

Modelling the Unusual: Queensland's Sugar Cane Railways

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Convention presenters over the past decade have given us inspiration and references to model Queensland's sugar cane railways. Bob Dow's scratchbuilt HOn30 bins and small diesel locomotives come to mind, as do Jim Hutchinson's loco sheds, and presentations by Jim Fainges, David Mewes, Greg Stephenson, Carl Millington and others.

This presentation will build on that base, look at some of the more unusual aspects of the industry, and hopefully inspire you to build a unique model or two.

Queensland's sugar mill-owned railways have much the same style of operation and 'make do' engineering as the bush tramways. Unlike our bush railway colleagues, Queensland cane modellers have the opportunity to observe and photograph operating sugar cane railways as well as a large number of preserved locomotives and other artefacts.

Health and Safety regulations, and security concerns, have made unfettered access to the mill railways difficult. Advance preparation and common sense, however, can still result in photographic and railfan opportunities.

Most museums and tourist railway facilities are volunteer-operated but almost always welcome guests, even on non-working days, if they are given adequate notice, and few will turn down a donation in return for helping with measurements and photography.

CaneSIG, the on-line resource for modellers (www.zelmeroz.com/canesig), was set up to support cane railway interests and has a significant collection of photographs and other materials. Unlike some railfan sites, CaneSIG doesn't emphasise motive power. Yes, there are locomotive photos, both steam and internal combustion, but the collection is much broader and this clinic draws heavily upon that collection.

What era, locale and type of system do you want to model?

- Steam, petrol or diesel powered?
- Irrigation or rainfall?

- Coastal or hill country?
- Mill, town or out-depot?
- Corporate, independent (local cooperative) or shire ownership?
- Mill-specific or freelance?

Trackwork Construction

Regardless of the arguments for a standard gauge railway linking all Australian cities and ports, no one should deny the rightness, for the time, of the decision to build Queensland's pioneer railways to 3' 6" gauge. The state's small population was scattered across large distances and a narrow gauge system would minimise costs. While some of those early lines were built to reasonable engineering standards, other 'development' lines were hastily constructed with light rail and minimal or no ballast.

Delivering sugar cane to nearby mills provided the justification for some of the QGR (Queensland Government Railways) lines. However, state resources were limited and most mills built their own tramways. These were built to 2' (610 mm) gauge for the same reasons: sharper curves, lighter and less expensive track and other engineering works, and smaller, less expensive locomotives and rolling stock.

The early sugar cane tramways were even lighter built than the pioneer railways. Temporary tracks into the cane fields were operated manually or with horses and the 'main line' often shared shire road allowances and bridges or was laid directly on the ground through farmer-owned cane fields. Speeds were seldom as much as 20 mph, loads were restricted to what the small locomotives could pull/stop, and scheduling was erratic.

Times and standards changed and by the 1970s Queensland's mills were investing more heavily in their cane transport systems. Dieselisation, chopped cane bins and better track resulted. A similar upgrade occurred in more recent times and cane railway track

standards sometimes achieved and exceeded main line (QR) standards, a necessity for increasingly heavier locomotives and loads.

Sleepers need replacement when they cannot any longer hold a spike. Good quality timber sleepers with little or no ballast have an average life of roughly 8-10 years, but good ballast and drainage almost doubles that. Concrete and steel sleepers (and bridges) may have a longer life but are often chosen for their availability and ease of installation.

When mills close locals may hope to retain a cane line for tourist operations but quickly find that the mill owned very little of the rail system. Mills own the track and fittings, but trains run in easements along shire roads or through the cane fields, and typically neither shire nor farmer want the responsibility of a tourist railway on their property.

Mills do own some of the land their trains run on, but use of easements help explain why cane trains sometimes run between farm houses and their sheds, in front of a row of houses or down city streets.

Bridges and related engineering works are a major cost for the cane railways, sufficiently so that some bridges over flood-prone rivers and creeks are designed to be removed every slack season. In recent years bridges and culverts have tended to be concrete, but a variety of materials have been used over the years. This has included sharing bridges with shire roads and recycling ex-QR bridges where government lines have been removed.

Infrastructure

Sugar mills and refineries are large industrial plants and are a challenge to model. While cane railways require the same type of maintenance facility as other railways the facilities are usually smaller and there is considerable variation between the mills.

In earlier days train crews would work out from a single location, mill or out-depot, returning there after each shift. An out-depot loco shed with water, fuel and sand would be a smaller version of the mill shed. Crew accommodation was sparse, whether mill-provided or in a country hotel.

