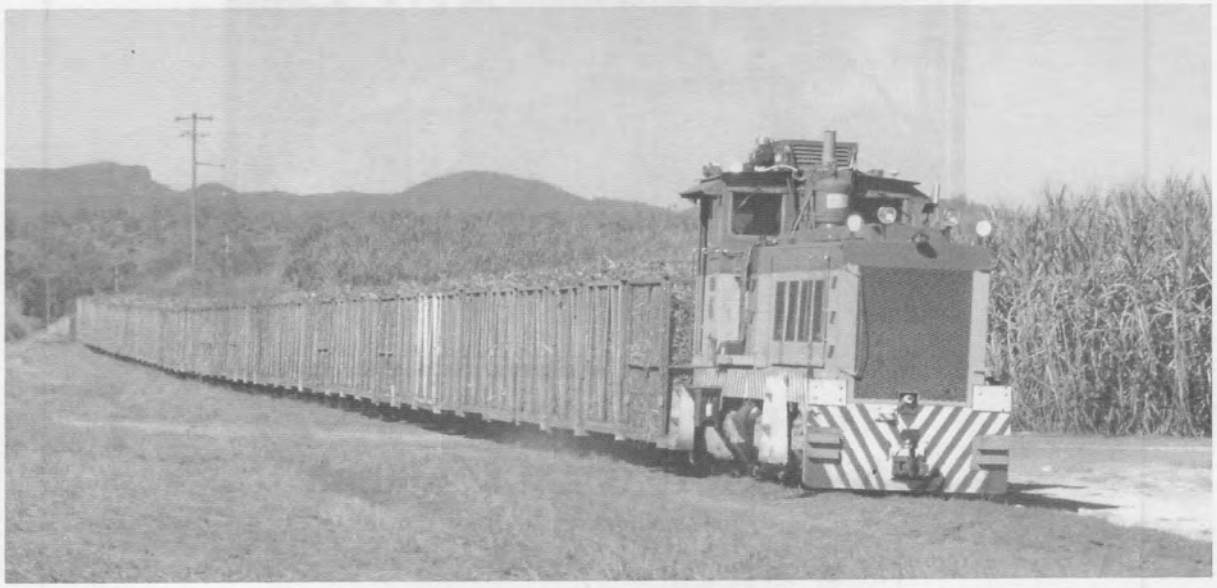
QUEENSLANDS SUGAR CANE TRAMWAYS-THEN AND NOW

By Carl Millington



Plane Creek mills 'D12' heads back to the mill with a rake of full's.

Photo: C. Millington

Before we look at the development of Queensland's sugar tramways, let's first have a look briefly into the history sugar cane in Australia.

What is sugar Cane?

Sugar cane belongs to a vast family of grasses which contains some 5,000 species. Included in this family are other economic crops such as barley, wheat, oats, maize, rice and sorghum.

Sugar cane has the ability to trap the sun's energy and convert that energy into sucrose (sugar) more effectively than most other crops.

Sugar is made in the leaves of the sugar cane plant by a natural process called photosynthesis. Chlorophyll, the green colouring agent in leaves, absorbs the energy from sunlight and causes carbon dioxide from air to combine with water drawn up by the roots of the plant. The result is sugar which the plant uses to grow and which it stores as a sweet juice in its fibrous stalks.

Mature sugar cane crop.

Photo: C. Millington

The history of sugar

The first record of sugar cane in the Western world was in 327 BC. Sugar cane is mentioned in Chinese and Russian records between 200 and 600 AD. In 1943, Columbus, on his second voyage from Spain, carried a single variety of sugar cane to Santo Domingo where it was spread by early colonisers to Mexico, Brazil and Cuba. During the next three centuries, sugar cane spread throughout the tropical world. Queensland has 70 different varieties of sugar cane.

The history of sugar cane in Australia

Sugar cane was first introduced into Australia, with the arrival of the First Fleet in 1788. Early attempts to grow sugar cane around Sydney Cove, Port Macquarie and Norfolk Island were not successful. It was not until the 1860's that a viable sugar cane plantation and raw sugar mill was established at Ormiston near Cleveland, Brisbane by Captain Louis Hope.

By the 1880s, cane lands were being developed further along the Queensland's tropical coast and along the northern coast of New South Wales.

The sugar industry today

Today sugar is Australia's second largest export crop and Queensland's largest rural commodity. Australia has 4000 cane farm business's growing 32 to 35 million tonnes of cane which is crushed by 25 sugar mills to produce 4.5 to 5million tonnes of raw sugar. Australia produces four percent of the world's sugar and exports 12 percent of total global free sugar trade.

Australia also exports refined sugar and has a refining capacity of about 1.3 million tonnes annually. Export sales of refined sugar currently total about 263, 000 tonnes annually.

The Australian sugar industry is worth between 1.5 & 2.5 billion dollars to the Australian economy.

Tully Sugar Mill.

Photo: C. Millington

Cane Growing Areas

Sugar cane is grown on the coastal strip between Grafton in Northern New South Wales to Mossman in Far North Queensland. Between 1995 and 2007 sugar was grown and crushed

in the Ord region of Western Australia. The growing and milling areas are divided up into 6 districts, New South Wales, Southern (Rocky Point-Bundaberg), Central (Mackay-Proserpine), Burdekin (Ayr), Herbert (Ingham) & Northern (Tully-Mossman).

The sugar cane crop

Sugar cane is grown from 'setts' (cuttings from mature cane stalks) containing two or more eyes (growing points), planted in rows 1.5 metres apart.

After a few weeks, new shoots grow from the buds on the joints (nodes) of the setts and break through the surface of the soil. Each sett grows a stool (or cluster) of about 8 to 12 cane stalks. Sugar cane grows for 10 to 18 months before being harvested. Mature cane stands two to four metres high and is harvested between May and December.

