



Mackay Sugar

Building a Renewable Biomass Cogeneration Project



Mackay
Sugar
Limited

6th August 2009



Who is Mackay Sugar Limited ?

- One of QLD's largest private companies
- Produces around 20% of Australia's raw sugar.
- 950 cane grower shareholders
- Process between 5.5 – 6.5 million tonnes of cane each year.
- Crushing season for 20 – 23 weeks from June to November.
- Produce 850,000 tonnes of raw sugar and 200,000 tonnes of molasses each year.
- 540 permanent employees and additional 340 seasonal employees.



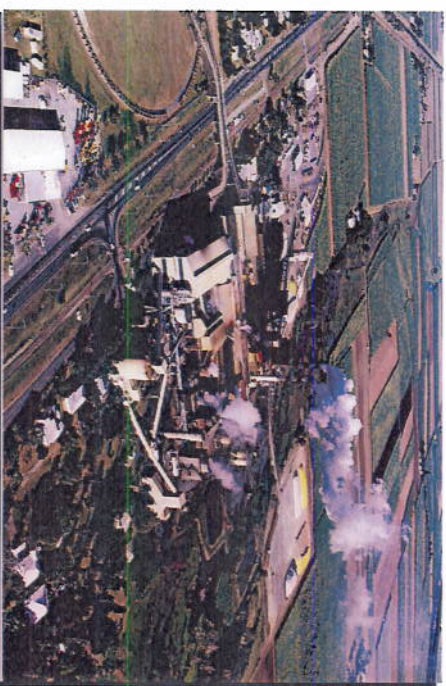
**More than 750 kilometres of mainline cane railway
50 locomotives haul cane to mills in 10,000 bins**





Joint Venture Owners in Refining Business

- 25% owner of Australia's largest sugar refining business – Sugar Australia.
- 25% owner of New Zealand's only sugar refining business – New Zealand Sugar Company.
- Other Owner is CSR Limited.
- Australia's largest sugar refinery is at Mackay Sugar Racecourse Mill site.
- Raw sugar is sold by Mackay Sugar to Sugar Australia.





