

Getting Started with On30: Capricorn Sugar Rail Museum Part 1

by Lynn Zelmer



Over the past five years plus of writing for *Narrow Gauge Down Under* I've covered topics as diverse as wholestick trucks; steam, petrol and diesel locomotives; navy and other small wagons; modelling the sugar cane itself; and the development of photorealistic card models and kits.

Articles currently in production include more in the diesel locomotive generation series; cane bins and their variations; mill buildings and mill railway operations. I often use my own modelling to illustrate the articles but I also try to showcase models from other modellers, including those overseas modelers of our sugar cane and shire railways whose efforts we don't often see.

This article is a bit different as it's the first of what will be a short series for the novice On30 modeller based on a small exhibition layout I built for display at the Brisbane Model Train Show. While many NGDU readers are already committed to narrow gauge modelling and a particular scale/gauge, the series will hopefully provide the inspiration for others to explore a new facet - any new facet - of the hobby.

One of the smallest and least assuming of the Brisbane Show's layouts, the Capricorn Sugar Rail Museum was also one of the few On30 layouts on display and, rather than being a 'finished' layout, was an 'in progress' demonstration of techniques and options. And as I said to visitors at the Show, some of whom asked how they could visit the 'real museum', the layout is an exercise in "what if?"!

TITLE PHOTO: The Australian Sugar Cane Railway in the Bundaberg Botanical Gardens has always had an excellent relationship with the nearby mills, receiving technical and practical assistance as well as experienced volunteer members. This relationship, and the continuous run through the Botanical Gardens, provided much of the inspiration for the freelance CSRM exhibition layout.

Here, two generations of Fowler steam locomotives pose at the start of a running day: *Invicta* (0-6-2T Leeds Fowler, 1907) was restored and returned to service in 2008 while *BFC 3* (0-4-2T, Bundaberg Fowler, 1952) has long been one of the Museum's attractions during their weekly operating days. Photo: Australian Sugar Cane Railway, Australia Day 2009.

RIGHT: HOOn30 mini-dioramas on display in the ANGRMS museum showcase, 2001. The steam locomotive on the smaller diorama is a Colonial white metal model with a scratchbuilt 'tropical' cab. The tractor is an Australian white metal model, the cane trucks and portable track are scratchbuilt (see also *Portable Track for the Cane Fields*, NGDU #36, January 2010).

The cane bins and Jenbach diesel locomotive on the larger diorama are Bob Dow models, the mechanical harvester is a Tom Badger model. Unfortunately, except for the tractor, the commercial models are now likely only available at swap meets or on eBay.

"What if?": Sugar in Central Qld

Sugar cane was an experimental crop at early settlements all along Australia's eastern seaboard, and Queensland's Capricorn Coast was no exception. The Yeppoon Sugar Company mill and plantation at Farnborough (near Yeppoon) operated from 1883 until 1901, when labour laws were changed to stop the use of Islander labour. A short-lived plantation and mill was also established at Alton Downs (Pandora Mill, west of Rockhampton), and another plantation likely existed at Cawarral (Cawarral Sugar Company, between Rockhampton and Yeppoon). Both apparently failed with the sugar price crash of 1884.

Cane for the Farnborough Mill was collected from as far away as Tanby, Zilzie and Joskeleigh (roughly 50 km distant). However the mill had many problems, including failure to sell all the company's shares, water shortages, poor roads, and low sugar prices. These resulted in foreclosure in 1898.



A second (private) company increased the capacity of the mill from 80 to 130 tons per day (or about 2,000 tons of sugar in a season) and made other improvements. While the mill did acquire a steam traction engine for hauling, most of the heavy work was done by Kanakas (Islanders), even on the small privately owned farms beyond the plantation. With the passing of the Pacific Islands Labour Act in 1901, the mill closed and assets were disposed of over the following years.

While transportation was a major problem, there had never been sufficient water or suitable cane growing areas within the mill's potential service area to justify a mill, even if there had been a rail/tram connection. And transporting cane up to 50 km at the turn of the century likely wouldn't have been economic in any event.