Harvesting

The harvesting of sugar cane from the early pioneer days was all done by hand. The cane paddock would be burnt to remove the trash and vermin and gangs of hand cutters would cut and top the cane stalks. The whole stalks (or sticks) of cane would then be loaded onto carts or wagons for transport to the mill. During the 1970's hand cutting of green unburnt cane was done in some areas. The last hand cutting of cane was in 1978 at Nambour.

The first recorded mechanical cane harvester was produced in 1890 in the Bundaberg area. These early machines cut the cane into whole sticks. 120 years later, computer and GPS controlled air conditioned harvesters take care of the entire Queensland sugar cane crop. Today all cane is cut by mechanical harvester into 300mm long 'billets'. Burning of cane has also reduced greatly thanks to mechanical harvesting with 94% of Queensland's cane crop now harvested green.

Harvested cane needs to be 'crushed' within 18hrs of cutting to ensure maximum juice extraction.

Hand cutting of burnt sugar cane.

Photo: A. Harrer

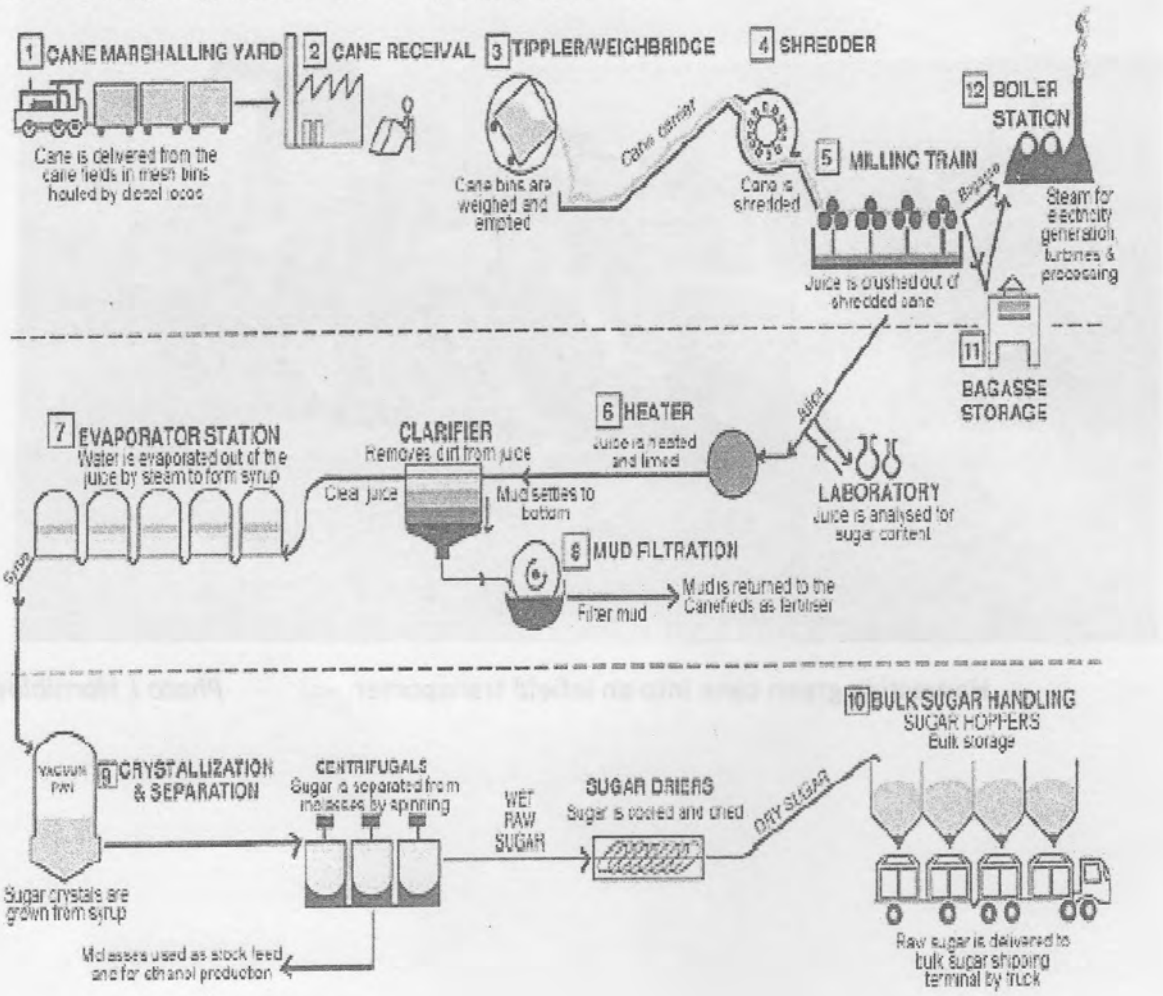
A modern AusToft 7700 tracked cane harvester.

Photo: C. Millington

Harvesting green cane into an infield transporter. *Photo L Horniblow*

Sugar milling process

The following diagram shows the sugar milling process.



Australia's Sugar Mills

Australia has 25 sugar mills to crush the 2010 crop. Of the 25 mills, 24 are full mills that crush the cane and produce raw sugar. The Tableland mill near Mareeba, in far north Queensland crushes and process to the syrup (juice) stage. The syrup is then railed to either Mulgrave or Babinda mills were the syrup is processed into raw sugar.

Several sugar mills have a refinery attached to produce refined sugars. These mills are Harwood (NSW), Millaquin and Racecourse (Qld).

Sugar cane from the Ord River area in Western Australia was crushed at the Kununurra sugar mill from 1995 until its closure in 2007.