Cogeneration Project Summary

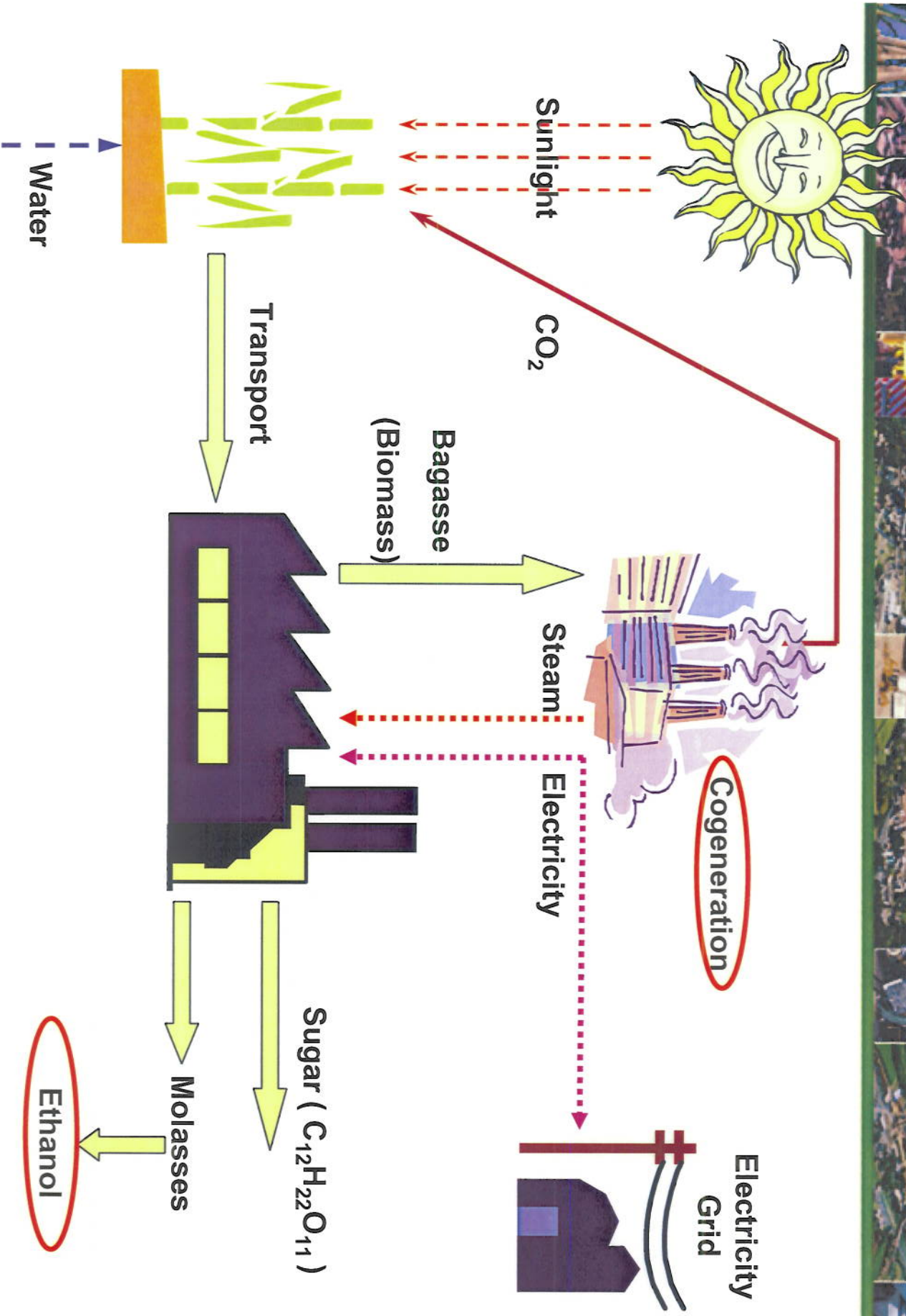
- Mackay Sugar is ready to commence construction of a 36MW renewable biomass Cogeneration Plant in Mackay.
- This one plant will power 33% of Mackay city's power requirements.
- Engineering, relevant approvals and capital costs have been basically finalized.
- Problem is the 20% renewable legislation delay which is affecting ability to finalize a Power Purchase Agreement with electricity retailers. CPRS uncertainty also.
- Cannot progress project until certainty around legislation occurs.



Mackay Sugar

**Sugar Cane has a
Significant Energy
Value !**

6th August 2009





What is Sugar Cane Bagasse?

- Bagasse is the fibrous material remaining after the sugar juice is extracted.
- It has a high calorific value and is burnt in large boilers to generate steam which is then turned into electricity.
- Sugar mills generate all their own electricity and export small amounts to local power grids now.
- Mackay Sugar produces around 2 m tonnes of bagasse pa.
- 2mt bagasse = 20PJ energy = 700,000 t.coal = 50% of energy used in all QLD mining operations.
- Most of this bagasse is used to generate steam/electricity to operate the sugar mills.
- The bagasse is 100% renewable biomass fuel.



Generation of Electricity from Bagasse?

- Mackay Sugar currently stores 90,000 tonnes bagasse each year at end of each crushing season.
- This is used to generate steam/electricity for Australia's largest sugar refinery – at Racecourse Mill.
- This bagasse offsets the need to burn coal. This is a lower cost fuel but also much more environmentally friendly.
- The income generated from electricity is shared with growers through a unique cane payment formula.
- The bagasse will also eventually generate steam and electricity for a 60 ML “green” ethanol plant at Racecourse Mill.
- An \$8m Biorefinery pilot plant is currently under construction at Racecourse → cellulosic ethanol within 5 yrs?