Today crews will changeover on the run, using road vehicles and taxis for transport. Shift change and maintenance facilities could be as simple as Moreton Mill's River Store, a vandalised lunch room and sand dryer, or as extensive as Isis Mill's Wallaville out-depot with navvy quarters, fuel bowser, sand and water, and a fenced compound for storing locomotives overnight.

Mills also had cane truck or bin maintenance facilities. Carpentry and machine shop facilities for the mill itself could often do locomotive and rolling stock repairs as well as some new construction. Today many of these tasks are out-sourced to specialised shops in the nearby township. Mackay Sugar, for example, has even out-sourced the management of its locomotive and vehicle fleets.

Locomotives

There are roughly two dozen operational 2' gauge ex-sugar mill steam locomotives in Australia tourist/museum operation plus a much larger number in storage or static display. There is also a more widely dispersed selection of older 2' gauge internal combustion locomotives.

In both cases there was a relatively small number of manufacturers, however, many locos are individually identifiable because of their unique fittings. Modellers should look particularly at the type of gear on the outside of diesel locomotives for authentic detailing.

Moving Cane from Field to Rail

The earliest manually moved cane trucks had a 1-2 ton capacity and over the years this gradually increased to 2.5-3 tons. The earliest chopped cane bins were built on ex-whole-stick cane trucks with a similar capacity. Although each mill had its own bin design, and the size of bin tippers limited their ability to improvise, the industry moved to a mix of four and six ton bins, then to larger capacity fixed wheelbase and bogie bins.

Bin couplings varied from mill to mill; although some allowed bins to be rotated in the tipper without uncoupling, most still require uncoupling. Most mills have installed

some form of automated bin movement through the mill and some have even automated the off-site collection points where rakes of bins are assembled for transfer to the mill.

Drivers, Off-Siders and Navvies

Mills employ drivers, off-siders and a small number of navvies during the crushing season. Some mills operate their own cranes and other equipment for rerailing trains, others out-source this work to cane farmers served by the trains or to local businesses. Train crews are expected to assist with repairs and these days repair equipment will probably come by road, not by rail.

For most of their existence the only really permanent employees of mills were the management and technical staff (chemists, cane inspectors, etc.). Some support staff, electricians for example, might be employed in their trade during the slack season, then primarily as drivers during the crush.

Navvy equipment is a mix of purchased and mill-built. Items requiring portability, such as generators and compressors, are often mounted on old wholestick or bin underframes. Crew cars, tampers, weed sprayers, etc., may be self-propelled or hauled by an older 4wDM or 0-6-0 DH locomotive. Tool and personnel wagons are often mill-built, older ones of canvas, timber and corrugated iron sheets, newer ones of square tubing and powder coated steel or aluminium sheeting.

Modelling

Cane railways can be modelled in any scale and gauge but HOn30 (3.5mm), On30 (1/4"), On16.5 (7mm) and SM32 (16mm) are the most popular. Although cane modelling is a niche interest with few dedicated models, the basic nature of locomotives, rolling stock and infrastructure make them easy subjects to successfully scratchbuild.

Selected References

The best references on preserved and operational locomotives in the Queensland canefields are on the Light Railway Research Society of Australia (LRRSA) web site (www.lrrsa.org.au) and in their bi-monthly journal, *Light Railways*.

Crellin, IR (1979). *Australian Sugar Tramways: The Challenge of the 1980s*, Melbourne: LRRSA, Light Railways 66: October.

Cane railway review at the end of the 1970s.

Gough, Bob and Webber, Brian (1999). *Queensland Sugar Cane Railways Album*, Yeronga, QLD: Authors.

Photos from QLD cane railways.

Kerr, Bill, and Blyth, Ken [Comp] (1993). *They're All Half Crazy: 100 years of mechanised cane harvesting*, Brisbane: Canegrowers.

Traces cane harvesting mechanisation from 1888 to the 1990s.

Kerr, John (1996). *Only Room for One: A history of sugar in the Isis District*, Isis, QLD: Isis Central Sugar Mill.

Representative mill history, one of many.

Roberts, Andrew K (1998). *Wheels in Motion*, Eton, Qld: Author.

23 Qld sugar mills which moved cane by rail in 1998. Motive power, people, histories.

Roberts, Andrew K and Ellul, Andrew B (cartoonist) (1999). *One for the Road*, Eton, Qld: Author.

Human side of the cane transport, portrayed through photographs, anecdotes and cartoons.

Rowling, Brian [photographer] (1988). *Steam, Rails and Sugarcane*, Parramatta, NSW: Rollingstock Productions.