The following table shows the mill types and cane/raw sugar transport modes.

State	Mill	Mill type	Cane receival*	Raw sugar transport	Port	Note
NSW	Harwood	Full	Road	Road		a
NSW	Broadwater	Full	Road	Road		a
NSW	Condong	Full	Road	Road		a
QLD	Rocky Point	Full	Road	Road	Brisbane	
QLD	Maryborough	Full	Road	Road	Bundaberg	
QLD	Isis	Full	Rail	Road	Bundaberg	
QLD	Millaquin	Full	Rail & Road	Road	Bundaberg	
QLD	Bingera	Full	Rail	Road	Bundaberg	
QLD	Plane Creek	Full	Rail	Rail	Mackay	b
QLD	Racecourse	Full	Rail	Road	Mackay	c
QLD	Marian	Full	Rail	Road	Mackay	
QLD	Farleigh	Full	Rail	Road	Mackay	
QLD	Proserpine	Full	Rail	Rail	Mackay	b
QLD	Inkerman	Full	Rail	Rail	Townsville	d
QLD	Kalamia	Full	Rail	Rail	Townsville	d
QLD	Pioneer	Full	Rail	Rail	Townsville	d
QLD	Invicta	Full	Rail	Rail	Townsville	d
QLD	Victoria	Full	Rail	Rail	Lucinda	
QLD	Macknade	Full	Rail	Rail	Lucinda	
QLD	Tully	Full	Rail	Road	Mourilyan	
QLD	Sth Johnstone	Full	Rail	Road	Mourilyan	
QLD	Babinda	Full	Rail	Road	Mourilyan	
QLD	Mulgrave	Full	Rail	Road	Cairns	
QLD	Mossman	Full	Rail & Road	Road	Cairns	
QLD	Tableland	Syrup	Road			

Notes; *a. Raw sugar from the NSW mills is processed at the Harwood refinery.*
b. Raw sugar is transported by QRNational to the Mackay Bulk Sugar Terminal.
c. Racecourse mill refines a percentage of raw sugar produced by the mill.
d. Raw sugar is transported by QRNational to the Townsville Bulk Sugar Terminal.
e. Sugar Syrup is transported by QRNational to Mulgrave or Babinda sugar mills for final process

Early transportation

The early days of cane transportation required farmers having to take their crop to the mill for crushing using horse drawn wagons and drays. Some farmers also used barges while in later years the motor lorry took over. By the late 1880's, farmers were no longer needed to deliver their crop to the mill, but to railway or tramway siding thanks to mills building tramways or using the government railways for cane delivery.

Horse drawn cane transport, Bundaberg area.

Photo: Courtesy John Oxley Library collection

First Privately Owned Tramway

Mackay sugar planter, John Spiller, is credited with pioneering the use of tramways in Queensland sugar producing areas. He commenced building a tramway on his Pioneer Estate plantation, Mackay in 1879 for the purpose of conveying firewood and sugarcane to his mill.

John Spiller built another tramway in 1880 on his River estate plantation, using a vertical boiler locomotive built locally at the Victoria Foundry, Mackay.

The tramway revolution has begun

With wealthy milling companies entering the Australian sugar industry in the 1880's they saw the benefits of building tramways to guarantee regular cane supplies to their mills. A good example of one of these larger mills investing in tramways is Mourilyan mill, which was erected in the 1880's and by 1884 had 11 kilometres of permanent 2 foot gauge tramway

and 4 kilometres of portable tramway. Two locomotives pulled the 60 wagons that kept the mill supplied with sugarcane.

Further mills followed the lead of Mourilyan mill by constructing tramways. Several mills that had access to the Government or private 'shire' tramways at the time, added sidings within their mills so that these systems could deliver cane from the farms to the mill.

To convey cane to the government railway sidings, isolated tramways were constructed. An example of this was Plane Creek mills Carmilla tramway. In later years these isolated tramways would be linked.

Early tramway construction

Early tramway construction consisted of rough hand cut timber sleepers and light gauge rail. The general formation of these lines basically followed the lie of the land with very steep grades and tight curves. As tramway practices improved in the early years, mills started to pay more attention to the formation and routes that their tramways would take, this way they could haul bigger loads and have less down time waiting for cane supply.

The next hurdle to overcome was track gauge. Although the first mills to build tramways had elected to use two foot gauge as equipment was available at the time, some others went for three foot six, as their mill was near a government or shire tramway of the same gauge and they could purchase second hand government equipment. At one stage a gauge of four foot was investigated, but dismissed on the grounds that it was too large and equipment hard to come by. In the end a gauge of two feet was settled on as the 'standard' gauge for sugar mill tramways, owing to its easiest to traverse undulating land and that equipment to suit this gauge was available 'off the shelf' from overseas, and in later years, locally.

