

**SUGAR RESEARCH AND
DEVELOPMENT
CORPORATION**

**CLEAN CANE
WORKSHOP 2000**

REPORT

*Dr. Michael F. Wilson
Canham Wilson & Associates Pty Ltd
GPO Box 1024, Brisbane QLD 4001
Tel: 3399 6599 Fax: 3399 6646 Email: canhamwilson@uq.net.au*

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1. INTRODUCTION

1.1 Background

The Corporation has identified clean cane as a strategic issue that transcends several of its programs of research.

For the industry, clean cane is a challenge on which growers; harvesters and millers have differing perspectives. There is also a strong social aspect with the ability of mills to penalise dirty cane and the pressure towards the end of the season to keep cutting in the wet to truncate the season length. The answers thus are not clinically functional or economic. The solutions may have trade-offs. Pragmatism may interfere with idealism. Dirt or trash in cane happens in the field but does its damage or has its effect primarily in the factory. Penalties discourage co-operation with management of the problem

The recent history of research in the industry into the production of clean cane has seen several industry participants take polarised views. While a healthy contest for position and research funding always assists the resolution of an issue, the polarisation of opinion and support for directly contradictory positions has the potential to confuse the rest of the industry and diminish support for research into clean cane overall.

The Corporation has been a consistent sponsor of industry representative workshops on clean cane for several years. In the mid 1990's, clean cane had been nominated as a multi-program activity for which the priorities and strategies for research and development had been prioritised. This led to a Corporation sponsored workshop in March 1996 which resulted in the development of a draft document to stimulate discussion and service an agreed platform for future progress.

Subsequently the Extraneous Matter Working Group held industry wide workshops in Cairns in September 1997 and Port Douglas in October 1999 on each occasion to assemble the present status of knowledge and research and development on the subject of clean cane.

Following these workshops, a team of researchers assembled a number of specific research projects and had sought SRDC sponsorship. Because of the significance of the size of these projects and the polarised perspectives referred to above, the Corporation decided to conduct an industry wide workshop to review the current status and priorities for research and development.

Part of the polarisation of perspective has been due to the components of unclean cane. There is no disagreement in the industry as to the damage done in the factory and harvester by dirt in cane. However there are differing views on the value of removing trash from cane. While the traditional position has been to keep as much trash as possible in the field, co-generation opportunities have raised the value of trash in many perspectives to the extent that research is currently being conducted at one mill aimed at paying growers for their trash and bringing it into the mill for the generation of electricity.

Dirt in cane remains one of the fundamental stumbling blocks to high quality sugar and the maintenance of Queensland's position in the world market.

1.2 WORKSHOP OUTCOMES

The planned outcomes of the workshop were:

- Guidance on whether the industry should actively pursue further research into cleaner cane production.
- If so, what are the priority areas for investigation?
- The determination of the application of research resources to cleaner cane.
- The analysis and allocation of risk associated with the research.

1.3 WORKSHOP ISSUES

The issues for consideration at the workshop were:

- Development of the credible options for cleaner cane production.
- Comparison of the options and evaluation of the potential likelihood for success in the research producing more effective mechanisms for cleaning cane.
- The adoption of an effective research prioritisation mechanism between the competing projects.
- The comparison of the relative value of research in disparate areas.

1.4 THE WORKSHOP

The workshop was held at the Sugar Research Institute in Mackay on the 24th and 25th February 2000. The agenda for the workshop is attached in Appendix A.

Attendance at the workshop comprised representatives of:

- Queensland and New South Wales sugar mills
- BSES
- CANEGROWERS
- SRI
- SRDC
- Australia Sugar Milling Council
- NCEA
- Australian Cane Farmers
- CANEHARVESTERS
- Fraser Osborn (Consulting Engineers)

- Stanwell Corporation Limited
- NJT Consulting Pty Ltd (Economic Modelling Consultants)

The workshop was prepared and facilitated by Dr Michael Wilson of Canham Wilson.