VHS video, from Brisbane to Rockhampton in 1957, 1966 and 1968. 45 minutes.

Webber, Brian (2004). *Exploring the Railways of Far North Queensland*, Brisbane: ARHS, Qld Div.

Historic and current railways of Cairns and District, and further north. Includes QR, shire, sugar mill and tourist railways.

Wilson, Craig (2002). *Built by Baldwin: The story of E M Baldwin & Sons, Castle Hill, New South Wales*, Melbourne: Light Railway Research Society of Australia, Inc.

History of Australia's E M Baldwin, sugar mill and mining locomotive manufacturer.

Items which are not currently commercially available can likely be found through one of the on-line used book stores.

Invicta, from cane field work horse to restoration and tourist train regular



Qunaba Mill's Invicta (0-6-2T Fowler 11277 of 1907) [no date], John Browning Collection



Fully restored Invicta with a train of tourist carriages at the Australian Sugar Cane Railway, Bundaberg, on its first regular operating day, 18 November 2007. Lynn Zelmer, photographer.

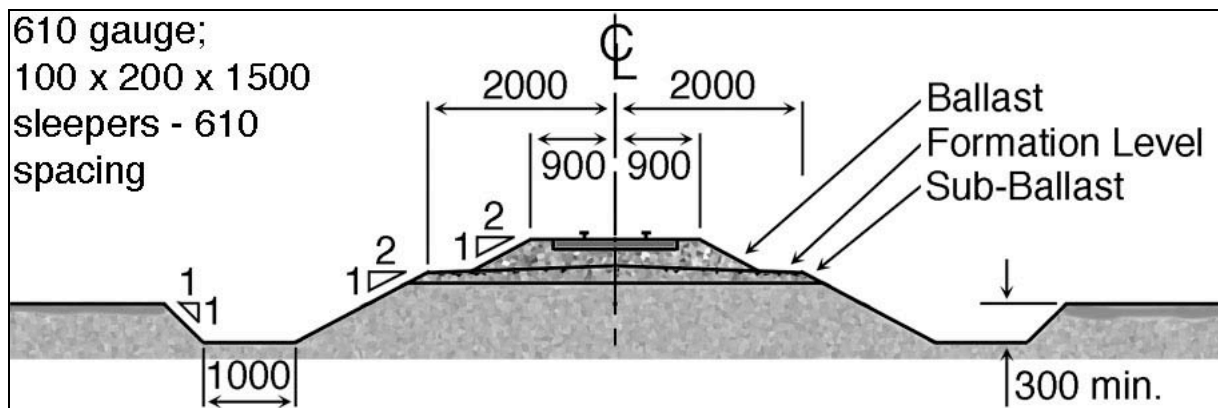
Purchased new in 1907 for the Invicta Sugar Mill, Invicta spent all its working life in the Bundaberg area. Sold in 1918 to Gibson and Howes (Bingera Mill), it worked in the Bingera area until the early 1960s, when it was sold to Millaquin Sugar Company and retired in 1978. In 1981 Invicta was donated to the HMAS Nirimba Navy Training College at Quakers Hill Sydney.

Returned to Bundaberg in 1993 Invicta was dry stored until restoration began in 2003. A team of 20 members of the non-profit Bundaberg Steam Tramway Preservation Society (BSTPS) worked over four years to complete the restoration. Invicta was recommissioned 17 November 2007 at a 100th birthday celebration attended by roughly 200 members and guests.