Mackay Sugar

**Large Cogeneration
Project is Ready to
Commence Construction**

6th August 2009



Mackay Sugar Project- Major plant

Power plant (Austrian Energy)

- 150t/h, 80bar, 525°C steam boiler and deaerator
- 36MW condensing steam turbine generator
- 70t/h condensor, cooling tower and pumps
- Coal plant and moving grate

Auxiliary plant

- Pressurised condensate system
- Improved evaporator steam efficiency measures
- New control and switchrooms
- Ergon Interconnection
- Extra bagasse storage facility



Project Outputs

- **206,000 MWh pa of Electricity**
 - Enough electricity for 33% of Mackay's power
 - Consistent and reliable output for full year (50 weeks)
 - Retailer pricing **uncertainty due to CPRS rules**
 - **198,000 pa Green Credits (RECs)**
 - Reduces CO₂ Emissions by 200,000 tonnes per year
 - Sell into the proposed Federal 20% RET market
 - Retailer pricing **uncertainty due to 20% RET rules**
- * **Financial Impact**
- \$112m capital
 - Net operating cash flow expected > \$23m pa. (10% of raw sugar revenue.)
 - 270 construction jobs
 - Diversification around sugar milling business



Greenhouse Benefits

- **Emission Savings**

Cogeneration Plant - 200,000 tonnes CO₂ pa (displaced electricity)

Ethanol Plant - 153,000 tonnes CO₂ pa (displaced E10 petrol)

Total Savings - **353,000 tonnes CO₂ pa.**

- **MSL Business Emissions (Current estimates)**

Milling & Cane Transport - 110,000 tonnes CO₂ pa

Canegrowing - 255,000 tonnes CO₂ pa

Total Emissions - **365,000 tonnes CO₂ pa**

After Cogeneration Project – Business will have reduced emissions by 55%

After Cogeneration + Ethanol – Business will have reduced emissions by 97%



Current Status- Cogeneration

- Cost ~ \$112m
- Design/contracts well advanced:
 - Austrian Energy & Environment (Power plant EPC)
 - BOP design complete and specs ready for tender
- Approval planned for October 2009 (subject to PPA)
- 36 month construction period
- Power purchase agreement
 - - Export: *waiting on CPRS scheme legislation*
 - - RECs: *waiting on 20% RET scheme legislation*
- \$9.0m QREF Grant offer
- Discussions with Ergon (interconnection)
- Project financing well advanced



