

*Achieving efficient, effective,
sustainable Industry research*

Australian Sugar Industry RD&E Reform

Report

Reform proposals

Implementation points

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Acknowledgements – sources, references

In this report, key references are listed in footnotes but many more documents and inputs were analysed as the basis for reform proposals. Data and facts have been cross-checked so far as possible. Sources are available for data and statements.

Many groups and individuals provided input to this phase 2 review, some personally.

Quotes are shown in text as 'words' or in small typeface but generally without names.

Thank you to all who have assisted including BSES, SRDC and SRL staff. sjw 9.2011

1. Context

Part 1 provides context to this review phase 2 report including particular features of the Australian Sugar Industry when considering research [1.1], and patterns of rural investment in RD&E as well as Industry investment in BSES and SRDC [1.2].

The platform to phase 2 is discussed and PJP cases summarised [1.3]. An outline of Industry consultation and expectations is provided [1.4]. Stakeholder concerns and ideas are taken into account at all points. A range of perspectives on issues are recorded throughout this report.

Australian agricultural researchers have a strong record in achieving returns for their sponsor industries and the Australian economy. A 2009 evaluation by Rural R&D Corporations, for instance, calculated on \$1 invested, returns of \$2.36 in five years, \$5.56 in ten, rising to \$10.51 after 25 years.¹

Australian Sugar Industry investment in research, development and extension (RD&E) occurs through BSES Limited and the Sugar Research and Development Corporation (SRDC), and to an extent, through Sugar Research Limited (SRL) and its Sugar Research Institute (SRI) arrangements at Queensland University of Technology (QUT). A level of R&D also occurs within mills.

In general, sugar industry members see effective research as vital. BSES and SRDC can point to studies of returns on RD&E for the sugar industry and this is not disputed. However, further research dollars do not automatically deliver the same order of returns,² and commercial operators must continually review priorities.

Concerned by alignment, coordination and performance of three industry backed research organisations, and a tripling of BSES service fee requirements over six years, the Australian Sugar Industry has invested in a substantial review. This report forms part of the Sugar Industry Reform Project phase 2.

1.1. Particular Australian Sugar Industry features

The last decade has seen major reform in Sugar Industry marketing and service structures, along the lines of other rural industries. The long established Cane-Sugar payment formula has endured these changes and the traditional 2/3-1/3 split influences some grower and miller views on what each sector should pay for Industry collective activities such as R&D. While the formula can also stand in the way of a natural economic flow of savings/costs along the supply chain, there is recognition that R&D-based advances should benefit all in the Industry.

Just as the cane yield has a direct impact on mill profitability, the performance of the milling sector has a direct impact on the grower's profitability. *Miller 7.2011*

¹ Council of RDC Chairs, 2010, *Impact of investment in research and development by Rural RDCs*.

² In its 2011 report, the Productivity Commission also noted studies of past payoffs from rural R&D but questioned a flow-on 'implication ... that a higher level of investment in rural R&D would provide a net gain for the community'. Productivity Commission 2011, *Rural Research and Development Corporations*, Final Inquiry Report, Canberra.

Also in this industry, production from small farms and part-time growers appears more important than in other rural industries where R&D entities can 'ignore the tail'. Some 32% of farms delivered over 70% of cane in 2008.³ However, with less land planted, in a throughput dependent process, smaller farms are providing vital cane for mills in a sector now operating at about 85% capacity.

Arguably, R&D aiming to make cane farming easier for lifestyle and off-farm working growers could sustain the industry as much as lifting output of larger farms. Yet, discussions indicate levels of frustration or disapproval among researchers, extension officers and some producers, with part-time growers or those wanting a comfortable farming life without precision demands.

In the Mackay region, for instance, a BSES survey found 52% of farmers are also working off farm, 19% over 30 hours a week. These account for some 45% of Mackay region cane production area. While Mackay particularly shows the part-time effect, growers who may not be aiming to achieve maximum returns or best practice are an important characteristic of all areas.

Figure 1 shows average cane harvested per farm. This is also the sum of money an average farm will pay for each \$1 in fees or levies. For example, \$6,410 in 2009.

Figure 1. Average farm size and harvest 2002-2010 – ASMC data

	2002	2004	2006	2008	2009	2010
Growers entities Queensland	6,518	5,933	4,925	4,350	4,335	4,287
Average entity harvest ha	63	67	77	82	79	68
Average cane tonnes/entity	5,312	5,844	6,725	6,935	6,410	5,991
All Queensland cane t/ha	84.6	87.4	87.6	84.4	81.1	88.0
All Queensland sugar t/ha	12.4	12.7	12.3	12.5	12.5	11.2

* The 2009 year is more representative of current production/harvest; 2010 was affected by extreme events.