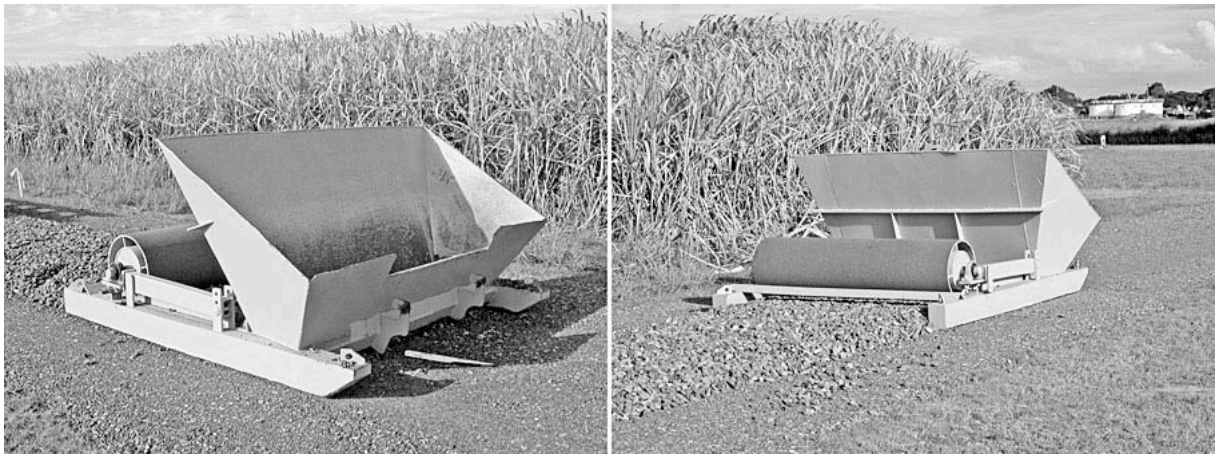
Trackwork Construction



While 'mainline' cane tracks will be well ballasted and maintained (see below), many lines run at ground level through the canefields. Lynn Zelmer, photographer



A well engineered cane line might look like this, with proper drainage slopes, drains and ballast.
Source: Sugar Research Institute and industry discussions.

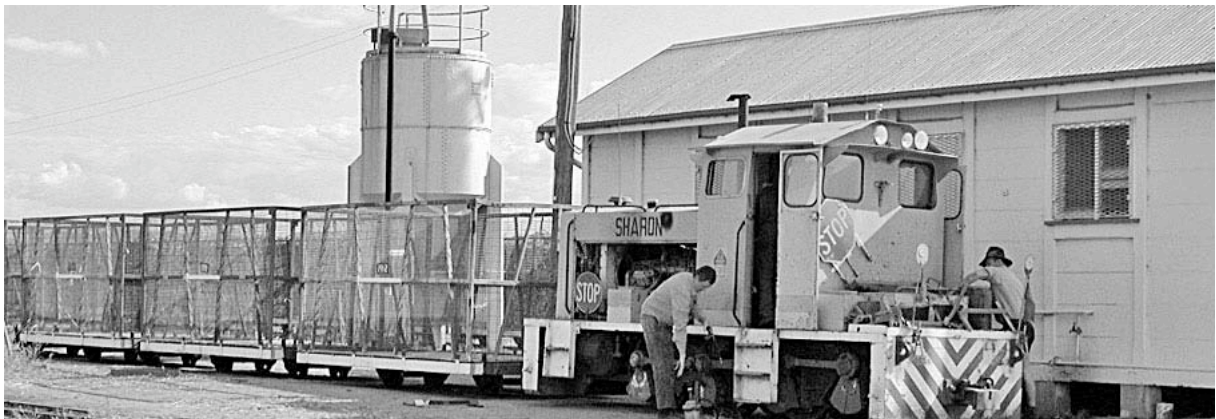


One of Millaquin Mill's ballast profiling machines, 2007. Lynn Zelmer, photographer

Infrastructure: recycle facilities and minimise costs



Millaquin Mill steam era loco shed during the transition era, 1977, Peter Jensen, photographer



Servicing Sharon between shifts at the Wallaville out-depot, 2002; fuel bowser is to the right, loco cage to the left, ex-QR station facilities and sand beyond, Lynn Zelmer, photographer



Transporting three loaded cane bins via truck and ferry to Millaquin Mill's rail transfer at Strathdees following Ferrymead Mill closure, Lynn Zelmer, photographer

Locomotives



Brightly coloured steam locomotives were the norm in cane growing areas before dieselisation. Qunaba Mill 0-4-2T (Fowler, Leeds, No 20284, Millaquin Mill owners) crossing Burnett Heads Road with empty wholestick trucks, 24.9.63, John Browning Collection