The broad methodology for the workshop was as follows:

1. Review in general terms previous activity and status of the research.
2. Determine the level of accomplishment in recent times.
3. Investigate the available options for research and development.
4. Analyse the options and prioritise.
5. Develop a risk assessment profile for the highest priority options.
6. Make recommendations for a future clean cane research and development plan.

2. REVIEW OF RECENT ACTIVITY

2.1 PREVIOUS WORKSHOPS

The Corporation has placed significant focus on clean cane for some time. As noted previously there have been three industry wide representative workshops since early 1996. Each of these workshops examined the issues and developed and prioritised future research and development strategies.

The breadth of the problem is indicated by the number of issues canvassed at those workshops:

- 1996 - six categories / 41 issues
- 1997 - six categories / 42 issues
- 1999 - eight categories / 88 issues.

The categories of issues were as follows:

1996	1997	1999
<ul style="list-style-type: none"> · Field issues · Harvesting and transport · Factory issues · Economic analysis · Industry issues · Market issues 	<ul style="list-style-type: none"> · Disposition · Origin · Removal · Definition · Damage · Dollars 	<ul style="list-style-type: none"> · Market Signals · Harvester design · Harvester operation · Farming practices · Plant breeding · Transport and milling · Communication and feedback systems · Defining and measuring quality

2.2 RECENT RESEARCH PROGRESS

Despite the significant research effort that has been conducted over the past five years and the issue development, review and prioritisation workshops referred to above the workshop was unanimous in its conclusion that the cleanliness of cane had not improved in recent years. The workshop developed the following reasons for the lack of progress with regard to producing cleaner cane:

- Developments in harvester technology have meant harvesters can go faster and, with

research indicating dirt in cane increases exponentially with harvester speed, harvester cleaning technology has not been able to keep up.

- "Clean" cane is difficult to define without reliable and precise measurement.
- The contractual arrangements in the industry are such that market failure has occurred in that the industry sectors producing unclean cane are not the sectors paying for the consequences. This has led to a reluctance on the part of those suffering the consequences to expend capital on remediation until a mechanism can be found to pass the costs back to the source of the unclean cane.
- The nature of harvesting contracts on a dollar per tonne basis with no incentives for cleanliness actually drives the industry towards more dirt in cane.
- The potential for co-generation from trash and its part in the overall cost equation has distracted the industry from the pursuit of clean cane for its own benefits.
- The significant work done in the past on the cost of unclean cane to the industry either has not been believed or has failed to excite action towards remediation.

2.3 PRESENTING CLEAN CANE AT HARVEST

Three segments at the workshop covered the ability to produce clean cane in the field. Increased harvester pour rates, lodged cane and wet conditions were indisputably the primary sources of producing unclean cane in Queensland.

In drier areas less prone to flooding experience has shown well presented, erect crops can be produced that minimise the amount of dirt that will be incorporated in the harvesting process provided harvester pour rates are kept moderate.

Much work has already been conducted in the areas of:

- Row shape / widths / spacing
- Drainage
- Drains / soil type
- Varietal choice
- Pest and disease
- Return effects
- Irrigation
- Trash blanket harvesting
- Cultivation.

The advantages of research into presenting cleaner cane in the field are:

- Reduces dirt and tops in the cane supply improving milling performance and reducing costs
- Defers capital costs.

The disadvantage of a focus in this area is:

- It does not fully address the issue of trash in the cane supply.

The desired research focus in this area is on new erect varieties of cane that have the same degrees of productivity and pest and disease resistance as existing varieties, are free trashing and show resistance to lodging.

All other areas are well understood.

2.4 HARVESTER DESIGN AND DEVELOPMENT

As noted above, recent advances in harvester technology have only exacerbated the problem of dirt and trash in cane through the ability of harvesters to cut at greater speeds and below ground level.

