

Train Operations on Queensland's Cane Railways

Part 3: Interacting with Queensland Rail

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Queensland's canefields are generally found relatively close to the coast, as is Queensland Rail's North Coast Line and various branch lines. QR was sometimes a source of cut cane, QR still transports sugar products to market for some mills, and the two foot tramway systems cross the three foot six inch lines at a number of places. The cane railways use one of three methods for crossing Queensland Rail's track: through an underpass as at Redlynch, tramway diamond crossings for track level crossing, and drawbridge systems to pass over the broader gauge.

There are no catch points (derails) on the QR at tram crossings, only on the tram lines. Although signals are normally set against the cane trams, QR train control does not control tramway diamond crossings except for Ingham. Mill trams can cross at any time day or night without giving any notice to QR train control. The general rule is that cane trams must give way to QR trains, ie look both directions first for QR traffic. Thus the QR train controller generally has no idea when these crossings are being used.

In the case of crossings protected by semaphore signals (QR side only, trams have disks), a non-reversible (Kangaroo) lever is used by the loco assistant to place the QR signals at stop, the cane signals at proceed, and the cane catch points to reverse (closed). The assistant must hold this lever until the tram has cleared all catch points.

These crossings are located at (QR names): Aloomba, Junction Creek, Mirawinni, Galanties, Silkwood, Feluga, Birkala, Euromo, Seymour, Lillypond, and Pombel.

TITLE PHOTO: A load of wholesstick cane, likely from the Avondale Plantation, being delivered to Fairymead Mill on the 3' 6" line, c 1897. This was the mill's first 3' 6" gauge tender locomotive (2-4-0, acquired in 1892 and variously numbered but becoming No 6, Ipswich Railway Shops, class A/A10 of 1877). It's unclear what type of wagon is in use here, but later operations used standard QR maroon H class wagons. State Library of Queensland image.



State Library of Queensland
John Clegg Library

ABOVE: Manually loading wholestick sugar cane into Queensland Rail four wheel DF (firewood) class wagons at Pomona, around 1910. The cane in the front wagon (DF 412) is loaded above the sides and has a rough fence of upright stalks holding the load in place. In other areas the cane stalks were stacked upright in the wagons. State Library of Queensland image.

Diamond Crossings Drawbridges

Ingham is the only tramway diamond crossing that is set against QR (during the crush only) due to its location in town and the many road crossings either side. The crossing is controlled by QR from a small signal cabin on Ingham station. When a QR train is approximately one section out of Ingham, the station officer contacts the Victoria Mill traffic officer and advises that they require the crossing back. The traffic officer will hold trams outside the town area until advised by QR that normal traffic may recommence. Semaphore signals protect this crossing.

For crossings that are protected by coloured lights (QR side only, trams have disks), a single lever release is used in conjunction with a free light operated by track circuits. If the free light is lit, the tram crew can 'take the release' and pull the lever setting the QR distant signal to caution and the home signals to stop, cane signals to proceed and the catch points to reverse (closed).

An unlit free light indicates a QR train is on the section. When a QR train hits the roughly 500 metre buffer zone from the QR distant home signal the section becomes 'occupied' and the free light will be unlit. This buffer zone is provided for QR train braking so a tram crew don't take the release without giving advanced warning to the QR train crew as they are passing the distant signal. Again cane traffic can take the release at any time without advising QR train control.