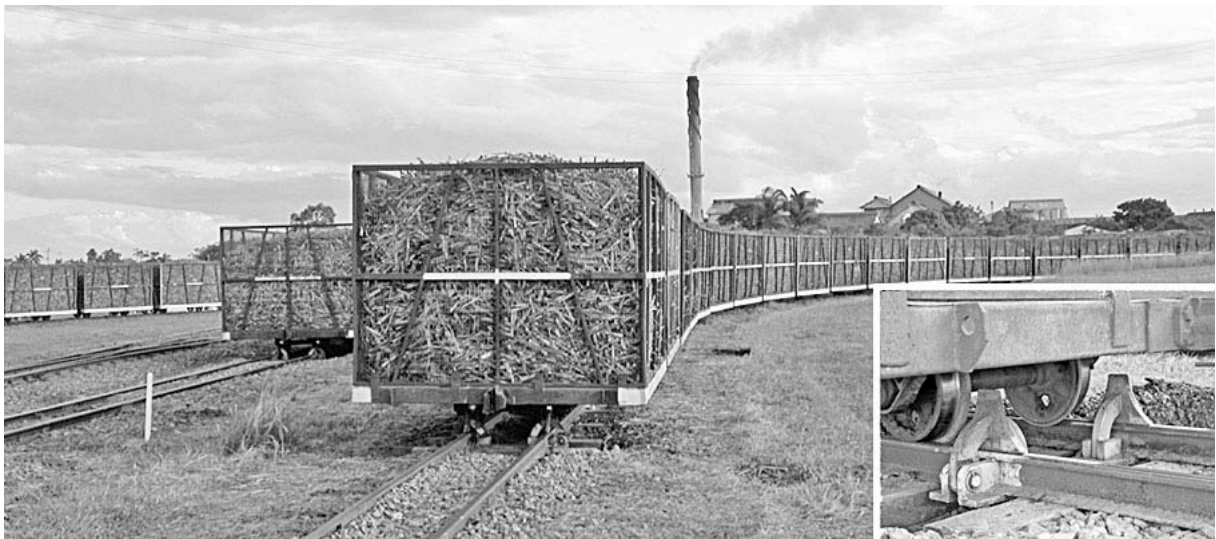


Regauged and rebuilt ex-mainline DH locomotives provide the power for faster, heavier trains. Mackay Sugar: rebuilt DH and bogie brake van, 2005, Jonathan Bayliss, photographer



Some loco modifications arise from engineering changes, such as regauging or remotoring, some from repairs after accidents, and others from operational restrictions. Note the reduced height cab to fit under the QR overpass at Redlynch, Mulgrave Mill, 1995, Greg Stephenson, photographer

Moving Cane



Cane being delivered to Millaquin Mill; top: truck which arrived via ferry from ex-Fairymead area farms releases three bins to Strathdees automated rail transfer yard before loading empty bins, centre: a tractor-hauled in-field transporter dumping into bins near the mill, and bottom: the mill's nearby full yard with (inset) manual bin stops. Lynn Zelmer, photographer

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Modelling the Unusual

Queensland's Sugar Cane Railways

Lynn Zelmer

<http://qldrailheritage.com>

<http://www.zelmeroz.com/canesig>

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Modelling from Life

- Observe changes over the decades
- Railway engineering
- Motive power, rolling stock, communications, infrastructure, climate and vegetation
- Information sources
- What era: wholestick or bin, steam, petrol or diesel power?
- What locale: irrigation or rain, coastal or hill country, mill or out-depot, ownership?
- Layout size: freelance or mill specific?

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Colourful scene from the past: Qunaba Mill Fowler 0-4-2 Tank crossing Burnett Heads Road with empty wagons (Built J Fowler Leeds, No 20284, Millaquin Mill - owners) 24.9.63, John Browning Collection

Note even in 1963 the flashing lights on the bitumen highway crossing. Cane line parallels road, then runs through field.

Libraries/Archives

- **State Library of Qld:** 900,000 images, over 30,000 now available on web site *Picture Queensland*; aka *John Oxley Library* (rare books, maps, newspapers, personal papers & archives)
- **Butlin Archives:** at ANU, Canberra; CSR depository (approval required for access); Qld, NSW and Fiji operations, company archives, photos, etc.
- Research only; costs & permission for display

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Emphasise need to seek permission for any display of materials from the government, university, institutional and commercial archives.

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Victoria Mill

- CSR ownership, one of largest mills
- Early adopter of diesels, but long transition period and one of last steam users
- Interconnected with Macknade Mill
- Corporate finances and multi-mill operation gives flexibility & economic power but local (cooperative) ownership of competitors, gives better community links

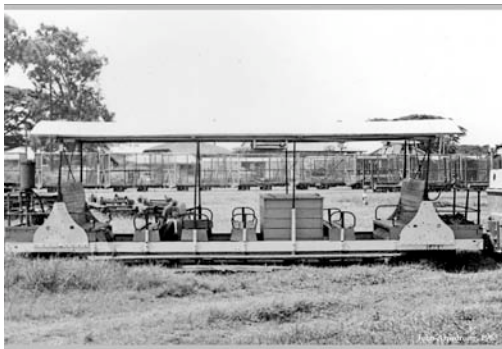
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Loco shed, Victoria Mill , November 1965. Diesel (Fowler on left) is on loan from Macknade Mill
John Armstrong, photographer

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Decauville Coach, Victoria Mill, November 1965
John Armstrong, photographer



Clyde inspection car, Victoria Mill, November 1965
John Armstrong, photographer

Presumably self-propelled, simple four wheel drive, easily modelled in HOn30 or On30 using available mechanisms; run headlight power up through canopy supports in larger gauge.