ABARE surveys over 2006 to 2008 found substantial variation in returns from sugarcane farming even across a few years. ABARE calculated average gross margin (surplus cane income over production costs) to be \$9.10/tonne in 2005-06, \$11.30/t in 2006-07, and \$3.10/t in 2007-08, with differences mainly due to sugar prices. An average cane farmer harvesting say 68ha, at \$9/t gross margin, the return-for-effort on a farm producing 88t/ha would be \$53,856. At \$3/t, this would fall to \$17,952. In contrast to commercial cash flow, BSES and SRDC fees/levies are fixed regardless of farm gross margin and good or poor years.

The ABARE surveys found major impediments to producers expanding their cane farming to include the sugar industry outlook, availability of land, and producer's finances as well as their personal priorities.

'Many producers [35%] also indicated they did not intend to expand because their current scale of production suited their lifestyle or they lacked interest to expand.' *ABARE 2008*

³ ABARE, Hooper, 2008, *Financial performance of Australian sugar cane producers 2005-06 to 2007-08*, research report.

These factors, alongside rising alternative crops and vegetation regulations, are reflected in the national harvest area falling almost 18% from 2002 to 2009. Higher cane prices since 2009 could attract more to planting cane, but production costs are now also higher including for fertiliser and contract work.

Further, across regions, there are some growth areas as well as contraction at different rates. Stakeholders are expecting these trends will be taken into account in this RD&E review.

Figure 2. Area harvested change, and proportional shifts by region 2002-2009 – ASMC data

	2002	2006	2009	2010	change 2002-09
QLD area harvested '000 ha	416,233	379,966	344,102	291,927	- 17.3%
NSW area harvested '000 ha	20,650	17,542	15,561	14,162	- 24.6 %
Australia '000 ha	436,883	396,508	359,663	306,089	- 17.7%
Regional area proportion	2002 %	2006 %	2009 %	2010 %	% shifts 2002-09
Northern	21.2	20.3	19.6	22.4	- 1.6%
Herbert-Burdekin	29.9	32.1	33.3	29.2	3.4%
Central	28.1	30.2	30.3	29.3	2.2%
Southern including NSW	20.8	18.3	16.8	19.1	- 4.0%

* The 2002-2009 trend is calculated as the 2010 harvest was affected by widespread extreme events.

One considered industry projection, provided by a group of BSES staff, sees a possible return to 34mtpa, but with ongoing production shifts:

Northern: expansion to 8 million tonnes per annum (mtpa); *Tully:* expansion potential in Tully area (3mtpa); *Tableland:* possible growth; shrinkage near Cairns.

Herbert: trend for expansion to 6mtpa. *Burdekin:* sustained production, 9mtpa.
Central: expand a little, 10mtpa

Southern: sustained at around 5mtpa, contraction in Bundaberg to 3mtpa, Maryborough expand to 2mtpa; *NSW:* maintain at 2.5mtpa.

Others see 31-32 mtpa as more likely, with the Herbert possibly reaching 5mtpa and industry expansion generally held to the north.

A cane harvest level of 30 million tonnes per annum is used through this Sugar RD&E Reform report as the basis for forward calculations and scenarios.

1.2 Australian agricultural industries – R&D investment

Through SRDC and BSES, Sugar Industry payments toward formal RD&E compare well with other industries, although activities differ with industry business structures.

Figure 3. Investment in RD&E through industry organisations

Industry	Stated Value 09-10	Organisation	Levies/fees 08-09	For R&D	Fed. \$ 08-09
Red Meat	\$16.1 billion	Meat & Livestock Aust	\$98.1m	\$25.9m	\$31.4m
		A Meat Processors	10.6	12.5	
		Livecorp IOCs	2.0	0.8	
Dairy	\$3.6 b farmgate	Dairy Australia IOC	29.5	14.5	19.2
Pork	\$2.9 b in 2006-07	Australian Pork Ltd IOC	16.1	3.1	2.8
Grains	\$10.5 b wheat +24crops	Grains R&D Corporation	89.2	89.2	43.9
Grape, Wine	\$ 5.5 b	Grape and Wine R&DC	13.3	13.3	11.7
Sugar	\$1.5-2.5 b	Sugar RDC	4.3	\$17.9m	5.1
		BSES Limited	13.6		

From Annual reports, PC 2011, websites. This is an indicative picture only, based on PC proportions to R&D.