Racecourse factory site

Bagasse storage pad

Boilers & pow

Bagasse bin

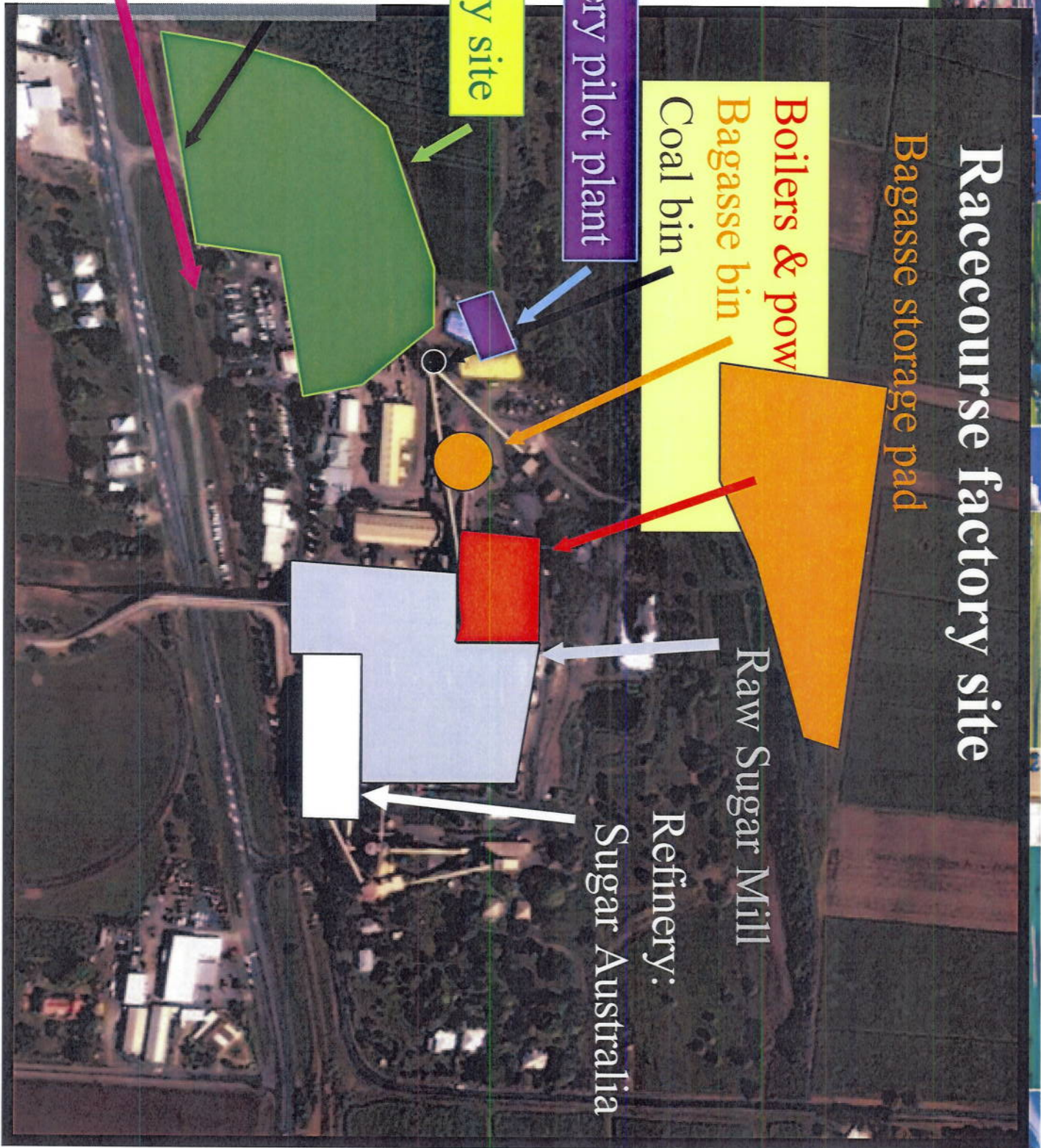
Coal bin

Biorefinery pilot plant

Distillery site

Dedicated
entrance to
Highway

QR

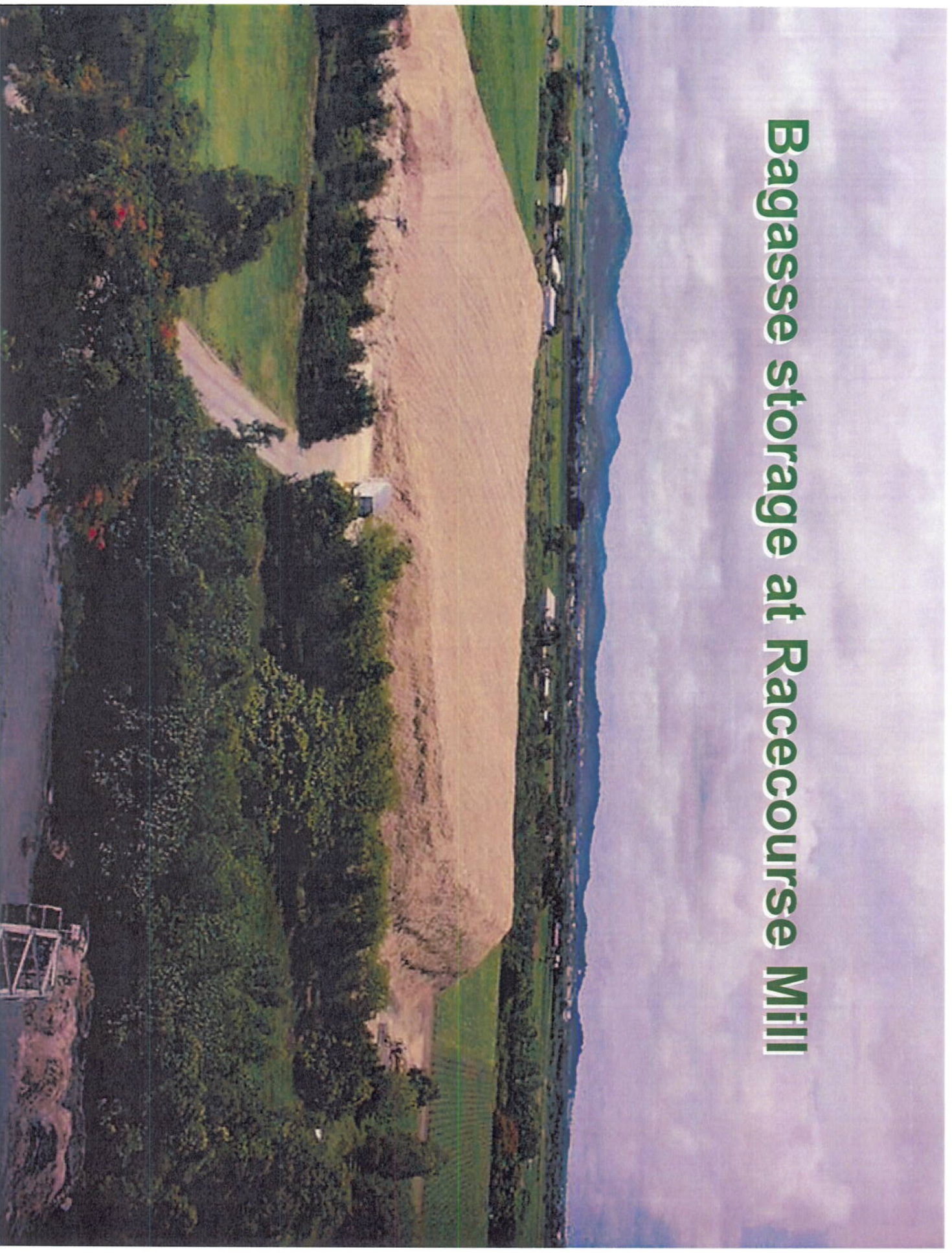


Raw Sugar Mill

Sugar Australia

Refinery:

Bagasse storage at Racecourse Mill





Mackay Sugar

**The 20% RET
Legislation is Critical
to Our Project !**

6th August 2009



- **2% MRET (9,500GWh) scheme effective, but too low**
 - Target easily met, REC prices have dropped
 - Retailers won't commit to long term REC contracts unless target is increased and regulations are known
 - 20% RET (45,000GWh) scheme would secure investments
- **CPRS will not provide sufficient revenue for Renewable projects**
 - Wind and sugar mill bagasse projects are acknowledged as the lowest cost renewables; but large capital cost increases over recent years
 - Mackay Sugar needs ~\$120/MWh for a viable project (this is considered the lowest cost large sugar mill project in Australia)
 - QLD pool price ~\$40/MWh
 - With carbon permits valued at say \$30, wholesale electricity prices could be expected to rise by about \$30/MWh under a CPRS (it will be less, due to the Electricity Sector Adjustment Scheme concessions to coal generators)



Legislation Delay Major Impact on Project Viability ?

- Capital costs increases:
 - 20 yr records show 7% pa ave increase in new plant cost
 - Mackay District has very high construction costs
 - Critical path items such as turbine have 36 month waiting periods
 - Interconnection with Local Grid has a long lead time (Ergon)
 - Current Financial volatility difficult to obtain large debt funding.
- Uncertainty over Government renewable electricity schemes:
 - Market: 20% MRET is essential
 - Retailers not offering acceptable black/green pricing with uncertainty over legislation
 - Urgent need to commence construction.



The Message We Would Like to leave with You ?

- Mackay Sugar is ready to commence construction of a 36MW renewable biomass Cogeneration Plant in Mackay.
- This cannot occur without certainty around the 20% RET legislation. The CPRS will assist the project.
- Our proposed project will supply a significant “green” quantity of electricity to Mackay City which is in a rapidly developing area (pop. ~90,000).
- Mackay Sugar currently shares its electricity and molasses revenue with its growers – any Cogeneration and Ethanol Plant will provide a diversified income base to all stakeholders.