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Preservation/Restoration

- Railfan organisations typically collected everything available
- Restoration expensive and skills declining
- Restore to what? Cosmetic vs operating
- Publications
- QR/Qld Museum Workshop
- ASCR
- ANGRMS
- Fairymead House, Buderim, Childers, Gin Gin, Sarina, ASIM, etc.

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Invicta, 1977. Image based on an original photo by Peter Jensen

Invicta 1977

Photoshopped image, Peter Jensen photographer for original

This was not the as-delivered locomotive, it had an open cab, etc. Selecting the era is likely the most important decision for restoration and modelling.

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ASCR 2007 celebrates 100th birthday of loco with return to service.



Invicta at ASCR, first day of normal operation following restoration, 17 Nov 2007.
Lynn Zelmer, photographer

This is the locomotive's original cab configuration.

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Construction

- Early lines built to minimal standards, ballast, etc.
- Track standards improved as load weights increased
- Current realignments reduce ruling grades or grade crossings
- Minimal bridges, etc., replaced with timber structures and then concrete
- Mill automation included automation of bin handling

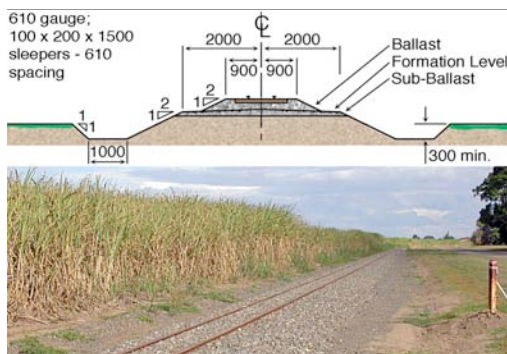
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Most early trackwork was laid directly on the ground... without ballast or formation profile.
Macknade Mill NQ, Hudswell Clarke 0-6-0 Seymour Line -- 8.69, John Browning Collection

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Modern track standard include proper slopes and drainage ditches.

This quality of trackwork would have been unusual prior to about 1990, but is necessary with modern locomotives and loads hauled.



Precast drains and culverts make new construction easy c 2006.

Earlier eras would likely have had very small bridges, perhaps only a couple of logs supporting the track over a hollow, or a metal culvert.

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This ballast spreader also profiles the formation.
Millaquin Mill, Bundaberg 2007



Bingera Mill: partially completed new grade from
Fairymead area towards Bingera looks like a scene
from a computer game.
2008, Lincoln Driver

Modern tracklaying can be almost fully mechanised
with a variety of tampers, alignment machines, etc.

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Bundaberg area, cane line running alongside the
local road. Line is well maintained with reasonably
fresh ballast and annual weed spraying. The line
terminates in an unballasted and over-grown length of
track before the road turns.



A common sight in the cane areas, the line runs
across an unsurfaced local road from one cane field
to another and disappears between the rows of cane.
At left, a growing crop with a more mature stand to
the right.

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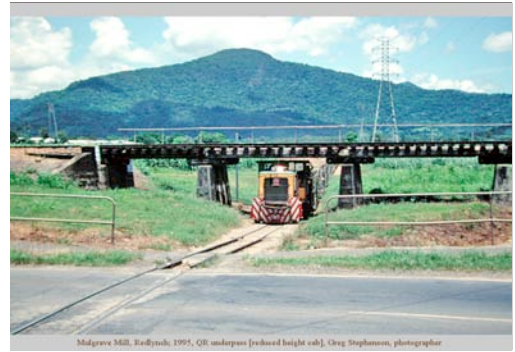
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Likely Mulgrave Mill. [Road/rail bridge] Greg Stephenson, photographer

Normally such shared usage bridges would at least carry warning/yield signs. This bridge presumably is low enough that flood waters would normally wash over top of the bridge, similar to a floodway on a road.



Mulgrave Mill, Redlynch; 1995, QR underpass [reduced height cab], Greg Stephenson, photographer

QR dislikes level crossings with the cane trains because of the control systems required and the necessity to run at a slower speed through the crossing.