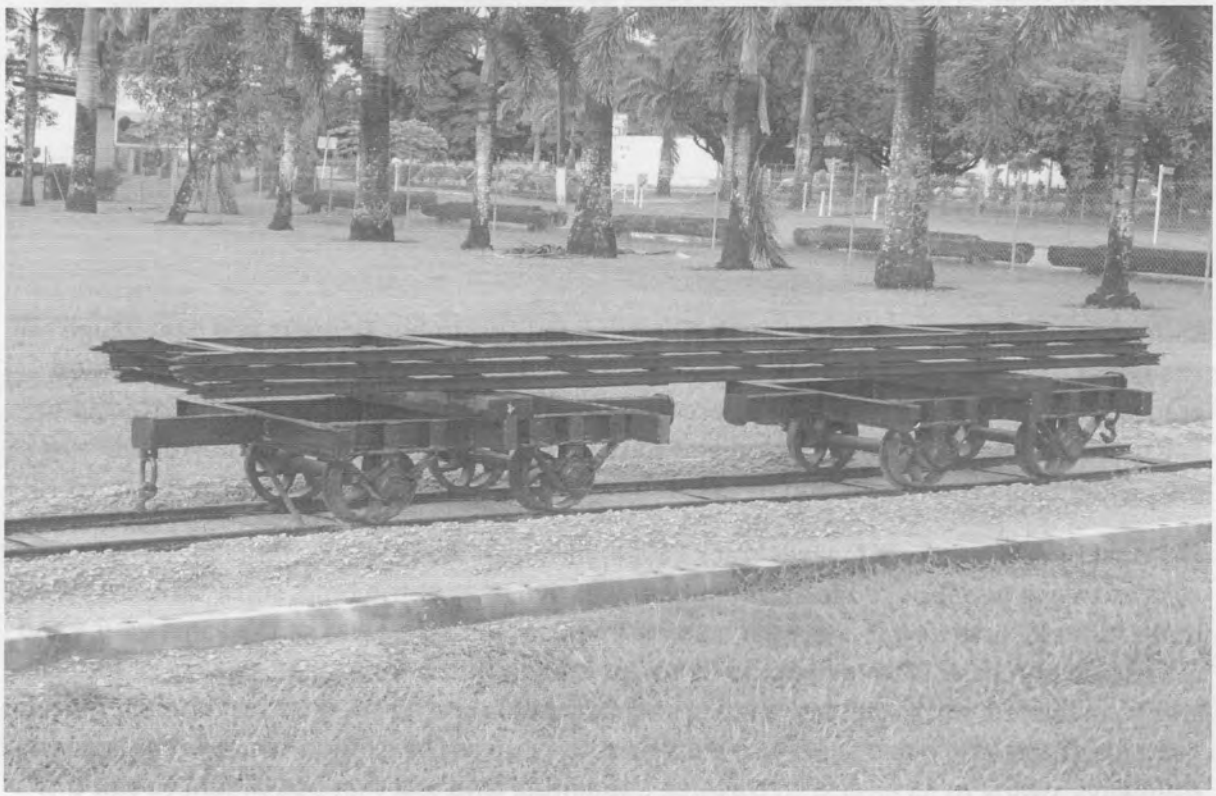
Today only one sugar mill doesn't use two foot gauge tramways, and that is Pioneer mill in the Burdekin. Pioneer mill stuck with three foot six gauge as they already had an established tramway using three foot six gauge.

Most mills also had several 'horse' lines. These lines would be of very poor construction or across unstable ground. Locomotives were not allowed to traverse these lines, so horses would pull the trucks. Surprisingly today, many areas still have horse lines. Only difference is that the horse has been replaced by a tractor.

Portable track

Before the advent of mechanical cane harvesters, all cane was cut and loaded as wholestalks by hand. To facilitate easier loading of the cane trucks by the cane cutting gangs, portable tramway would be laid from a spur off a permanent tramway and into the cane paddock. Portable tramway is much like the 'set track' you would find on a model railway. Portable track came in straight and curved 'panels' and was easily lifted by two men. Portable points were also manufactured. Only the cane trucks were allowed to traverse the portable track. Small 'bolster' wagons were used to carry the portable track

panels from paddock to paddock via the permanent tramway. The last known use of portable track was at Moreton mill in 2003! Farmers that loaded cane at 'Perseverance' siding used panels of straight portable track to extend their dead end siding. Some farmers still have portable track stored on their farms, while some mills use straight panels of portable to store cane bin wheelsets.



Tully mill has on display these 'bolster' wagons carrying portable track.

Photo: L. Horniblow

MODERN TRAMWAY CONSTRUCTION

Today's tramway is a smaller version of the government owned mainlines, sometimes even better! Concrete and steel sleepers have replaced timber and many small and tight curves have given way to larger radius curves with cant to reduce wheel and rail wear.

To aid in maintaining their tramways in tip top condition, mills have invested in state of the art track machines. All of Queensland's 19 mills that use cane tramways have access to track machines like, sleeper replacers, tie cranes & ballast regulators. Some of the mills with very large or interconnecting tramway systems have invested in state of the art computer controlled track tamping machines.

Well maintained tramway.

Photo: C. Millington

A line up of track machines at Plane Creek mill. R-L Track tamper, Sleeper replacer, ballast regulator.

Photo: L. Horniblow

Cane trucks to cane bins

To cart the cane from the paddocks to the mill, small 4 wheeled wooden flat trucks with wooden spigots in the ends were used. The whole sticks of cane would be placed across the wagon and a wire rope or chain used to tie the load down. In later years the whole stick trucks were made out of all steel construction. These wagons were unsprung and unbraked, although several mills did have hand brakes fitted to aid in descending grades. Today some mills still use former whole stick trucks in navvy service, the most common use is to cart sleepers.

Preserved steel whole stick truck at Tully mill.