In 2007, BSES calculated industry and government inputs via CSIRO, CRC and universities plus some local R&D to add to \$58m a year, and noted this total expenditure on sugar RD&E 'substantially exceeds the 2% benchmark recorded in the international literature for a mature industry'.⁴ The PJP team ascertained total industry and public RD&E funding including the then CRC and productivity groups to be around \$57m in 2009-10.⁵ Patterns in Industry payments to RD&E are shown in Figure 4 and graphed in Figure 5.

Figure 4. Sugar industry investment in RD&E through BSES and SRDC 2004 to 2011

		2004	2005	2006	2007	2008	2009	2010	2011
QLD+NSW cane crush	mt	37.0	38.3	35.7	34.2	32.1	29.6	27.3	est. 29
BSES service fee – growers	c/t	8	6	10	15	20	20	20	40
BSES service fee – millers	c/t	8	6	10	15	17*	17*	22*	22*
BSES fee collected	c/t	16	12	19	28	37	37	42	62
BSES income from Industry	\$m	5.9	4.6	6.8	9.6	11.9	10.9	11.5	18
SRDC levy (50-50)	c/t	14	14	14	14	14	14	14	14
SRDC income from industry	\$m	5.2	5.4	5.0	4.8	4.5	4.1	3.8	4.1
Total industry investment	\$m	11.1	10.0	11.8	14.4	16.4	15.1	15.3	22.1

From formal sources. *Average collected through Service Level Agreements between mills and BSES. Column 2011 contains current year estimates including the agreed special circumstances BSES service fee increase.

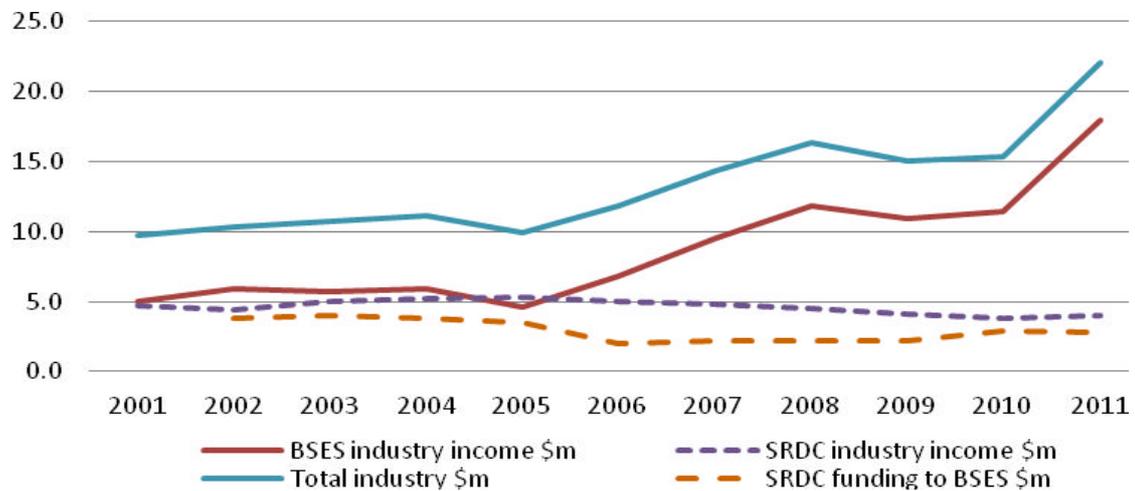
⁴ Wallis, 2007, *Discussion paper on The role of BSES in a sustainable future for the sugar industry*. In 2007, the BSES service fee rose from 30c/t to 40c/t (20 cents each growers and millers). The higher figure would have been used in calculations plus ASA data.

⁵ Port Jackson Partners (PJP), 2011, *Reforming Sugar Industry RD&E to become more efficient, effective and sustainable*.

What is the 'normal' baseline for BSES funding? The question of income levels within which BSES should manage its budget was raised during discussions. BSES itself considers it has been under-funded for a number of years.

The decline in cane harvest of 20% since 2002 is put as a reason for BSES needing more funds but this explains only a moderate income fall (as seen in the SRDC income at a static levy of 14c/t, second lowest line Figure 5). Also, in 2003, SRDC did stop providing 5-7 c/t (\$1.8m-\$2.5m pa) in untied funding and required project applications from BSES for all SRDC funding.⁶ This decision too had some impact. Inflation would also account for some of the current BSES need.

Figure 5. BSES and SRDC income from industry \$m; SRDC funds to BSES \$m



However, increases in BSES service fee and income from industry outweigh these effects, giving more understanding to views that 'BSES should cut its cloth'.

BSES has conducted cost reduction programs including redundancy of 22 staff over 2004-2006. The Board decided against cost and location tightening in 2007.

BSES income and expenditure are discussed in section 2.6 and Part 3 below.