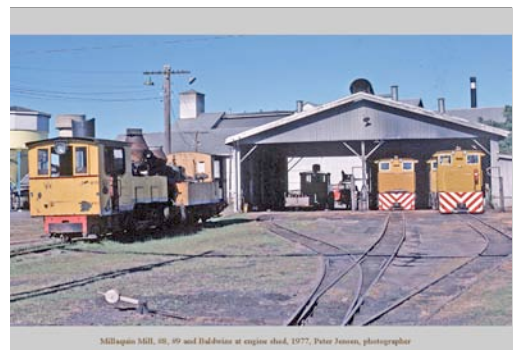
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Motive Power

- Steam to diesel transition
- Fixed wheelbase to bogie transition
- Light to heavy bogie transition
- Older locomotives to scrappers, preservation, restoration and reuse (eg in navy service)
- No two locos alike
- Colour schemes and logo changes

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Millaquin Mill, #8, #9 and Baldwins at loco shed, 1977, Peter Jensen, photographer

This is the transition period, with steam still operating and diesel locomotives sharing the steam loco sheds. Diesel only sheds generally do not have the same roof vent requirements.

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Moreton Mill 'diesel shed', December 1966
Peter Jensen photographer

Compare with photos of Moreton Mill's much larger diesel shed in the era leading up to the mill's closure.



Sharon (0-6-0DH, Com-Eng, 1959), Wallaville out-depot, 2002

Daily maintenance is carried out in the open close to the ex-QR station building. A fenced enclosure to the left provides some protection from vandals when a loco must be parked overnight. Fueling facilities are to the right.

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Wallaville out-depot fueling facilities, 2002

The white box is a simple bowser with metering facilities. Note the relatively new EPA-mandated dyke around the fuel tank. With the increase in fuel prices locks and other protective mechanisms have probably been added.



Millaquin Mill, 'Calavos', Bundaberg 2007
EMB Calavos

The lights are raised to provide visibility over a rake of cane bins.

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Millaquin Mill, Bundaberg 2007. EMB Calavos

The back end of the loco in the last slide, note the feight of the cane bins relative to the loco lights.



Mackay Sugar: rebuilt DH and bogie brake van, 2005, Jonathan Bayliss, photographer

Cane bins are unbraked; a variety of radio-controlled brake vans provide extra braking ability for the locomotive. Some mills use radio-controlled slave locomotives, operated in tandem with the locomotive at the front of the train (rake), or in the middle of the rake, but brake vans are generally operated at the end of the train.

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Millaquin Mill, Bundaberg 2007

River punts used to deliver wholestick cane to a landing point near the mill. Today barges or ferries are used to carry loaded bins from one part of the mill network to another. Here the ferry allows road transport to deliver bins from an isolated growing area to an unloading point near the mill.



Strathdees, Millaquin Mill, Bundaberg 2007

The unloading point for the road transport in the preceding photo. The truck will back into the dock, drop his load down one track and retrieve a similar number of empty bins from another.

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Strathdees, Millaquin Mill, Bundaberg 2007

Unloading using gravity. The short rake of bins trails a metal cable which will be detached and used to haul in the empties.



Strathdees, Millaquin Mill, Bundaberg 2007.

The rear of the trailer has a funnel-type pan which engages, directs and lifts a hinged track section at the loading ramp.

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Strathdees, Millaquin Mill, Bundaberg 2007.
Automatic bin mover

Once gravity has delivered the bins down the ramp the automatic system aids coupling and moves it into place for pick-up by a mill locomotive.



Strathdees, Millaquin Mill, Bundaberg 2007. Close-up
of automatic bin mover

Other automatic bin moving systems have hooks which engage the bin axle, etc. This system causes minimum damage to the bins.

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Strathdees, Millaquin Mill, Bundaberg 2007

With the mill in the distance, this collection area can accommodate several rakes of both full and empty bins. The rake is prevented from moving by a bin manual wheel stop in front of the bin.



Strathdees, Millaquin Mill, Bundaberg 2007. Manual bin stops

In previous decades a wooden sprag would likely have been used instead of the permanent bin stops.

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Fairymead Mill

Bin tipping systems determine the maximum size and capacity of bin that can be accommodated at the mill. A variety of systems are used to hold the bin while being tipped, but the necessity to completely invert the bin means that the bin holding system is critical. Some mills, and mills in other countries, used to use bins with one side that opened when tipped, requiring somewhat less of an inversion.

The bin coupling effects the bin tipping... some couplings allow the bin to rotate without being uncoupled, other mills uncouple individual or small groups of bins, depending on the tipper capacity.