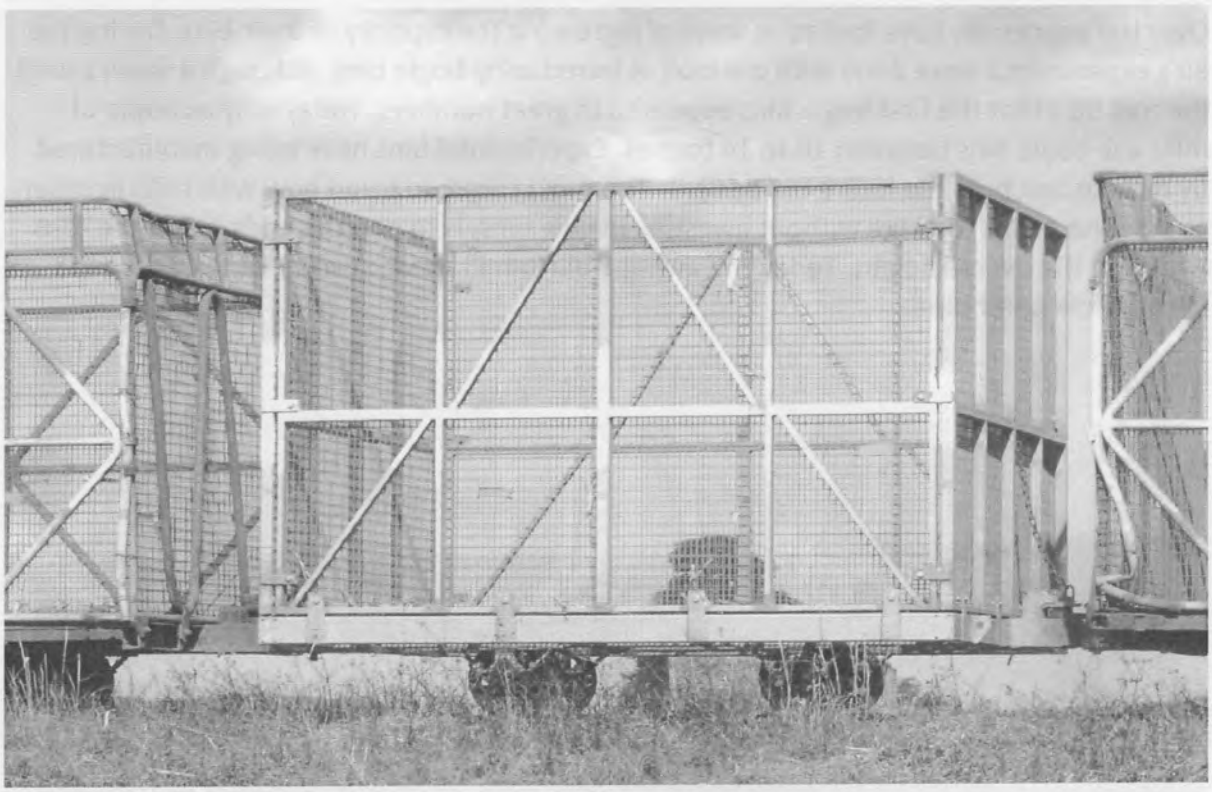
Photo: L. Horniblow

With the advent of mechanical harvesting, mills had to invest in 'bins' to cart the chopped billets of cane. Early examples of these bins consisted of a timber or tubular steel frame covered with mesh mounted on a former 4 wheeled whole stick truck, 'wire baskets on wheels'. As tonnages increased, and the older bins started to wear out, mills started to invest in all new bin fleets made of either square or tubular steel. Of course investing in new bin fleets meant major changes to the mill yards and the tippler arrangements, as the new bins in most cases were bigger in length, height and carrying capacity. All cane bins are un-braked.

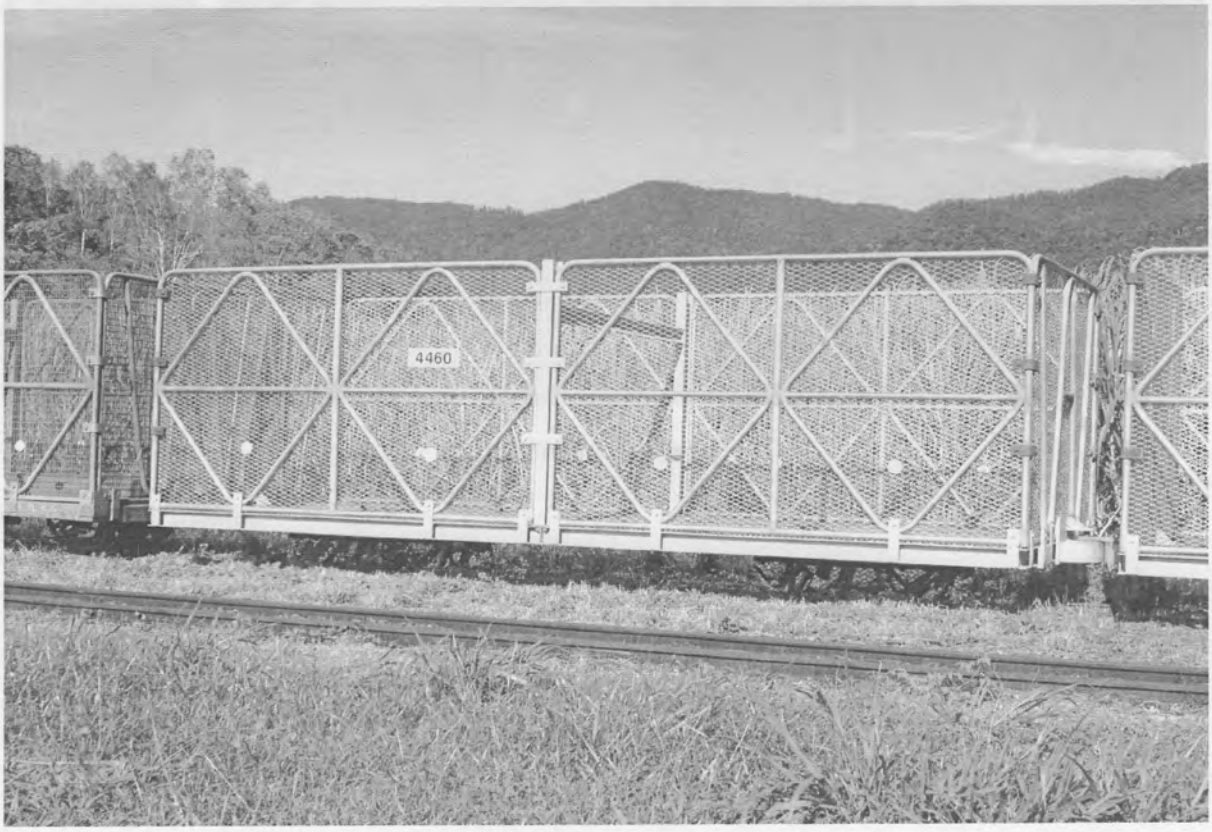
Over the years mills have looked at ways of increasing the capacity of their bins. During the 80's experiments were done with the look at introducing bogie bins, although it wasn't until the mid 90's that the first bogie bins appeared in great numbers. Today only a couple of mills use bogie bins between 10 to 14 tonnes. Experimental bins have being manufactured by mills to test possible future bin designs. The most common trend now with mills in order to increase a bins tonnage without investing in new bins, is to pop the ends out at the tops and raise the overall height. Today the average bin in mill service carries between 4 and 6tons of chopped cane.