⁶ BSES advises that SRDC felt BSES project proposals at that time did not rate well on the SRDC attractiveness/ feasibility scale, comprised core BSES activities, and/or not have enough industry partners. There are also views SRDC and BSES differed in interpretation of industry priorities and time horizons, and that SRDC saw a charter to broaden the RD&E provider base. BSES has since addressed a number of these points in developing project proposals and is SRDC's largest funding recipient [2.4].

1.3. Review documents and working cases

Platform documents for this Sugar RD&E Reform Project phase 2, are the:

- Australian Sugar industry Alliance statement: Achieving Efficient, Effective and Sustainable Research in the Australian Sugar Industry, March 2011
- Port Jackson Partners report (PJP), Reforming Sugar Industry RD&E to become more efficient, effective and sustainable, February 2011.

The PJP report collates and analyses a deal of industry and R&D data, and the team worked through layers of BSES internal cost and expenditure records. Key parts are perceptive on issues and approach. In particular, the PJP report:

- takes note of a range of stakeholder opinions on priorities (as confirmed in surveys and recent consultation rounds)
- responds to the industry call for close examination of the RD&E funding situation after sizeable increases in BSES service fees, and
- grasps key issues in putting forward hard-edged income/cost options.

However, the PJP report is not palatable, and has weaker points. It has been criticised by industry stakeholders from differing angles.

For this Phase 2 work, the PJP report provides a key reference point. The intention is for this phase to work forward, so both documents were provided to industry stakeholders as a basis for consultation inputs and discussions during July 2011 (as also advocated in the PJP report). BSES, SRDC and SRL were asked to provide points of correction if required. BSES and SRDC have done so.

Overall, the PJP report presents choices for levels of industry investment and provides a useful basis for this phase 2, including cases and calculations.

In March 2011, the Australian Sugar industry Alliance (ASA) considered and generally supported PJP recommendations, including on:

- industry governance of R&D investment
- one industry R&D organisation
- central funding of core work by all millers and growers on a sustainable basis
- a user-pays basis for non-core activities with local determination of levels of services, delivery and funding.

ASA stated its support for the new organisation 'focusing efforts on Agreed Centrally Funded Activities. As a principle, this would include activities that directly or indirectly impact 75% or more of mill areas.'

ASA also indicated that centrally funded activities could include:

- Plant breeding, Molecular biology, Biosecurity, Farming and Milling systems
- Research stations, Chemical laboratories
- Entomologists, soil scientists, agronomists, engineers to research, develop and provide advice on pest and weed control, cropping systems, soil science, water management, logistics, supply and mill optimisation
- Extension associated with systems and technology, but not group or one-on-one extension services; training activities for delivery extension packages
- Strategic Initiatives such as the DuPont Joint Venture.

For any period, ASA states, the extent of R&D activities would reflect alignment with industry priorities, and the level of funding industry as a whole ('all millers and growers') is in a position to provide. The industry research organisation is to be efficient and effective, with likely a mix of in-house and contracted operations.

As part of a comprehensive reform package, including amalgamation of BSES, SRDC and SRL and an expanded milling research platform, ASA supports equal funding by millers and growers; it is acknowledged that in 2012 this will be at levels higher than the industry funding for BSES in 2010. *ASA, March 2011*

Consultations for this phase 2 have included meetings with all industry groups, as outlined in section 1.4 and through this report. It is evident within the industry there are distinct and firm views on:

- the size of any 'compulsory' levy or service fee for research, development, and particularly for extension as it is conducted today, and
- what should be agreed for central or collective funding through industry payments.

The views of Canegrowers Association and the Australian Sugar Milling Council generally represent the spread of issues raised in discussions [see 1.4].

A key part of the Port Jackson Partners report is the three change cases for BSES, compared to BSES structures and arrangements in mid-2010 as the 'status quo'.

Each PJP case proposes levels of core and non-core activities by area and staffing, then estimates BSES service fee income needed from industry to support each case. That fee level is calculated as c/tonne on 30mtpa harvest.

Any such calculations are complex, and PJP delved deeply into BSES accounts, with assistance from BSES. Points can be criticised but the PJP cases are useful reference points for this phase 2, particularly the Status Quo and Base Case.

Each Case is a BSES 2012 structure with a one-year financial summary calculated as an average of 2012 to 2015 with inflation increases (ie. 'PJP dollars' averaging about likely 2013-14 dollar values). PJP case dollars and c/t do not compare directly with BSES 2010-11 budget or actual numbers however, percent changes are comparable [see 3.4].

Status Quo – existing BSES, no change: Full year costs of \$31.9m, 185 FTE staff, \$7.7m of other income of which \$2.2m from SRDC. Industry funds needed \$24.2m a year. At 30mt harvest, an industry service fee to raise \$24.2m is **81c/tonne**.