But what if? What if there had been adequate transport, water and suitable growing areas along the Capricorn Coast? And what if the mills and their tramlines had survived into the 21st century, rather than disappearing a hundred years earlier? Might there still be at least a couple of mills and a rail-oriented museum to keep the history of the industry alive? And given the mill's health and safety/insurance concerns, might that museum have a dedicated tourist railway to ensure that there was no need for tourist or excursion trains on the mill-operated rail lines?

Capricorn Sugar is one of those fictitious mills, crushing cane from the coastal area of Central Queensland. Its railway is based on Queensland shire and sugar practice and operates (or operated) cane, sugar, molasses and other trains for the mill as well as passenger and general freight services for the local shire.

Thus the Capricorn Sugar Rail Museum (CSRM) to maintain the rail heritage traditions!

Modelling a Museum

The idea of modelling a museum is not new. Yallah, built by members of the Illawarra Light Railway Museum Society and based on the museum's station area, is just one example. Yallah features scenes and artefacts from the museum. The layout was built using foamcore board on an aluminium frame, which makes it easy to transport for promotional purposes.

My purposes were somewhat different: to explore the limits of On30 modelling before I committed fully to building a small shelf-style home layout; and also to attract modellers to On30, particularly novice modellers. Further, I wanted to display my own kit, kit-bashed and scratchbuilt sugar cane and shire railway models at local (to Rockhampton) rail heritage events.

RIGHT: A close look at the continuous running module. The points at the right rear are cosmetic only but provide a location for parking a wagon or a locomotive when not in use. The points at the front have no moving parts to minimise exhibition difficulties. Trains run continuously in a counter-clockwise direction, but get directed onto the straight side (and the connection to the next module) if operated in a clockwise direction. Sleepers cut from printed circuit board maintain the gauge at critical locations.

I'm a freelance modeller rather than a purist. Just as I didn't want to model a specific mill or shire railway, I didn't want to be restricted to a single museum's collection. After all, I've already compromised by using On30 rather than On2; I've modelled Fijian and Hawaiian rolling stock; and my Queensland models are often 'inspired by', rather than an absolutely accurate representation. Modelling a museum attached to a 'what if' sugar mill in Central Queensland - where sugar hadn't been grown for a century - was an almost ideal solution.

I was very familiar with three of Queensland's working rail museums as a volunteer, through maintaining their web sites and (for two) editing their newsletters. Two of these have back-and-forth rail operations using ex-mainline formations. While point-to-point operations can be interesting for the enthusiast, they are not attractive for exhibition purposes and wouldn't easily test On30 limits such as minimum operating radius. However the third rail museum, the Australian Sugar Cane Railway (ASCR) in Bundaberg, has a roughly circular track wandering through the city's Botanical Gardens, with engine facilities off one side.

The ASCR provided the rationale for a continuous running loop, the first of the three modules making up the CSRM exhibition layout. The second module provides limited engine facilities (there is no locomotive servicing pit, for example) using typical Queensland structures and some display space. The third module was almost accidental: it extends the layout to the limits of a standard long folding table and provides additional display space. The modules have been constructed so that this module can be left at home if a long table isn't available, or to relieve transport difficulties. Somewhat later I hit upon the idea of using the narrow space at the rear of this module as the location for some mill buildings.

Why On30?

I've always been interested in narrow gauge or branch line operations. Before becoming intrigued by modelling Queensland's sugar cane and shire railways, I had focussed on small 'gypo'* logging lines in the Pacific Northwest of Canada and the USA, modelling in HO and HOn3. The sugar mill railways have some of the same attractions: fairly short hauls, limited infrastructure maintained locally, and idiosyncratic operations.

My first cane railway models were HO scale, since several of the Brisbane area cane modellers were already working in OO9/HOn30 and reporting on their model building through the Modelling the Railways of Queensland Conventions. Bob Dow's HOn30 cane bin kits, then available from The Turntable hobby shop in Brisbane, also meant that I could get started fairly quickly.

