided having to move the engine from one end of the train to the other before continuing the journey.

Only 11.5 miles of the line was straight, the remaining 18.5 miles of track was curved with radii as sharp as 2 chains (approximately 40 metres)



The only way to travel on Puffing Billy. Young passengers have ridden like this for over a century!  
(Photo: Dick Langford)

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## The Moe to Walhalla Line

The northern section of this railway is the most scenic of all these narrow gauge lines. It winds through the narrow Stringers Creek valley, hugging the sides of the valley and frequently crossing the creek. This line was built in 1910 to service the gold mines that had been operating at Walhalla since the 1860's. Gold was discovered in the Stringer's Creek valley in 1863. Cohen's Reef at Walhalla was one of the richest reefs in Victoria, yielding over 55 tonnes of gold during the fifty years that it was mined. Unfortunately, the railway carried very little gold from the



Locomotive 6NA at Belgrave (Photo: Dick Langford)



Two NA Class locomotives haul a train toward Belgrave on a rainy day (Photo: Dick Langford)

steel beams plus small timber trestle spans at each end carried the railway over the Thomson River. Other substantial bridges were required to carry the railway over the Latrobe, Tanjil and Tyers Rivers.

The Stringer's Creek valley, which the railway followed from the Thomson River crossing to Walhalla, is so narrow that the Walhalla Station buildings had to be built on top of a concrete tunnel, over the creek bed. The station buildings were not completed until January 1913.

The railway at Moe was 229 feet above sea level and climbed to 1323 feet near Erica before descending to 717 feet at the Thomson River bridge and climbing again to 1021 feet at Walhalla. Very little useful timber remained close to Walhalla itself, most of the nearby timber had been used for mine props and firewood.

region. The railway was commenced in May 1906 and took nearly six years to construct. However, around 1914 to 1915, the largest and most profitable mine, the Long Tunnel Mine closed and gold production was decimated.

The railway continued to service the township and carried many tonnes of timber from the neighbouring forests. Very little useful timber remained close to Walhalla itself, most of the nearby timber had been used for mine props and firewood.

An attractive bridge comprising four concrete piers and

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## Victoria's Narrow Gauge Locomotives.

The first two locomotives to operate on these four narrow gauge railways were built by the Baldwin Locomotive Works of Philadelphia, USA. Both engines were 2-6-2 tank engines. One (Number 1A) was a two cylinder simple locomotive whilst the other (Number 2A) was a four cylinder Vaclain compound. Boiler pressure for the simple engine was 160 psi, whilst the compound engine's boiler was rated at 180psi. Both boilers supplied unsuperheated steam and the maximum pressure for locomotive 1A's boiler was soon increased to 180 psi. Fifteen additional similar engines were built in Malbourne at the Victorian Railways' Neport Workshops over the next few years. One of these (Number 4A) was a Vaclain compound, the remainder were two cylinder simple locomotives. The locomotives weighed 30 tonnes and had outside frames.

Trains on the Colac to Beech Forest line and the Moe to Walhalla line frequently required two of these locomotives so in 1926, the Victorian Railways sought more powerful locomotives for these two lines. Two 2-6-0 + 0-6-2 Garratt locomotives were ordered in 1925, from Beyer Peacock Ltd of Manchester, England. These two locomotives arrived in Malbourne on the SS Ferndale in April 1926. G41 commenced operating on the Colac to Beech Forest line on 5 June 1926 and its sister engine, G42, commenced operating on the Moe to Walhalla line shortly after. These locomotives were substantial, weighing 70 tonnes in working order and being 49'10" long overall. If you are looking for a substantial engine to model, a G Class Garratt would be 12'6" long in 7¼" gauge or 8'3" long in 5" gauge.

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Westinghouse air brake compressor and maker's name plate on G42

(Photo: Dick Langford)



G42 crossing the walkway at Menzies Creek station

(Photo: Dick Langford)

Railway. This railway also has five of the original 17 NA Class 2-6-2 tank locomotives, plus a magnificent Climax geared locomotive in service. The Walhalla Goldfields Railway has two diesel locomotives and an interesting steam locomotive in service. The steam locomotive is a Henschel 0-6-0 tank, built in Germany in 1956 and brought to Australia from Thailand. Its diesel locomotives are a 1951 vintage Fowler mechanical transmission machine and a 1970 EM Baldwin diesel hydraulic locomotive.