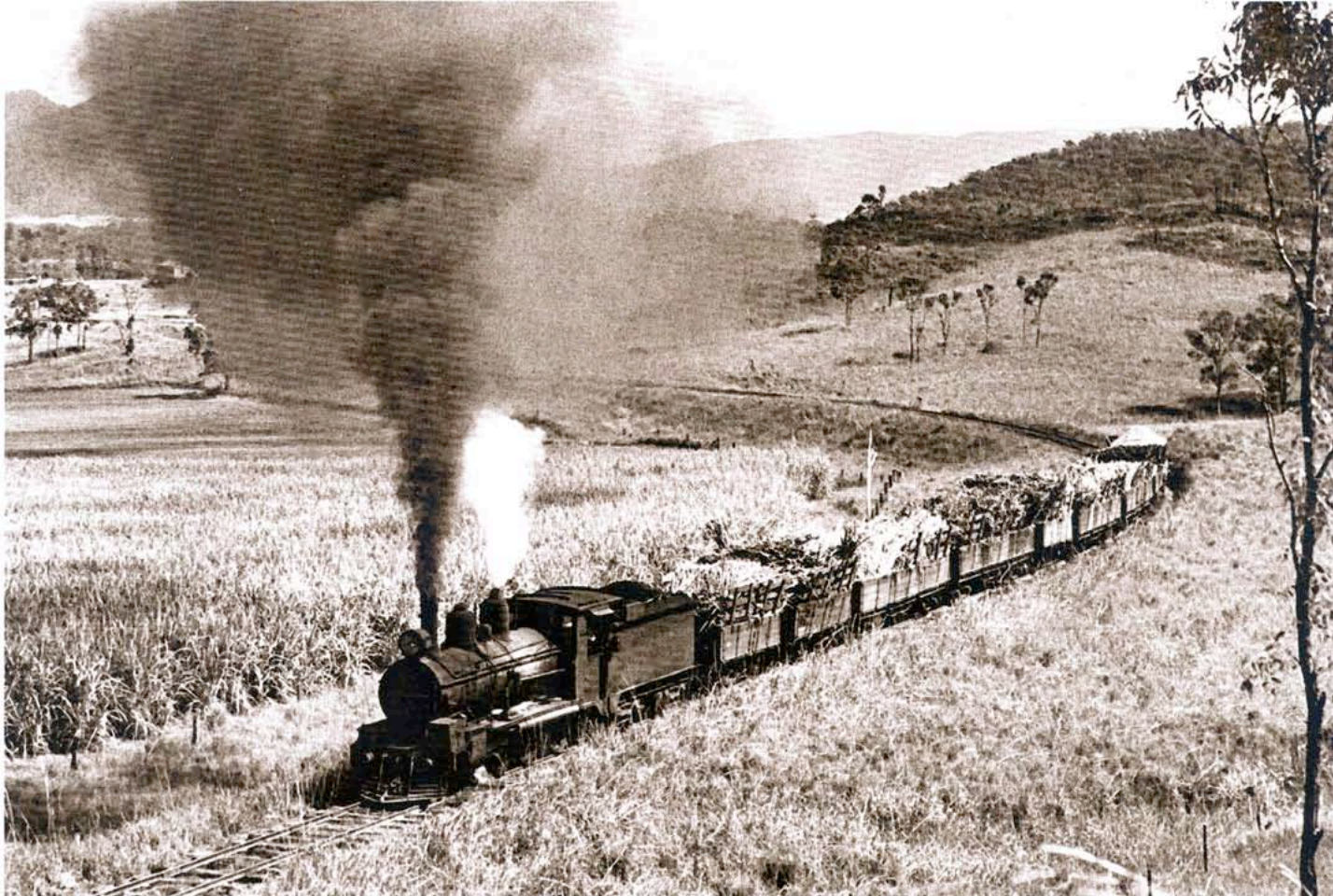
With the exception of Kuttabul, Erakala, Rosella and Koumala tram crossings, the QR train controller has no idea that the crossing is in use. These crossings are located at (QR names): Gordonvale, Pyramid, Babinda, Goondi, Boogan, Jaffa, El Arish, Brandon, McDesme, Foxdale, Calen, Kuttabul, Erakala, Rosella, Mt Convenient, and Koumala. The four exceptions are in or close to a QR station (crossing loop). Therefore, the standard QR signals that protect these stations also protect the tramway crossing.

The only four drawbridges in use are located at Wollingford, Balberra, Meadowvale and Elliott. The drawbridges are operated by the tram crews by entering a code into the traffic control radio or using a remote control, similar to those that open garage doors. This code lowers the drawbridge only. Drawbridges are protected by track circuits, with distant and home signals on both the QR and tram sides, and if a QR train is on the circuit the drawbridge will not lower, regardless of the code having been entered. Locos that don't have a remote can ask the QR train controller to lower the drawbridge, except at Wollingford (see below).

Once a drawbridge is activated, the QR signals revert to caution (distant) and stop (home). A flashing light and warning buzzer sounds, the drawbridges lower, tram catch points close and the tram signals change to proceed. Once the tram has cleared the track circuit either side of drawbridge, the drawbridge raises clear and QR traffic is given the road again.

Drawbridges are full of electronics and micro switches and are one big interlocking circuit. If one of the interlocks fails, the signals cannot be cleared. QR train controllers can see the drawbridges in use or not on their screens, as all except for Wollingford are on QR tracks controlled by remote controlled coloured light signals.