I built several small dioramas as my first HOn30 modelling projects, two of which in 2001 became displays at ANGRMS, the Australian Narrow Gauge Railway Museum Society. Roughly A4 and slightly larger respectively, one showed a typical end-of-steam era scene with wholestick trucks and portable track sections. The second depicted a diesel era scene with a mechanical cane harvester and chopped cane bins. The dioramas were very well received by modellers and railfans, but comments from museum visitors indicated that the models were too small to see details inside the display case.

** Gypo is a less than complimentary term referring to small logging operations in the Pacific Northwest area of the USA and Canada. Perhaps it refers to the gypsy nature of the operations, typically logging small stands or areas that were uneconomic for larger companies. Alternatively, it might refer to the frugal nature of the operations and the tendency for such operations to go bankrupt, leaving suppliers unpaid and workers without wages or other entitlements.*

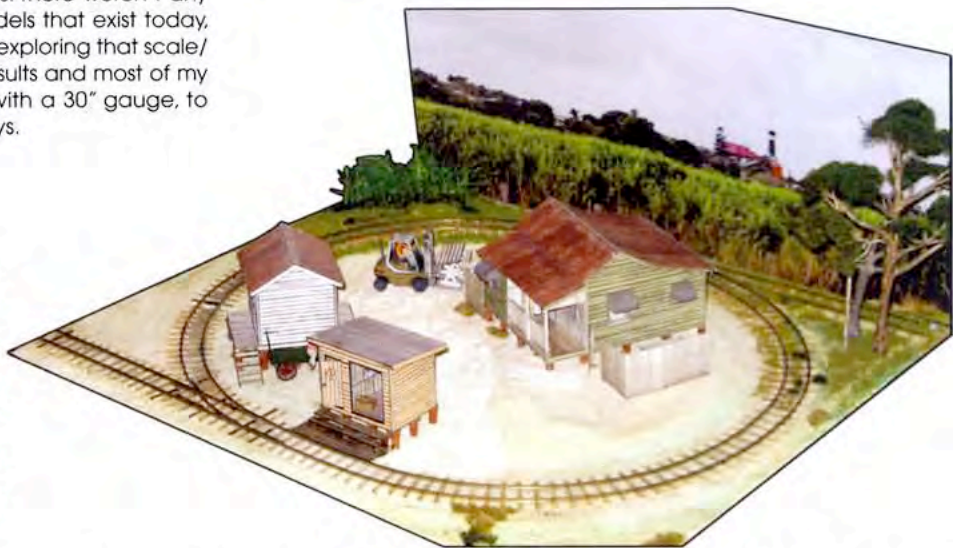




HOn30 is obviously a compromise for modelling Queensland's 2' gauge railways, but a combination of HO and N scale components makes modelling fairly easy... provided one's eyesight is good. With my own eyesight deteriorating, and the reaction of museum visitors, I started looking for alternatives. Sn2 or On2 were possibilities but I'm simply a 'good enough' modeller, and both would have required more commitment than I wanted to consider.

While still requiring a compromise on gauge, On30 appeared to have the same advantages as HOn30 a decade earlier, particularly since Bachmann and others had recently entered the market with relatively low cost ready-to-run models and kits. There weren't any of the Queensland-specific On30 kits and models that exist today, but there was enough potential for me to start exploring that scale/gauge combination. I was pleased with the results and most of my current modelling is in O scale (1:48), albeit with a 30" gauge, to represent Queensland's cane and shire railways.

RIGHT: The continuous run module being prepared for the 2011 Brisbane Train Show with full length backdrop and structures. The Queensland cottage (right) featured in a recent NGDU series of articles on photorealistic modelling with card. The small QR halt (centre) is adapted from a Jim Fainges LadNDad card kit and the QR-style cream shed is a photorealistic card model of the shed restored at the North Bundaberg Rail Museum. The fork lift is delivering a couple of picnic tables (card models) for use by museum visitors.



ABOVE: Capricorn Sugar Rail Museum as it appeared with minimal scenery and no structures at the 2009 Brisbane Model Train Show beside Ron Aubrey's On2 Sugar Valley exhibition layout (see Modelling Sugar Cane Fields, NGDU 35, October 2009). The module's photo frame and supporting timber base can be clearly seen and the models are a mixture of RTR, kit and scratchbuilt. Subsequent modules attach to the left of this module.