Recent trials in Mossman on harvester speed and cane cleanliness indicated that small decreases in harvesting speed will produce significant increases in the quality of cane harvested. Initial estimates of the net additional costs of harvesting through slowing down harvesters were of the order of 13 cents per tonne of cane cut.

There are elements of both harvester design and harvester operation impacting on cleanliness of cane. Presentations to the workshop indicated the following:

- The variables of pour rate and fan speed are reasonably well understood but poorly controlled due to lack of concrete incentives
- Group size and harvesting rates are critical
- Evenness of feed into the harvester is important
- The detail of the design of extractor blades combined with fan speed affect the cleanliness of cane.

The workshop agreed that there was significant potential for harvester based solutions to the cleanliness of cane. It was agreed that continuing research into harvester based solutions was a priority to build on the previous research in this area which has included:

- Base cutter presentation
- Cutting depth
- Harvester speed
- Alternative cutting mechanism
- Automation and feedback in harvesters
- Operator skill and training

- Pushover angle and crop dividers
- Dirt extraction mechanisms.

2.5 FACTORY PRE-PROCESSING

Factory pre-processing as a viable alternative for producing clean cane has risen in priority in recent years. The 1996 industry workshop rated the potential for pre-crushing removal of dirt and trash as good in theory but unlikely to be able to be effected in reality.

The research and development process by the industry since 1996 has been successful in transforming this view. Some in the workshop concluded that there were potentially viable pre-crushing removal options in:

- Improved harvester design to clean the cane prior to either discharging the trash into the field or loading the trash with the cane into the bin
- Building installations at the factories to clean the cane prior to crushing.

However the industry is well divided in its perspective on what is likely to be the most viable option. There is evidence from the workshop of selective presentation of information, both for and against the various options, and this is causing confusion and reduced credibility.

Cane Cleaning at Factory

Significant research has been carried out into the design of a cane cleaning apparatus to be installed at a sugar mill. These have been well reported on in the preliminary papers for the workshop. The major advantages of factory pre-processing are:

- Trash is available for co-generation if required
- There is better cleaning potential.

The disadvantage of factory based solutions are:

- The high capital cost of the equipment
- Unproven technology
- Potential cane loss.

A presentation at the workshop by NJT Consulting indicated that, under present cane payment arrangements, should cane loss at the factory climb to 1% in the cleaning process then all of the economics of cleaning for the benefit of the factory disappear. This is an area that lends itself to further research and analysis.

The future research and development initiatives in this area that are required are:

- Technical and economic feasibility of the elements of factory cane cleaning equipment
- The value of co-generation as an income stream.

Harvester Cleaning of Cane

There is a significant body of support within the industry for further continuing investigation into harvester cleaning of cane.

The advantages of harvester cleaning include:

- Dirt and trash are not transported to the factory with the associated costs;
- It avoids the significant capital costs at factories. Also, overall capital cost to the industry may be less if harvesters are modified;
- It transfers the cost of cleaning cane to the harvester and grower segment which is where the cane gets dirty in the first instance. This addresses some of the market failure.

The disadvantages of harvester cleaning of cane are:

- Many of the options are unproven technology;
- There is a slow uptake of much of the new technology as a ten year lead time is required for all harvesters in the industry to be suitably equipped;
- Cane losses through the harvester have not been adequately investigated.

The research and development required in this area includes:

- Further research into harvester design
- Further research into harvester operation
- Further specific research into cleaning systems adaptable for harvesters.

The proponents of harvester based cleaning solutions suggest that a proven harvester based technology could also be installed at a factory. With a harvester based system having to cater for 100 tons per hour of cane, a maximum of six systems in parallel would be able to handle the input for an average sugar mill even if no scale up were feasible.