The QR branch to Marian is crossed by a former Pleystowe Mill (now Marian) line at Wollingford. This was the prototype drawbridge crossing, and unlike the other three drawbridges, the QR line to Marian is worked under ordinary staff instead of being track circuited. There are track circuits at the Wollingford site only, thus it is set up and operated the same as the other three, except that the QR train controller cannot tell if it's in use or not, nor can they lower it remotely. Cane and QR crews raise and lower the drawbridge as necessary from a panel located at the equipment hut.



ABOVE: The main source of goods traffic on the Mackay Railway in August 1965 was sugar cane. Such was the load behind the drawbar of PB15 457 that the train had to be divided at Gargett to enable the grade to be surmounted. Image from McCarthy, Shane (1975). *Impressions of Steam* (with photographs by Robert Belzer, Robert Carlisle, Ken Macleay, Ted Payne and Arthur Wills), London: Angus and Robertson, p 28.

Connecting to Qld Rail

Queensland Government Railways serviced many mills in earlier years, delivering cane for crushing as well as collecting finished products for shipment to port, refinery or mill. Although road traffic has taken over for many mills, Queensland Rail still services several mills, primarily for transporting bulk sugar and molasses. Safe working rules govern how the QR and cane workings interact.

In situations where dual gauge track exists, if the mill has both 2' and 3' 6" gauge locos they would likely shunt their 3' 6" gauge lines with 3' 6" gauge locos and then take the wagons to a transfer siding with the government owned system. In other cases a 2' gauge locomotive with appropriate offset couplings might shunt 3' 6" gauge wagons on the dual gauge, again delivering them to a transfer siding.



ABOVE: Queensland Government Railway's 3' 6" Rail Motor service to Eton, shown loading at Mackay, 1954. The North Eton Mill and its employees presumably received their supplies through this service, as well as it being their access to the outside world. PG Dow photographer from the Robert Dow Collection.

RIGHT: Dual gauge (2' and 3' 6") leading to Fairymead Mill's bulk sugar and molasses storage sheds, 1990. This is the mill end of the 3' 6" gauge branch originally used to deliver cane from the Avondale plantation and then to ship sugar products via Queensland Rail's main North Coast Line. It would have been considered a privately owned branch line and operated by the mill's locomotives. Lynn Zelmer photographer.



The following notes explain the current Burdekin mill dual gauge lines are worked.

Pioneer Mill and Molasses Traffic:

Before a QR train can enter the mill line the driver must obtain radio permission from the mill traffic officer to enter the mill tramway network and record it on a yellow form. This form gives permission to enter the Tramway but not to pass the molasses limit of shunt board. The molasses wagons are dropped off at the first siding from the junction by QR and moved to the mill proper by mill locomotives. During the slack, an officer at QR Townsville will contact the mill during normal working hours and advise of after hours train workings. The mill officer will fax a letter of permission to enter the mill tramway to the train controller. The train crew working the run will call QR train control and obtain their yellow form from the QR train controller.

Pioneer Mill and Bulk Sugar Traffic:

Before entering the Pioneer tramway, the QR driver must obtain permission by radio from the mill traffic officer, again on a yellow form. With the form completed, the driver proceeds to the sugar balloon, calls the traffic office when in clear and then loads. Another yellow form will be required to leave the sugar balloon. When clear of the mill tramway, the driver must call and advise the mill traffic office.

Kalamia Mill: Before a QR train can enter the 'Town Siding' from the main QR line at Ayr, the station officer at Ayr must contact the Kalamia Mill traffic officer by phone and receive written permission on a white form to enter the siding. This completed form must be shown to the QR driver prior to entering the Town siding.

QR molasses trains only drop the wagons off at the Town siding; they don't go up the tramway, only sugar trains do. QR sugar trains will pull through the Town siding to the stop board where they will radio the mill traffic officer and obtain permission to enter the mill tramway on a yellow form. With the form completed the QR train will proceed up the tramway, calling and stopping as directed by the form and the stop boards along the way.

At Lily Pond Junction, the QR driver may have to stop and change the points for the correct road to the sugar loadout. Once clear on the sugar balloon, the driver advises the mill traffic office. When ready to leave for Ayr, the driver must stop at the balloon exit stop board, call the traffic officer, fill out another yellow form, and head off to Ayr. A white form isn't required to be completed by Ayr station, as the QR train 'owns' the road all the way back to the QR lines. The Ayr station officer will advise the mill traffic officer that the QR train is clear of the Tramway.