Minimal change: Moves some extension officers to user pays. Saves \$1.4m. Costs \$30.5m a year, 167 staff. At 30mtpa, the service fee to raise \$22.8m is **76c/tonne**.

Base case: Rationalisation of infrastructure (from 7 to 4 or 3 research stations); some staff transfers to build critical mass in remaining locations; and a revamped variety selection process (two not four sites, more Final Assessment Trials). Most Chemical Laboratory work outsourced and the Mill NIR Technology Unit not counted. Corporate overheads trimmed to reflect reduction in staffing and functions. Base Case removes \$7.3 m pa from BSES cost base. Year costs \$24.6m before \$7.7m income, 131 staff. At 30mt, service fee to raise \$16.9m is **57c/tonne**.

Far Reaching Change: Extends the Base Case by outsourcing all chemical laboratory functions, all extension being user pays, and reducing Farm Services to 10 specialists with no technical support. Removes \$9.9m pa. Year costs \$22.0m, 106 staff. At 30mtpa, industry service fee to raise \$14.3m pa is **48c/tonne**.

In each Case, PJP assumes \$7.7m pa external income to BSES including \$2.2m pa from SRDC. These Cases include \$3.9mpa (13c/t) for the Strategic Initiatives. PJP also considered a Base Case with amalgamation of SRL-SRI and SRDC.

In assessing PJP Cases, BSES has indicated that the Base Case plus \$1.9m is the order of income needed for BSES to keep a critical mass in core activities with reorganisation of plant breeding and user-pays extension. Base Case plus \$1.9m would be total income \$26.5m, of this \$18.8m from industry.

BSES is concerned that inflation be addressed by Industry with regular income increases. However, others argue BSES should adapt to a smaller industry.

The PJP Cases include inflation factors. The Base Case \$16.9mpa (57c/t) is the Industry funding PJP assessed as needed to ensure BSES operating expenditure, after PJP proposed reforms, would be matched by revenue each year from 2012 to 2015. In these calculations, PJP escalated salaries by 5% pa and operating costs by 3%pa.

1.4. Industry consultations and expectations

Consultation during the PJP exercise included field meetings and a workshop involving industry and R&D leaders (11.2010). PJP saw 'strong indications that both growers and millers may be prepared to increase their financial contribution' but assessed both were 'unlikely to do so in the absence of reform to address the six other matters of concern with the current RD&E effort', being:

- differential funding contributions by growers and millers
- perceived inequitable allocations of RD&E spend (especially by BSES among regions ...)
- concerns over RD&E performance (outcomes and value for money)
- poor priority setting (money not seen to be spent in line with industry priorities)
- a lack of transparency (... difficult to understand allocation of funds ...)
- an overall feeling by the industry that it is not in control of the RD&E effort.

These issues were confirmed during 2011 consultation sessions based on the PJP report and the ASA statement. Over 100 written inputs were received including follow-on email interactions, with over 80 meetings in Brisbane, from Cairns to Ballina, and in Canberra, including with SRDC, SRL, SRI, BSES leaders, staff and site groups, CANEGROWERS groups, ACFA, Pioneer, Kalamia, ASMC, mill managers and groups, productivity services, DEEDI, CSIRO, DAFF and two Dupont staff.

A large number of further questions have been pursued with BSES, SRDC, SRL, QUT on plant breeding, varieties, biosecurity, extension, farm systems and mill technologies, research/development, and financials.

The PJP report and ASA Statement provided a sharper base for written inputs and discussions. The PJP Cases provided a useful 40c/60c/80c start for discussion of priorities with stakeholders, without introducing new numbers into the mix.

40c/t – BSES service fee in 2009-10, half from growers, half from millers

60c/t – near PJP Base Case level, and the special BSES service fee in 2011

80c/t – the PJP calculation of total fee needed for BSES to stay as now.

This assisted discussions around 'wanting us to pay more for less', and questions of cost-shifting. For growers and millers, 40c/t (20c each) paid in 2009 is 'usual'. However, on seeing that industry payments of over 80c/t would be required for current BSES activities including extension to continue, most focussed quickly on:

- the reality now of needing to 'pay more for the same', then
- their priorities and options for use of the 20 or 40 cents difference, and
- potential for inequities to be greater as service fees increase.

On funding and expectations

Some grower groups and individual farmers say they will support a BSES service fee of 80c or \$1 ('not \$2'), but 'the mills must pay half', and so long as they 'see performance and value for money'. At 'usual' fee levels, some groups are satisfied.

...happy with the present structure...best interests of [our] growers are being attended to at present.