The large posters behind promote Queensland's rail heritage operators and the ATRQ (Association of Tourist Railways Queensland). The computer-based slide show randomly displayed roughly 200 Queensland rail heritage images with a sprinkling of model photos.

RIP RIGHT: My first On30 model railway is a foamcore base in the A4 aluminium photo frame. The 5" x 7" x 6" sleepers are Mt Albert On3 12" switch ties cut in half and glued to HO cork roadbed.

RIGHT: Woodland Scenics plaster cloth was cut to fit the non-track areas, dipped in water and smoothed in place. The top layer is a thin coating of Plaster of Paris, coloured with enough yellow ochre water colour to minimise white spots when chipped. The ground was further coloured with water colour paints. The semi-buried track represents the unballasted track typical of the shire and cane railways pre-1990. The rails are nickel-silver, likely code 83, and have been fastened with Kemtron Code 70 spikes. The Queensland-type trees are wire frame armatures covered with flexible gap filler and leaf material. Two are commercial (Trackside Trees, Kurri Kurri, NSW), the other is homemade using Heki-flor.

LOWER RIGHT: Detailing includes Woodland Scenics ground foam, lengths of coloured sisal and burned lengths of sleeper. The ground surface has been finished with a dusting of 'Todd River Sand' coloured grout powder, fixed with a spray of water. The temporary backdrop will be replaced by a computer printed scene fixed to the inside of a plexiglas cover.

BOTTOM RIGHT: The final diorama and its plexiglas cover with a printed backdrop along the back and half of one end. The diorama normally sits on a shelf in my office with a steam locomotive and one or two wagons. The backscene, Photoshopped from a Central Queensland cane farm scene, is also available mounted on foamcore board so that the diorama can be displayed without the cover.

The cost of building a model railway is a direct function of the type of railway modelled and how much work you do yourself! The ability to use mass market HO components in O scale modelling helps simplify the modelling and lowers modelling costs.

On30 models have the advantage that they are large enough for detail to be readily visible, but small enough that a reasonable layout can be built in the kind of space typically available in an Australian home. Most modellers build something larger than a micro-layout but a very large space is not required, particularly to showcase the type of equipment common on most cane railways.

The small trains, locomotives and rolling stock typical of shire railways and the sugar industry also have the potential to minimise costs. Wagons can often be scratchbuilt for little more than the cost of trucks and couplers. Kit-bashing mass market rolling stock is also quite feasible, whilst modifying a small mass-market locomotive is far less expensive than an imported brass model.

On30 Modelling Techniques

With my previous experience constructing HO, HOn3 and HOn30 models I didn't think I would have any problems adapting to On30 modelling. But, rather than start by building a major layout I built several small dioramas to ensure that track, scenery and backdrop materials all combined to give an acceptable impression, albeit with the 30" gauge compromise. The A4 diorama in the photos shows the construction techniques I tested for the On30 dioramas and then adopted for three module CSRM mini-layout.

The basic construction uses 1/4" foamcore board mounted in aluminium photo frames. Scenery is built up with sculpted foam and other risers glued in place (using water-based rather than solvent based glue). This is covered with plaster cloth then surfaced with one or more layers of Plaster of Paris, sometimes mixed with coloured grout. Surface colouring is a mixture of water colours, coloured grout, and conventional scenery materials such as ground foam.

Some trees are commercial; others have been made by the author. All deciduous trees use wire armatures covered with flexible gap filler, and greenery created by teasing out net-like material from Heki and others. The flexible gap filler is sometimes also used along the semi-vertical edges of the foam scenery risers to minimise damage as the frames flex during handling.





ABOVE: The ready-to-run, kit, kit-bashed and scratch-built equipment at the 2009 Brisbane Train Show. The Porter steam locomotive has been kit-bashed from a Bachmann r-t-r model while the ComEng inspired diesel #7 is scratch-built. One of the Moreton Mill cane bins is a Ron Aubrey-sourced resin kit, the other is a pewter RJ Models kit. Together they were used to demonstrate the requirement for proper weighting and differences in modelling materials. One open wagon has a load of navy gear, providing a conversation starter on modifying models to get a unique look.