During the slack, the station officer at Ayr will call the mill during normal day hours and advise when molasses wagons will be collected and dropped off. A mill officer normally faxes a completed white form to the Ayr station officer allowing after hours entry to the Town siding.

The yellow forms mentioned above are carried on the QR locos allocated to the Burdekin sugar season.



ABOVE: Kalamia Mill's Kilrie on the dual gauge track at Mordavale, 3 October 1999. You can tell it's operating on the 2' gauge line since the coupling is centred between those rails. Greg Stephenson photographer.



ABOVE: Mackay Sugar, Marian Mill: QR 1512 crossing Marian Mill's 2' line on the North Coast Line near Kuttubal, September 1990. Note the stop signal and cane line check point. Lynn Zelmer photographer.

BELOW: Close-up of the derail lever and signal controls to permit the Marian Mill trains to cross QR's North Coast Line at Kuttubal, 1990. Shown left to right: blue box on post is a phone to call QR train control, silver box on post is the free light indicator, single lever release to activate the tram crossing. Lynn Zelmer photographer.

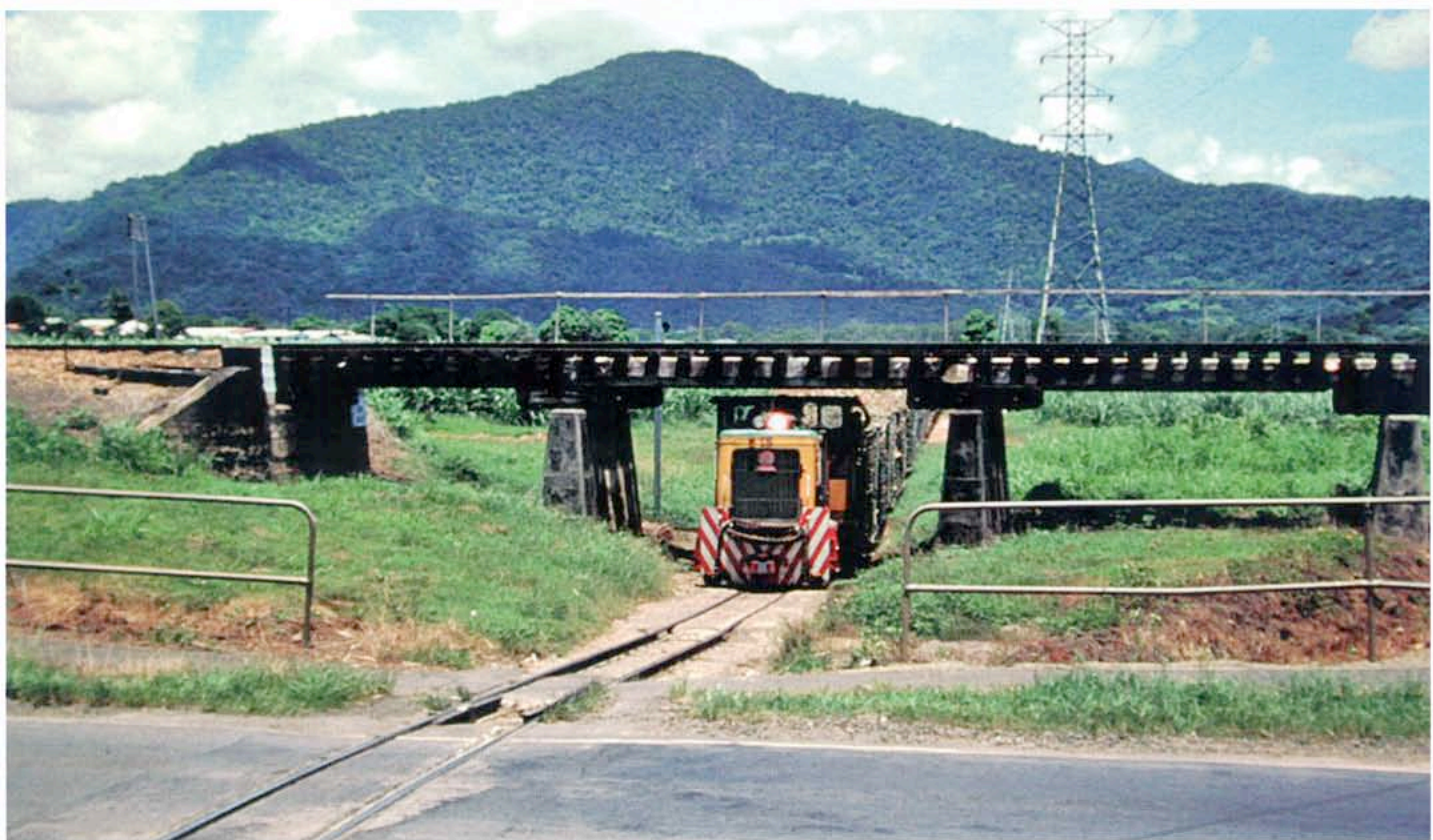




LEFT: Signals and check rail on the approach to the Pleystowe Mill's drawbridge over the QR line at Wollingford, 1995. The sign to left reads 'STOP, Cane trains must not proceed past this point until signal clear and drawbridge locked in down position'. The centre sign is the 'Keep Clear' sign detailed in the other photo, and the sign on the right is a standard QR warning about overhead live wires. Greg Stephenson photographer.



LEFT: Lowering the Pleystowe Mill drawbridge at Wollingford, 1995. The 'Danger' sign reads 'Keep Clear, Bridge Operates Automatically, Authorised Access Only'. Greg Stephenson photographer.



BELOW: Mulgrave Mill #18 (0-6-0DH Clyde ex-Hambledon Mill) negotiates the QR underpass, Redlynch, 1995. This is one of three locomotives with low profile cabs to fit under the QR bridge. An earlier era locomotive had a collapsible cab. Greg Stephenson photographer.



BELOW: Bulk tankers for molasses on Queensland Rail have evolved over the years. This mixed string is outside Proserpine Mill, January 2003. Lynn Zelmer photographer.



Modelling Considerations

Lincoln Driver's Wallaville layout (Narrow Gauge Downunder issue 22, Winter 2006) provides a good example of a cane railway system that can have some semblance of prototypical operation. The visible portion of the layout emphasises the Wallaville yard and the mainline to Bingera Mill, with a multi-track fiddle yard hidden behind the backscene. The layout, and fiddle yard, also includes some of the star pattern branches typical of the Wallaville area.