2.6 OVERSEAS EXPERIENCES

A presentation was made to the workshop including a video of Brazilian activities with cane cleaning. Points of interest from the presentation were:

- Factory based cane cleaning equipment is a common feature of Brazilian mills.
- Brazilian cane is better presented in the field which has much to do with drier conditions.
- Mills are better able to control the quality of cane through diversion of inferior cane to alcohol production and that the industry is set up with mills controlling all of the growing, harvesting and processing activities.
- Generally cane in Brazil is cut above the ground.
- Harvesters are seen to be the constraint in the system and all else works around the capabilities of the harvester design which means that lower pour rates than in Australia are commonplace.
- To make up efficiency harvesters operate on a 24 hour cycle with efficient in field haul out equipment.

2.7 CO-GENERATION OPPORTUNITIES

As noted previously, there were diverse perspectives on the value of co-generation to the industry. On one hand it was noted that mills had been co-generating for many years and it is already a part of mill activity. On the other hand trash can be seen as a valuable commodity to provide an additional income stream for the mill. This latter view has detractors who do not believe that co-generation to sell power can be an economically feasible opportunity in the long term.

The interest in co-generation is driven by Australia's participation in the Kyoto Protocol. This protocol places minimum percentages on "green" power for the future. Some are sceptical that the Kyoto Protocol will ever be fully invoked. Others see a significant selling premium on electricity generated as a result of the protocol.

3. R & D STRATEGIES AND PRIORITIES

3.1 RESEARCH & DEVELOPMENT PRIORITISATION

Each research issue was rated according to two parameters:

Importance

- The importance of this issue to an overall solution to the problem, or;
- What % decrease in trash or dirt or % decrease in cost to the industry is likely through research here.

Potential Improvement

- The amount of improvement possible in this area, or;
- Has this area of research been well worked over to date, or;
- Is there only a narrow band of response to R&D and its solutions.

These parameters were then used to prioritise research initiatives according to the Table below:

IMPROVEMENT POSSIBLE	IMPORTANCE TO SOLUTION	
	Low Importance (I ₁)	High Importance (I ₂)
Little Improvement Possible (P₁)	<p>A research issue not seen as important to an overall solution and where there is little scope for progress.</p> <p>Low priority for future research.</p>	<p>An important part of an overall solution but one which has been well worked to date.</p> <p>High priority but incremental value for effort applied is low.</p>
Large Potential for Improvement (P₂)	<p>Not seen as leading directly to an overall solution but plenty of scope for improvement.</p> <p>Good value-for-money research but overall value not so high.</p>	<p>An issue whose solution could be critical to the overall problem and for which would likely produce substantial results.</p> <p>Highest priority.</p>

3.2 REVIEW OF POTENTIAL RESEARCH AND DEVELOPMENT PRIORITIES

3.2.1 FIELD ISSUES

FIELD ISSUES		
RESEARCH AREA	COMMENT	PRIORITY
<i>Farming practices</i>	Farming practices are an area well worked in the research and development thrust to date. Many of the answers are known and only full implementation is required. There is little research priority here.	I ₂ P ₁
<i>Plant breeding</i>	The workshop was of the view that plant breeding for free trashing, erect varieties is the most potentially lucrative area in the farming sector.	I ₂ P ₂

FIELD ISSUES		
RESEARCH AREA	COMMENT	PRIORITY
<i>Pest and disease</i>	While any factor that causes cane to fall over is going to contribute heavily to dirt intake, the workshop was of the view that this is an area already well worked.	I ₁ P ₁
<i>Grower knowledge</i>	The transfer of knowledge from the research and development environment to growers was seen as an educational challenge. There was a view that until growers have to pay the cost of clean cane they will not be interested in investing effort in a solution. Improvements in measurement technologies will be necessary before this area can be advanced.	I ₂ P ₁
<i>Incentives</i>	Sheeting home the cost of unclean cane to the sectors that cause it has been difficult because of the need to maintain historical perspectives on the balance of payment for cane within the industry. There are entrenched positions that are not easy to disturb. At the end of the day clean cane will require the transfer of some of the benefits from one sector to another or, to frame it in another manner, the development of suitable incentives.	I ₂ P ₂
<i>Removal in the field</i>	Several at the workshop championed the option for mobile cane cleaning apparatus at sidings. Little work has been done on the technical feasibility and there was only moderate support for this as a long-term option.	I ₁ P ₂