Others are not.

A general consensus of growers out there is we are not getting value for money.

More grower and productivity service groups were concerned about fee jumps, what they would get, how extra funds would be raised, and what would lose out. Some suggest an additional 'extension levy' be centrally collected but spent regionally and with local instructions.

In March 2011, the CANEGROWERS board, representing the largest proportion of growers, expressed a RD&E policy that 'sufficient funds be provided to ensure':

- current rate of genetic improvement through plant breeding should be maintained or enhanced
- ability to improve yields through improved farming systems should be maintained or enhanced
- BSES has the ability to deliver appropriate extension to the industry to allow them to evaluate and adopt new methods and varieties, and
- ability of BSES to prepare for, identify and respond to biosecurity threats to the industry cannot be compromised. *Canegrowers 3.2011*

This was the general feeling in discussion with local Canegrowers groups, though with variation of views. Among others, positions range from no change to a stronger user-pays emphasis and support for the PJP Far Reaching case.

There are also some differences among ASMC members on contributions for R&D, and on 50:50 payment. These have sharpened as funding issues and service fee levels have become clearer.

The ASMC in principle support to fund research 50:50 between millers and growers is subject to confirmation of the proposed reform as a complete suite rather than item by item consideration, resulting in comprehensive reform of sugar industry research that will deliver an ongoing sustainable research base and structure for the industry with a single research organisation which includes milling research. *ASMC 8.2011*

Mill groups express concern about further increases in R&D/BSES fees off a 2009-10 baseline (total 40c/t). Council and companies expect robust review.

All mills agreed they were unwilling to increase funding without comprehensive reform of research, including analysis of asset base and overall resource utilisation, plus work to bring the three bodies into a single organisation. ... ASMC came to a position to support 50:50 funding for research in principle provided there was major reform in the research organisations (not just a superficial look and a quick decision to significantly increase the funding) and agreement on what makes up the centrally funded activities. *ASMC 8.2011*

[We] support the need for substantial reform of RD&E as currently exists for the industry ... Conceptually we have signed on to the base case ... BSES has to cut its cloth *Miller*

... this review is timely and essential. [We have] for some time been concerned with delivery of RD&E as undertaken by the major industry research organisations – principally BSES and SRDC. Institutional structures and cultures seem to have limited the extent by which these concerns have transferred to motivation for change within these organisations. [We have] become increasingly frustrated in dealing with an RD&E 'black box' which seemed unable to demonstrate the value proposition of continued investment while continuing to deliver outcomes which fell short of industry expectations. *Mill group*

Across the industry there is an expectation of efficiency and rationalisation with levels of support for one industry research organisation: 'amalgamation of the three R&D bodies makes more sense than anything', 'too much doubling-up', 'need one good strong organisation'. There is stress on transparency and cultural change.

Adjusting to shifts in cane growing locations also attracts strong views.

BSES is going to be in real trouble if it listens to regions that say the shrinking regions should shrink in services... We expect an equivalent service on varieties for our service fees. *Joint group*

Others argue a need to adapt in delivering services, not to be bound by history.

When a region declines in tonnes, there is a residual BSES service centre there that is effectively cross subsidised by the regions that maintain their size or even grow ... The system does not adapt to this and we effectively not only see CPI type of increases but significantly more in total \$ terms because we have to pick up an increasing gap left by those exiting the industry (40mt to 30mt ...) while BSES remains a similar size. *Miller*

BSES staff, in turn, are concerned and perplexed about the funding argument: 'we don't market BSES well', 'do they understand the costs and what will be lost?'

BSES undercharged for some years, failed to sell why they need to pay more ... industry got the impression they could get full BSES service for little money.

Industry urgently has to recognize the importance of research and the fact it does not come cheaply, and pay the required service fee, for Industry forefront and sustainability.

However, some senior research, development and policy experts also express concern about effectiveness and impact of sugar R&D arrangements .

The current R, D & E effort is simply too fragmented to ensure that we stay at the forefront of sugarcane production and processing. *Researcher*

High-level research strategy development is not happening now ... there is need to ensure research foundations ... and the Industry absolutely must question grower expectations of one-on-one service [from the research entity] ... this will have political issues but needs to be addressed. *Policy stakeholder*

On priorities for industry research investment

In tighter funding circumstances, a theme on priorities emerged: the industry research organisation should focus on specialised work for industry benefit – that is, on what businesses including growers cannot do for themselves. Four levels of priority were identified from inputs, as well as areas of lower weight for use of funds.

Figure 6. Industry consultation – priorities for research expenditure

Priority 1A. Research into breeding and ongoing variety development including variety usage notes. There is disappointment around performance of varieties, but this is outweighed by general recognition of the importance of breeding new varieties, and that overall, 'varieties are better than 10 years ago'.