Herbert 4 ton bin.

Photo: C. Millington



South Johnstone mill made this experimental bin in 2008 based on the old Moreton mill bins.



10 ton bogie bin at Mulgrave mill

Both photos: C. Millington

Mossman mill took a totally different path when it went about investigating replacing its aging bin fleet in the late 60's. Instead of keeping with the traditional 4 wheeled bin, they elected to use 'canetainers'. These canetainers are basically a 20 foot open top shipping container that sits upon a bogie framed wagon and can be transhipped between rail and road at sidings. The first of the rail canetainers was in service for the 1971 season.

Mossman Mill 'canetainer'.

Photo: L. Horniblow

Bulk sugar wagons

Before the advent of we now know as today's bulk handling methods, mills would pack their raw sugar into canvas bags. These bags would be loaded onto a rail vehicle or truck for transportation to the terminal or refinery. Today all raw sugar is stored in bulk 'bins' and transported in sugar 'boxes' by either road or rail. Over the years only five mills used purpose built bulk sugar 'box' wagons to transport raw sugar from the mill to the port using two foot gauge tramways. The former Queensland Government Railways Innisfail Tramway railed bulk sugar from South Johnstone, and the former Mourilyan & Goondi mills to the bulk sugar terminal at Mourilyan Harbour. After the sale of the QGR Innisfail Tramway to the mills in 1977, the mills continued to rail raw sugar, but all this came to an end when the last

of the 3 mills to use rail transport, Mourilyan railed bulk sugar for the last time in 1997. Road transport has now taken over.

Sucrogen's (formally CSR Sugar) Victoria & Macknade mills in the Herbert district continue to rail raw sugar to the terminal at Lucinda.

Macknade mill No 14 arrives at Lucinda with a train of bulk sugar.

Photo: C. Millington

Navvy wagons

Like their bigger cousins, sugar mills have a variety of 'service' or 'navvy' wagons. Most of these wagons where converted from old whole stick trucks or cane bins. Some mills have even converted former locomotives, both steam and diesel to navvy wagons. Some mills have also constructed purpose built wagons from scratch.

Navvy wagons can consist of bolster wagons to new carry track panels, old whole stick trucks to carry sleepers, shipping containers mounted on bogies, ballast hoppers, weed spray wagons and grass mowers.

Pioneer mill being the only three foot six gauge mill, uses former Queensland and Commonwealth Rail rollingstock for track maintenance.

Mackay Sugar's 'Chelona' at Marian mill with a navvy train.

Photo: L. Horniblow

LOCOMOTIVE DEVELOPMENT

The first locomotives built were very primitive in design and construction. The first recorded purpose built sugar tramway locomotive, built by the Victoria Foundry of Mackay was for John Spillers River estate tramway, and consisted nothing more than a wooden chassis with a vertically mounted boiler. It wasn't until more milling companies sought to use tramways and tonnages grew that they looked to the more conventional steam locomotives. Well know locomotive builders such as Decauville, Krauss & Fowler soon latched on to the market. In later years local companies Perry Engineering and Bundaberg Foundry built some of the last steam locomotives for the sugar industry.

A Qunaba mill Perry loco at work.

Photo: Unknown

The steam Claytons

Mills that had connections to the government railway usually had a loco of the same gauge for shunting the wagons delivered by government trains. Nearly all these locos were bought second hand from either the government system or from private companies. Purchasing of second hand two foot gauge locomotives from other sugar mills or industry was a common practice. An example of this is Isis Central Mill purchasing one of the Sharp Stewart 0-4-2T from the North East Dundas tramway in Tasmania and rebuilt it into a tender loco.

Fairymead sugar mills No 6 in late 1890's an ex QGR A10 class.

Photo: Courtesy John Oxley Library collection

The internal combustion era

Many major worldwide industrial companies sought to 'modernise' their locomotive fleets in the early 1900's once they had seen the benefits of the internal combustion engine. Small petrol powered locomotives built by companies like Motor Rail of England, had been used during World War One to transport supplies to the front lines over 'tramways', and as many of these ran on two foot gauge track, found their way to Australia at the completion of hostilities. Although not as powerful as the steam locomotives in use at the time, they did replace some yard duties that were done by horses and worked navvy trains.

With the development of the diesel engine in the mid 1900's together with mechanical transmissions, a new breed of 'light' locomotive was available that could handle small loads and grades. The Second World War provided many surplus locomotives one of these being a locally produced 4 wheeled locomotive from Malcolm Moore. As the first diesel locomotives were small in size they could only handle small loads and mills mostly had them working the lighter lines or on yard or navvy duties.