3.2.2 HARVESTING AND TRANSPORT

HARVESTING AND TRANSPORT		
RESEARCH AREA	COMMENT	PRIORITY
<i>Harvester design for cutting</i>	Some of the recent research has involved the design of the base cutter and the configuration and orientation of the cutting blades to attempt to recover the cane with minimal dirt input. As there is research in progress there was not a lot of support for further work in this area as a means for making substantial gains in cane cleanliness.	I ₁ P ₁
<i>Harvester operation</i>	The trials at Mossman mill have shown that operating harvesters at a lower travel speeds and fan speeds in the extraction mechanism have produced significant improvements in the cleanliness of cane. This is a potential solution with little if no capital cost but slightly higher operating costs because of the labour and fuel costs involved. However the potential benefits are immediate and substantial. There is very little research required in the operations but some work involved in quantifying the cost savings.	I ₂ P ₁
<i>Harvester design for trash separation</i>	This is the significant area of potential improvement in cane cleanliness through cleaning the cane prior to transporting to mill. This is further discussed in Section 3.3.2.	I ₂ P ₂
<i>Payment for quality</i>	The advances in harvester initiatives can be implemented as long as harvest contractors are properly compensated for the extra costs involved. This requires a revision of the contractual arrangements commonly entered into between growers and harvesters. This will not be easy to implement without improvement in measurement techniques.	I ₁ P ₂
<i>Harvest scheduling and management</i>	There are potential improvements available with no capital cost through scheduling harvesting to avoid harvesting cane which has suffered most from lodgment or flooding.	I ₁ P ₁

3.2.3 FACTORY ISSUES

FACTORY ISSUES		
RESEARCH AREA	COMMENT	PRIORITY
<i>Cost of dirt to mill operations</i>	This is an area where much investigation has been conducted in recent years. Each mill has a reasonable perspective of where the costs are and their quantum. There is little extra research needed in this area.	I ₁ P ₁
<i>Pre-crushing removal</i>	This is the area of intense focus of the workshop. This is further dealt with in Section 3.3.1.	I ₂ P ₂
<i>Cane sampling and testing</i>	Critical to effective implementation is the ability to sample and test cane on an individual grower basis to determine the rewards that should be necessary for production of cleaner cane. Improved measurement is a high priority for the industry.	I ₂ P ₂
<i>Quantification of sugar losses and quality effects</i>	Most factories have some perspective on the sugar losses and the decrease in sugar quality associated with dirt and trash in cane. Some further research is needed in this area.	I ₁ P ₁

3.2.4 ECONOMIC ISSUES

ECONOMIC ISSUES		
RESEARCH AREA	COMMENT	PRIORITY
<i>Industry cost impact model for dirt and trash</i>	The industry will not make significant advances towards cleaner cane without the proper economic transfers and incentives between sectors of the industry. For this a full industry cost analysis must be developed. Significant work has been done to date in several areas but it needs overall co-ordination and extension to the whole industry.	I ₂ P ₂
<i>Factory economic analysis</i>	Substantial work sponsored by SRDC is being	I ₂ P ₂

ECONOMIC ISSUES		
RESEARCH AREA	COMMENT	PRIORITY
<i>for dirt and trash effects</i>	done on the cost benefit analysis of a factory based cleaner. This needs to be extended and more sensitivity analyses run on a number of variables.	
<i>Value of trash for co-generation / blanket / etc</i>	A volatile issue is the value of trash to the industry. While present perspectives that co-generation opportunities are not significant are driving solutions towards non capital cost alternatives, more work in this area may lead to a change in overall perspective towards factory based options.	I ₁ P ₂
<i>Grower / harvester / miller payment model</i>	Following the development of industry cost mapping a series of typical or standard contracts is needed to be developed to initiate a change to the compensation mechanisms existing in the industry.	I ₂ P ₂