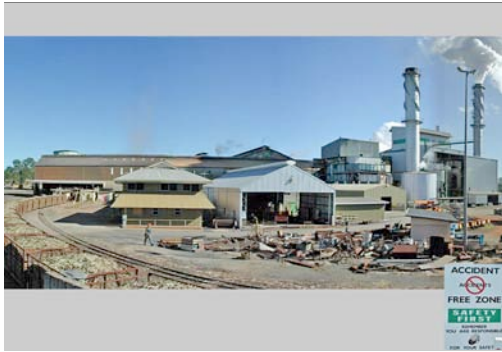


Isis Mill, elevator to take cane into mill

Building a model mill? Be prepared to build several buildings with lots of elevators, pipes, etc.

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Isis Mill

There are at least eleven buildings, plus several specialised constructions (stacks, tanks, etc.) visible in this panoramic view of the mill. The locomotive sheds and other maintenance facilities, as well as full and empty bin yards, are located in another area of the site.

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Rolling Stock

- Wholestick trucks, then bins (cages) on the same trucks, replaced with 4w bins, extended bins and a mix of road transport
- History of increased capacity and size: 2.5t to 20t
- Navy and related wagons often mill-built and often used ex-cane hauling chassis (trucks/bins)

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Moreton Mill 2003

The building at left contains the bin repair shop. This track has a number of less than functional bins waiting for repair or junking as appropriate.

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Victoria Mill bogie bin, 1996, Greg Stephenson, photographer

Double length bin... other mills use containers on a special container wagon or heavy-duty four wheel suspensions.

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Isis Mill extended bins

Alternatively, you can extend the capacity of existing bins. These bins would likely have problems negotiating the sharp corners found in some farmer's fields or around the mills. In earlier years bin capacity was increased by adding 'hungry boards' or the equivalent as extensions to the height of the bins.



Ethanol on QR, Sarina, 2005

Molasses are often shipped by truck, especially where the bulk of the molasses are sold to local cattle producers. Over the years a variety of tankers have hauled molasses (and cane 'juice') but these extended tankers are part of a fleet that operates over QR's standard gauge (ie 3' 6") tracks.

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Molasses tanker, Moreton Mill 2003

Molasses and mill mud are both hauled by road vehicles at many mills. This facility at Moreton Mill had a truck marshalling area that accommodated at least three double-length tankers at a time.



Molasses detail, Moreton Mill 2003

Even something as simple as a molasses tank has lots of potential for modelling detail.

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Moreton Mill bogie flat with water tanks and pump,
Dec 1966.

Peter Jensen, photographer

A wooden bogie flat car with the two rusty water tanks centred over the bogies. A present day alternative might have round or rectangular plastic water tanks and a modern pump... and the Moreton Mill street watering wagon (now at ANGRMS) had a round tank on a ex-bin four wheel underframe.



Farleigh Mill, Calen, 24 Aug 2000

Greg Stephenson, photographer

This is actually two roofed navy wagons (look at the floor heights), followed by more navy wagons.

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Farleigh Mill, Navvies Transport; 18 Oct 1997

Greg Stephenson, photographer

Roughly the same size as the navy wagons in the previous slide, these are much newer and show what is possible with more modern building materials.



Proserpine Mill, weed spraying wagon, 1997

Essential equipment for most mills... weed control includes mowers, sprayers and burning machines.

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From the farm...

- Some areas heavily irrigated, other rainfall
- Increasingly crop rotation and other green practices
- Much of the cane is contract harvested
- In-field transporters more common
- Mills without a cane railway may have a rail system to move bins through the mill

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Millaquin Mill: tractor-hauled side-tipping infield transporter

There don't appear to be any models of such farm equipment, and manufacturers' information/plans are almost impossible to source. However, a modern layout needs modern farm equipment as well.

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Front view of self-propelled infield transporter

Unlike the last slide, where the transporter had two bins, this transporter has a single bin and likely tips forward into a conveyor system behind the cab, rather than sideways.



Rear view of the same self-propelled infield transporter

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Home-made or manufactured... you can likely find a prototype for anything you can build from your scrap bin



Bingera area, May 2007

While some of the cane growing areas depend upon rainwater, many use irrigation systems... typically either aerial spray or gravity-fed flooding between the rows. This pump could provide the pressure for either and is just one of several components (pipes, valves, meters, pump houses, sprayers, hose, trailers, etc.) for an irrigation system.

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Isis Mill, 2002

Another variation on the end-of-rake brake van and a different pattern of cane bin.

Another resource... N arrow Gauge Down Under magazine.



BadgerBits Bli-Bli On30 kit, partially completed by Rob Nesbitt, 2008

This kit comes as an envelope with sheets of etched brass, an instructional CD, and several bags of other components.

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Battery powered SM32 Clyde and wholestick truck from Tootle Engineering

The loco was supplied ready-to-run, the Moreton Mill-type wholestick truck as a white metal kit.