Mackay Sugar's aptly named 'Little Baldwin' still in service after 47 years.

Photo: L. Horniblow

As diesel engines and transmissions improved, mills started to look at larger 'diesel' locomotives to take over the roles of the high maintenance steam locos. British company E. E. Baguley offered several designs in the early 1950's. Local locomotive builders also saw the

potential of offering locomotives to the cane industry and with this Clyde Engineering built its first cane loco in 1954 for the former Hambledon mill. Today this loco is still in service as Macknade mills No 16.

Macknade sugar mills No 16. The first Clyde built cane field locomotive.

Photo: L. Horniblow

South Johnstone sugar mill 22 is a 45 year old ComEng product.

Photo: C. Millington

Another local railway equipment manufacture to see the potential of building cane locos was Commonwealth Engineering (ComEng) who joined the ranks by supplying Mulgrave mill with 5 locomotives in 1955. With the purchase of these 5 locomotives, Mulgrave became the first mill to fully dieselise.

E.M. Baldwin & Sons of Castle Hill NSW entered the cane field locomotive market in 1963 with a small 4 wheeled navvy loco for North Eton mill. Their first 'mainline' loco was built in 1965 for the former Moreton sugar mill. For their first 3 mainline locos, Baldwin's used former Ruston locomotive frames. From then on all locomotives were built from scratch.

The first E.M. Baldwin 0-6-0. Former Moreton mill loco 'Bli-Bli'.

Photo: C. Millington

Enter the bogie Baldwin

The year is 1972, the month June, and a new revolution in cane field locomotive development has hit the tracks, with E.M. Baldwin & Sons of Castle Hill, Sydney, delivering the first bogie diesel cane locomotive to the sugar industry. 'Kilrie' as she was named by Kalamia mill weighed 26 tons and was fitted with a 365Hp engine. The day of the rod coupled cane loco was coming to an end. This type of locomotive allowed for heavier trains with reduced wear and tear on the track. The only other major competitor to Baldwin's at the time, Commonwealth Engineering, supplied a bogie loco to Cattle Creek mill in 1977, but never matched the quality of the Baldwin product and thus exited the cane locomotive market.

The pioneer bogie Baldwin loco. Now working for Inkerman mills as 'Iona'.

Photo: L. Horniblow

Other players

Like every industry, competition to supply equipment is ripe. The early 1990's found several mills looking at obtaining larger locomotives to haul longer and heavier trains, but due to low sugar prices and rising operational costs, money to spend on new equipment was scarce. Several mills however did find some funds for the purchase of new locomotives. By this time the original big 3 major suppliers, Clyde, ComEng & E.M. Baldwin's had exited the cane field business. New players like Sydney based company Eimco supplied new locos to Fairymead and Marian mills in 1990. Prof Engineering of Zimbabwe supplied South Johnstone Mill with a new loco in 1991, based on the Eimco design.

The last brand new purpose built cane loco for the sugar industry was delivered to Invicta Sugar mill in August 1991. This loco was built by Sydney Company Westfalia, who had purchased the rollingstock business from E.M. Baldwin.

Mackay Sugar's Eimco built 'Farleigh'.

Photo: L. Horniblow

Brand new, second hand locomotives

The late 80's, early 90's found Queensland Railways withdrawing their Walkers built DH class shunting locos. The Sugar Research Institute saw the possibility in converting these locomotives for use on the sugar tramways, so with the cooperation of two mills, who agreed to purchase a locomotive each, had them rebuilt by their original makers, Walkers. Although the first conversions were nothing more than converting the wheel gauge from three foot six to two foot, and removing some redundant equipment, the idea proved a success. With other mills seeing the benefits of a cheap locomotive conversion to replace aging equipment, they quickly sought about buying surplus DH locomotives from Queensland Rail. Around the same time the NSW railways were also disposing of surplus Walkers built 73 class shunters. These locos and simular ones from Western Australia's Westrail, have provided sugar mills with an opportunity to replace older locomotives with new low cost locomotives.

The average weight of an 0-6-0 cane loco is between 15 and 24 tons. Bogie locos are between 24 and 40 tonnes. Top speed is between 25 and 40 kph.

Bingera mills converted QR DH locomotive 'Kolan'.

Mackay Sugar's 'Dulverton' a former NSW 73 class locomotive.

Both photos: L. Horniblow

It's interesting to look at mill loco fleets over the years, particularly in the early days of dieselisation. Mills like Mulgrave for example stuck with the ComEng product, where mills like Racecourse stuck with an all Clyde fleet. Some mills bought bogie Baldwin's, while others converted ex Government locos. As mills closed or merged loco fleets changed quite considerably.

The following tables show the changes of Mulgrave Central mills locomotive fleet between 1990 and 2010. The biggest change was the absorption of the Hambledon mill fleet after that mill closed in 1990 and the retirement of older locomotives.