Clearly the number 1 priority is to maintain the plant breeding effort at the level it is ... nowhere else to turn to get varieties. Can rearrange but not diminish. Preference to spend more on normal plant breeding. Yes, we recognise this means moving into more speculative research. *Mill board*

Some regions place highest stress on development of suitable varieties as 'only BSES can do that'. Local management of other activities could enable allocation of more time and money to variety development as a central specialisation.

Priority 1B. Research and action for biosecurity and plant health particularly tied with breeding. 'Industry also needs a core of experts in things like grub control ... want to have capability in entomology'.

Priority 1C? Variety advances through GM techniques – this is of interest and concern. The 'model is a mystery' (costs, returns, form of delivery, scientific and market risk) and 'needs to be better understood to decide priority'.

The return on investment projected from the Dupont Joint Venture should be reviewed. While we accept that GM varieties may improve future cane yield and reduce farming costs, how confident can we be that this will occur? Further, how confident are we that growers will be willing to invest in GM varieties (at higher PBR costs) in the future? *Grower group*

At this point of time, we are of the view that core researchers' funds should not be redirected towards the Dupont joint venture, but we do recognise the need to keep this moving forward. *Joint group*

Priority 2. Open access to research knowledge and detail. Links between research, extension and practices and realities on cane farms are seen as vital. The priority is on enabling active flow of information to and from all researchers to all types of field service providers and all types of growers. And then on 'some extension in an organised way', such as group based activities for education.

Some raise need for competition and a wider range of professional advisors and that information should be equally available to those not employed by BSES.

Priority 3. Cane farming challenges, longer term – eg. breeding and farming for changing climate and/or regulations, rather than today's farming approaches.

Priority 4. Supply chain/milling efficiencies – system research and development.

Lower, or low, priority for use of sugar industry R&D funds, include:

- *Diversification in cane uses or mill products.* 'This will occur through other channels' if there is market support. 'Not a priority while relies on government subsidy.' 'Outside core business' of industry research, 'this will be commercially driven'. However, some researchers consider millers-growers have 'no vision for future of the industry' unless it includes cane as biomass for fuel and as well as research on other products from cane.
- *Farming practices and techniques.* Most acknowledge there 'has been some good work' but also views that BSES is 'relying on old stuff', 'going round and round' on nitrogen, and on row spacing. Even with BSES extension officers (EOs) in the field 'the research pushed is not practical for many farmers'. 'Top farmers are not using new ways'. The research also 'needs economic analysis – what's in it for me', not what is declared as 'accepted best practice' or 'best science'.
- Repeated extension on 'best practice' farm systems, to groups or locally.

[Questioning] how much effort BSES should put into convincing growers to implement 'better practice'... growers saying that is a grower decision and they do not want to fund us to do that. There are many reasons why a grower may not implement 'better practice' eg time, farm economics etc not related to R&D. *Staff officer*

Some BSES experts are allowed to dictate to growers / clients; but do not engage and persuade, and so create enemies; or so disinterest those otherwise supportive clients that BSES is left without defenders. *Staff officer*

- *Direct advisory (one-on-one) for growers.* A general conclusion is 'we cannot afford one-on-one'; we 'don't need one on one and extension to growers'. Exceptions include some of the 10-20% receiving it, and some BSES officers. Others have 'a passion for one-on-one', but see it could be done in other ways.
- Mills often have field work and one-on-one written into Service Level Agreements negotiated with BSES. However this seems to reflect their wanting to sharpen definition of deliverables under current arrangements, rather than a priority.

After plant breeding/biosecurity if no money left – then don't do it...others will step into the breach.

On capacity of local level groups

Discussions highlighted variations in local capacity. However, there are also signs of local areas working to address changes in field service demand and supply.

Many grower, miller and joint groups have identified field service gaps and a number are proactively developing a range of local level needs with the aim of increasing land under cane and productivity.

Most make positive points about aspects of BSES services especially strengths of some individual BSES officers. Most also have concerns and/or want improvements.

Extension services in the Burdekin district are currently not meeting grower's expectations. As a service provider to the industry in the extension area we believe that a large portion of lower level extension services could be provided by ourselves, or agribusiness consultants who distribute and sell chemical and fertiliser. For this type of extension to be effective it will require a strong connection with the R&D body (BSES) and also to be able to see proof of the science (demonstration work). For an industry body such as ourselves to provide these services we would need to increase our current membership fee and/or where specialist advice is sought by individuals this may be charged as a Fee for Service (FFS) activity. Variety information, communication of trial work results and new research findings are the paramount things that growers see as lacking in current extension services.