For modelling purposes we might somewhat ignore the Cane Inspectors' cutting allocations and assume that all transfer points (branch lines) must be serviced with empties and fulls every time period. A small rake of empties would be shunted for a loco driver to take to the fiddle yard via the branch line, returning with a similar rake of full bins to leave in the Wallaville yard to be assembled into a longer rake for a larger loco to deliver to the mill (again behind the backscene).

To use loco-specific staff control the loco driver could hang the token (staff) on a control panel hook to indicate that train is in a particular section or down a branch, and other trains cannot enter. Alternatively, the driver might be required to have the staff in hand to enter a track section, giving it up when leaving. With timetable and train order control the loco drivers might know the order of servicing of each branch but be required to have permission of the Traffic Officer to enter and leave the transfer yard (eg Wallaville).

If the layout includes a mill, locomotives should only enter with train order delivered via radio, with the mill shunter(s) under similar Traffic Office control. Crushing priorities, based on where on the system the cane originated, could be used to control the order in which rakes are broken up for bins to be shunted into the mill's tippler. If the mill is also served by QR trackage for molasses, bulk sugar or other traffic, train control similar to that discussed above could be used.

More complex operations over a simulated 24 hour operating session might include allocations that require the pickup of cane cut prior to the operating session waiting for pickup, with the delivery of a specified number of empty bins for the current cutting (simulating the cane inspector) and/or the use of bin cards and priority sheets to require drivers to deliver rakes of bins in the correct order (crushing priority). And overall, a traffic controller (dispatcher) with a situation board indicating the location of each train and radio contact with drivers.

Finally, if the focus is a shire tramway, instead of or in addition to a mill tramway, or is in the steam era when it was necessary to transport some passengers and freight for mill employees, then the operation would have to include other types of traffic. During the crushing season, for example, the Douglas Shire tramway had to cut back on the number of daily passenger and/or freight services. Partly this was a result of the amount of cane traffic and partly because the cane traffic had priority for available locomotives and crews.

Acknowledgments and References

Flint, EJ (2008). *The locomotives of Fairymead Sugar Mill, 1882-2004*, self published.

While hopefully no details have been lost, some images have been quite extensively restored in Photoshop to obtain a publication quality image.

Further information can be found in previous issues of Narrow Gauge Downunder and on the CaneSIG (www.zelmeroz.com/canesig) or Modelling the Railways of Queensland Convention (QldRailHeritage.com/mrqc) web sites. More photos are available in the rail heritage image collection (www.zelmeroz.com/albumquery/_search.php/).