3.2.5 MANAGEMENT ISSUES

MANAGEMENT ISSUES		
RESEARCH AREA	COMMENT	PRIORITY
<i>Implementation of research findings</i>	This situation of significant effective research in recent years coupled with the little improvement in the cleanliness of cane indicates the need to investigate whether or not the industry researches are being effectively implemented before more resources are poured into the research arena.	I ₂ P ₁
<i>Measurement</i>	Many advances have been made with regard to measurement of the dirt in the cane supply. However these need to be refined to the extent that individual growers crops can be separately identified. There was a view at the workshop that while measurement is currently theoretically possible it is extremely expensive and would detract somewhat from the benefits of securing a cleaner cane supply.	I ₁ P ₂

3.3 SELECTED RESEARCH AND DEVELOPMENT PRIORITIES

The table below outlines the workshops analysis of the research and development priorities as they exist at this point in time.

R&D AREA	CURRENT R&D	POTENTIAL R&D GAINS	ANTICIPATED IMPACT	RESOURCES REQUIRED	PRIORITY
Factory pre-processing	SRI has developed some concepts which have been costed and analysed for their operational effectiveness.	There is significant work to be done in this area and much of the gains to be made in the future are still ahead of the industry.	The development of a capital and operating cost-effective piece of equipment at the factory could be a huge boost for the industry.	Prototyping of equipment is required with an immediate budget of \$1 million to get to this stage.	The need to renegotiate the cane payment formula, the unproven technologies and the high risk from a factory perspective lowers the priority a little from that which might be drawn from the anticipated impact. Nevertheless the priority remains high.
Harvester design	Significant research has been done on a number of fronts with regard to cleaning and extraction mechanisms.	The potential gains from effective installations of concepts such as jet-clean are impressive.	If an effective cleaning mechanism could be developed for harvesters this would have an immense impact on the industry and the capital cost involved of developing a cleaner cane supply.	Significant resources are required and this is in the very initial phase. An estimate of at least \$2.5 million is needed to develop a new concept harvester with better efficiencies and lower losses.	The potential impact on a clean cane supply is such to give this an extremely high priority despite the long lead-time of about ten years before all harvesters in the industry would be suitably equipped.
Harvester operations	Some work has been done at Mossman on harvester operations with good results.	It is unlikely that there are great gains to be made from more work in this area, as the field is fairly well understood.	A no capital cost solution would be very attractive to the industry.	Only minimal resources are required with mill based research possibly more than paying for itself with cleaner cane.	This is an immediate priority for the industry.
Measurement	Much research into measurement has been done but the challenge of extending measurement to individual growers' crops lies ahead. Present measurement techniques are to labour intensive and	The solution is still some way off and research and development is the only way to get there.	A satisfactory measurement scheme would set up the whole industry for proper compensation for the effort involved with the production of clean cane.	Significant resources are required which have yet to be costed.	An immediate priority.

R&D AREA	CURRENT R&D	POTENTIAL R&D GAINS	ANTICIPATED IMPACT	RESOURCES REQUIRED	PRIORITY
	expensive.				
Mapping industry costs	Some research and development has been conducted in individual local areas for separate steps in the logistics chain, from grower to mill. It has not yet been put together in a vertically integrated sense or a wider geographical sense.	It is a straightforward consulting activity with the work applied guaranteed to give the answer.	Like measurement this will give the industry the ability to properly compensate for clean cane.	Resources have yet to be costed but they are not considered to be as significant compared to the other priority research areas. Anticipated cost is at least \$250,000.	An immediate priority.
Plant breeding	There has been little research done into plant breeding for specific or erect varieties to improve cane presentation in Australia. (Colombia has done some but this may not be available to Australia).	As with all varietal work it is impossible to determine potential research and development gains in advance.	Erect well presented cane in the field will assist in reducing dirt in areas not subjected to adverse weather conditions.	Breeding programs always require significant resources.	A moderate priority compared to other immediate research areas
Contractual arrangements	No work done in this area.	Standard contractual agreements possible.	This will assist in the measurement and the industry cost management initiatives in backing up with contracts to facilitate the payment for clean cane.	Resources required are of a moderate anticipated cost of \$150,000.	Immediate priority