1990

No	Wheel	Make	Builders No	Year	Type
1	0-6-0DM	Bg/RMP	3377	1953	
2	0-6-0DH	ComEng	A1001	1955	AA
3	0-6-0DH	ComEng	A1003	1955	AA
4	0-6-0DH	ComEng	A1004	1955	AA
5	0-6-0DH	ComEng	A1005	1955	AA
6	0-6-0DH	ComEng	A1006	1955	AA
7	0-6-0DH	ComEng	B1010	1956	AA
8	0-6-0DH	ComEng	A1926	1958	AE
9	0-6-0DH	ComEng	FC3473	1964	FC
10	4wDM	EMB	6-881-1-6-64	1964	DH6-PS
Pie Cart	4wDM	Mulgrave		1962	

2010

No	Wheel	Make	Builders No	Year	Type	
2	0-6-0DM	ComEng	A1001	1955	AA	
3	0-6-0DM	ComEng	A1003	1955	AA	
4	0-6-0DM	ComEng	A1004	1955	AA	(a)
5	0-6-0DM	ComEng	A1005	1955	AA	
6	0-6-0DM	ComEng	A1006	1955	AA	
7	0-6-0DH	ComEng	B1010	1956	AA	
8	0-6-0DH	ComEng	A1926	1958	AE	
9	0-6-0DH	ComEng	FC3473	1964	FC	
10	4wDM	EMB	6-881-1-6-64	1964	DH6-PS	
11	0-6-0DH	EMB	4413-2-8-72	1972	DH18	(b)
13	0-6-0DH	Clyde	64-316	1964	HG-3R	(b)
14	0-6-0DH	Clyde	56-86	1956	DHI-71	(b)
15	0-6-0DH	Clyde	58-190	1958	DHI-71	(c)
16	0-6-0DH	Clyde	56-96	1956	DHI-71	(b)
18	0-6-0DH	Clyde	64-379	1964	HG-3R	(b)
19	0-6-0DH	Clyde	65-435	1965	HG-3R	(b)
Gordonvale	B-BDH	BFE	DH13	1995		(d)
Mulgrave	B-BDH	BFE	DH31	1995		(e)
(Pie Cart)	4wDM	Mulgrave	1962			
	4wDM	MR	10450	1954	32/42hp	(b)

(a). Partly dismantled 2001. Out of use 2000.
(b). Ex Hambledon Mill 1991.
(c). Ex Hambledon Mill 1991. Partly dismantled 1998. Out of use 1998.
(d). Ex QGR DH13 GH500 595 of 1968, 1994. Converted Bundaberg Foundry 1995.
(e). Ex QGR DH31 GH500 612 of 1969, 1994. Converted Bundaberg Foundry 1995.

Brake Vans

One of the biggest challenges facing sugar mill loco crews is controlling a train of un-braked bins, particularly down steep grades. To provide extra braking to trains, several mills invested in remote controlled brake vans. A brake van is basically a 'brick on wheels', on average weighing between 12 and 20 tonnes. A small diesel engine powers an air compressor and at the command of the locomotive driver through radio signals interpreted by electronics applies or releases the brakes. The first brake van was built in 1965 by Clyde Engineering, while E.M. Baldwin has also supplied brake vans. Several local engineering companies have supplied brake vans to mills using former Queensland Rail wagons. A couple of mills have converted former cane and government locomotives into brake vans.

Mulgrave mills E.M. Baldwin built brake van.

Photo: C. Millington

Remote control

Another innovation of the Queensland sugar industry was the use of remote controlled locomotives, in 'slave' train configurations, thus providing faster and more efficient services over longer routes. A second unmanned locomotive is placed near the middle of the train, and is operated by the driver on the lead locomotive. Bingera mill was the pioneer at running slave trains over its line from Wallaville in 1975. Mackay sugar & Plane Creek mill operate slave trains over their longer routes.

Remote Shunting Unit or RSU for short was introduced by CSR (now Sucrogen) in an attempt to cut costs in the early half of the decade. Instead of having a crew of two (driver & fireman) the RSU works on the principle of Driver Only Operation (DOO). At sidings the driver gets off the locomotive with a remote control box and moves the locomotive from the ground.

Plane Creek mills 'Allan Page' in slave mode.

Photo: C. Millington

Government & Shire railways

As mentioned before, Government and Shire tramways have played a major part in the development of the sugar industry in Queensland and still do to this day, although the Shire tramways are now a part of history having being amalgamated with the Government owned network many decades ago.

Mention had being made about the former Queensland Government Railways built and operated Innisfail tramway. This tramway not only hauled bulk sugar to the terminal at Mourilyan Harbour, it also hauled cut cane from the farms to the mill at South Johnstone.

Prior to Plane Creek mill opening their Southern Cane Railway from Koumala to Karloo (Carmilla), QR brought in sugar cane for processing.

Today QRNational (QRN), the freight arm of Queensland Rail, transports bulk sugar from the 4 Burdekin mills and 2 Mackay district mills to Townsville & Mackay bulk sugar terminals respectively.

The sugar syrup from the Tableland mill at Arriga is railed by QRN to Babinda or Mulgrave mills for final processing.

Molasses, a sugar mill by-product, is railed from several mills by QRNational.

A QRNational bulk sugar train loading at Plane Creek mill.

Photo: C. Millington

What will the future hold for mill tramways?

Some analysts say that the Australian sugar industry is dying, and some say it's going ahead in leaps and bounds. No matter what is said, for the forcible future, there will be a sugar industry in Queensland and New South Wales.

In past 15 years we have seen 9 mills close either due to rationalisation or other events, like the deregulation of the industry. Deregulation allowed rival mills to poach cane supply from each other but also brought about the closure of several mills. One upside of deregulation was the need by some mills to expand their tramways to ensure supply.

Land use is always a big issue with the sugar industry, particularly in populated areas like Mackay and Cairns. With ever increasing population and the need for housing, cane farms make easy targets for developers.

Then there's the generation game. With our mining industry paying so well, many young offspring of cane farmers are steering away from a life on the land to a lucrative job in the mining sector.

It's doubtful that we will see new locomotives built for the sugar industry in the foreseeable future as the current focus on mills now cogeneration & bio fuels.

Whatever happens in the future, sugar mills will still have to invest in their tramways.

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For a more information about the Queensland's sugar mills and tramways have a look at the CaneSig website: http://www.zelmeroz.com/canesig/

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