After several false starts I've settled on hand laying my track on timber sleepers. Mt Albert On3 switch tie (5" x 7" x 12") work well for On30 when cut in half. While these are as much as a scale foot longer than a normal Queensland 2' gauge sleeper, the extra length is required outside the rail for On30 to look reasonable. I'm using code 83 rail for most purposes but I would use code 70 if I was building exclusively for the steam era. I will likely use code 40 rail when I eventually model portable track components.

CSRM: The Layout

The CSRM layout consists of three mini-modules, essentially three dioramas linked together to form a 6 foot long layout. The first module contains a 8.5" radius loop allowing continuous running. It was displayed at the 2009 Brisbane Model Train Show alongside Ron Aubrey's On2 Sugar Valley exhibition layout featured in the October 2009 NGDU article on modelling sugar cane. Ron's layout showed what a completed O scale cane layout should look like; my module provided an opportunity to talk to novice modellers about techniques, differences in modelling materials, etc.

This article has introduced the Capricorn Sugar Rail Museum, its continuous running module and my modelling techniques. Subsequent articles will look at the layout more closely and follow it through to its current form.

Acknowledgments and References

Information on the Farnborough Mill and other mills in the Rockhampton area has been sourced from *The Trail of Endurance: A journey from paradise*, Peter Panochini (2001); Yeppoon; Livingston Shire Council, South Sea Islander Cultural Mapping Project.

Details of the Australian Sugar Cane Railway, Bundaberg can be found on their web site: <http://QldRailHeritage.com/ascr/>. Similarly, details of the Australian Narrow Gauge Railway Museum Society can be found on their web site: <http://www.angrms.org.au/>.

The HOon30 mini-dioramas are described in Handbook 5: Creating the ANGRMS Dioramas, downloadable from the CaneSIG web site. Additional construction details for the small On30 diorama can be found in Handbook 21: Building an On30 Diorama. Construction details for some of the Capricorn Sugar equipment as well as general information, drawings and photos of the Queensland sugar industry, and a selection of card model kits can also be found on the CaneSIG web site (www.zelmeroz.com/CaneSIG/).

Photos and models by Lynn Zelmer unless otherwise credited.

Gauge versus Scale

'Standard' gauge generally refers to the distance between the rails of the dominant freight and passenger service in a particular state or country. New South Wales, for example, uses a gauge of 4' 8.5" (1435 mm), the same as the majority of English or North American railroads.

However many local developmental or industrial railways used a 'narrow' gauge, generally to reduce construction costs. Queensland Rail operates on 3' 6" (1067 mm) gauge track, while most of the shire and sugar cane railways selected 2' (610 mm) gauge.

Scale, on the other hand, refers to the relationship between real world dimensions and the size of the models. HO scale (3.5mm=1') is the most popular scale and has a ratio of 1:87, so that a 168 cm (5' 6") adult would scale out to 19.25 mm (~3/4") and HO 'standard gauge' is 16.5 mm between the rails.

There are many common scale/gauge choices available for modellers. Someone who is modelling long freight or passenger trains, for example, might choose N scale (1:160) with its 9 mm track gauge or HO scale (1:87) with its 16.5 mm track gauge, while a railway in the garden might use a larger scale with G (45 mm) track.

On30 (1:48 or 1/4"=1' with 16.5 mm gauge track) scales out to approximately 2' 6" gauge for the narrow gauge modeller who wants reasonable sized models (big enough for convenient handling but small enough for transport) with a good range of commercially available items. Wheelsets, track components, etc. can also be used from more readily available HO models to minimise costs and modelling effort.

Many On30 modellers scratchbuild some of their models, but kits and ready-to-run models are also readily available. On2 (1:48 but with 1/2" gauge for the track) might be more accurate for modelling Queensland's 2' gauge sugar cane railways but the On2 modeller must do much more scratchbuilding.