4. THE CLEAN CANE RESEARCH STRATEGY

4.1 SUMMARY OF RESEARCH PRIORITIES

The immediate research priorities are as follows in decreasing order of priority:

- Harvester design - incorporating current and future research findings
- Factory pre-processing - research into the various elements and costs
- Industry cost management - obtaining realistic estimates of the various elements
- Contractual arrangements - study of and assistance with grower/harvester/miller? contracts
- Measurement - methods for determining levels of trash and dirt in cane and relationships to payment models
- Plant breeding - erect, free trashing plant material
- Harvester operations - assistance with implementation of incentives to operate a t best practice.

4.2 FUTURE STRATEGIC DEVELOPMENT

Research Management

A feature of the research done to date has been the wide field over which the net must be cast to encompass an all-of-industry focus. The management of the research thrust has risen to become critical to delivering results.

It is recommended that a formal project management system to manage the research into clean cane be established through a project management consultancy by SRDC to monitor and manage the research thrust.

Workshop 2001

The series of workshops since 1996 have advanced the issue of securing a clean cane supply. It is not necessarily the outcomes of the workshop that are important but on the discussion and interchange of views that the workshop facilitates. It is recommended that a series of future workshops be programmed at 12 month intervals. These may be coordinated by SRDC.

APPENDIX A

SUGAR RESEARCH & DEVELOPMENT CORPORATION
CLEAN CANE WORKSHOP
24TH / 25TH FEBRUARY 2000
AGENDA

NO	DAY / TIME	CONTENT
WORKSHOP BACKGROUND		
1	Thursday 24Feb00 5.00 pm - 7.30 pm	<ul style="list-style-type: none"> · Welcome by Clive Hildebrand · Introduction by Michael Wilson · The BSES/SRI Proposal - Graeme Bullock (SRI) · The BSES/SRI Proposal - Chris Norris (BSES) · Initial Costings - Frank Osborn · The Economics - Neville Tudroszen · EM Economic Modelling - Ross Ridge · Co-Generation Prospects - David Burbidge · Summary - John Baird
2	Thursday 24Feb00 7.30 pm - Finish	<ul style="list-style-type: none"> · Barbecue & discussion
CURRENT APPROACHES TO CLEANER CANE		
3	Friday 25Feb00 8.00 am - 10.00 am	<ul style="list-style-type: none"> · Facilitator - Michael Wilson · Do we want cleaner cane? How badly? · Field / factory pre-processing -v- Other alternatives (Brazil - Chris Norris, JetClean - Harry Harris) · Available options
MORNING BREAK 10.00 AM - 10.15 AM		
ANALYSIS OF OPTIONS		
4	Friday 25Feb00 10.15 am - 12 Noon	<ul style="list-style-type: none"> · Facilitator - Michael Wilson · Viable options for field / factory pre-processing · The economics. Are the concepts viable? Financial parameters?
LUNCH 12 NOON - 12.30 PM		
POTENTIAL SOLUTIONS		
5	Friday 25Feb00 12.30 pm - 2.15 pm	<ul style="list-style-type: none"> · Facilitator - Michael Wilson · Analyse & quantify difficulties & risks · Groundwork for Go / No Go decision(s)?
WHERE IS R&D APPROPRIATE?		
6	Friday 25Feb00 2.15 pm - 3.00 pm	<ul style="list-style-type: none"> · Facilitator - Michael Wilson · An appropriate budget? Access to funding? · Minimum performance parameters?

NO	DAY / TIME	CONTENT
		· The development of research specification(s).
7	3.00 pm - 3.15 pm	· Close - Eoin Wallis