Although there is understanding of the idea of BSES contracted services (user pays) for general extension, views are mixed on taking this up. Concerns include cost/value when put to an 'extra money' test. Also access to research information and some facilities especially if competing with BSES' employees as advisors. Inputs signal some need for assistance in establishing or enhancing industry groups or others to provide information and advisory services in the field. There is also concern about equity and cross-subsidisation.

This also raises the question of equity between the local areas. Each district will negotiate its own deal with New BSES for contracted services (if that is what they wish to do) but no one area would like to think it is paying more for the same service. *Joint group*

Inputs indicated changed arrangements could harness and encourage a range of sugar cane field service providers to strengthen the industry. How services would be best delivered 10 years out needs to be considered. This observation from a sizeable industry farm group relays multiple messages about their understanding and valuation of BSES services.

At present, we spend approximately \$15,000 per annum on memberships that give us access to the BSES extension service. We feel that the main reason for paying this contribution is to have the extension service available. If this is no longer available to us, we feel we would rather spend our \$15,000 gaining this knowledge from an alternative consulting service such as an agronomist.

On governance arrangements

Numbers of those consulted, but not all, are looking to achieving a single Industry research organisation, reflecting concerns with current bodies. Provisions of the BSES constitution attract criticism from varying perspectives. Alongside recognition that BSES has been given mixed messages about its role and 'being commercial', there is also a feeling that 'BSES moved away from shareholders years ago!'

While these organisations supposedly work for us, the industry ... they are very resistant to any change they do not come up with ... it is time to break this cycle and set it up for the future.

There is across-industry concern that any new industry research organisation needs to actively account to and involve all in the industry.

There is also an identified need for new branding and techniques to 'visibly link 4,000 growers with research programs, varieties and results'.

2. Sugar industry research – changing current structures

Part 2 provides reasons for a single research organisation, and proposes that Industry lead the development of an Industry Owned Company, 'Sugar Research Australia' [2.1]. It puts forward a framework for SRA formation [2.2] including a Research Funding Panel and larger research pool [2.3].

The three current entities are considered in this context – SRDC [2.4], SRL [2.5], BSES [2.6]. BSES views and financial position are outlined as background to streamlining proposals in Part 3.

The Industry has issue with the direction and operation of RD&E as a whole and with the three Industry-backed R&D entities – BSES, SRDC and SRL-SRI. Concerns are longstanding and forms of reorganisation and merger of these groups have been investigated since at least 2003.^{7 8} Aspects of functioning have improved, but other issues and confusions have magnified.

BSES needs to change. We are currently stuck somewhere between believing we are a quasi university delivering R&D and a commercial entity. This means we probably do not do either well.

Attention to a potential single industry research organisation is a key element of this Sugar RD&E Reform phase 2. Both the ASA Statement and the PJP report discuss a single entity led by and accountable to Industry members [1.3].

This review phase 2, through analysis of issues and expectations, and investigation of models and rural R&D directions, confirms strong reasons for the Sugar Industry moving to achieve a single research organisation. These reasons include:

- Sugar is a moderate size rural industry [Fig. 3] but supports three industry based research entities, with BSES now requiring substantially increased funding.
- The three entity structure is not working as well as the industry needs, although enough time has been given for service performance to mature.⁹
- In particular:
 - there is no 'centre' for top-level research strategy development, for whole industry R&D strategy planning, or for working with Industry on R&D decisions including around forward policy issues and positions. Outcomes of efforts to achieve a National Sugarcane Industry RD&E Strategy are illustrative.
 - however, there is a 'money-go-round' for income from industry and across the three entities, plus as identified in the PJP report, layers of process adding to costs, diluting thinking, fragmenting effort, and inviting gamesmanship.

⁷ Ernst&Young, 2003, *Bureau of Sugar Experiment Stations and the Sugar Research Institute, Draft Business Case for a proposed merger*; KPMG, 2009, *BSES Limited and SRDC, Preliminary analysis of a proposed merger*. ASA R&D Committee, 2009, *Towards More Efficient and Effective RD&E Delivery*. Also the PJP report, February 2011.

⁸ Other arrangements have been considered at times. For instance, a decade ago, possible incorporation of the Bureau of Sugar Experiment Stations into a major university. The Queensland Department of Employment, Economic Development and Innovation (DEEDI) has recently moved this way with its rural research, in forming the QAAFI, the Queensland Alliance for Agriculture and Food Innovation, a joint research institute located at University of Queensland and as a new model for outsourcing DEEDI R&D.

⁹ BSES has been operating as a company since September 2003. SRDC was established in 1990, SRL-SRI@QUT in 2005.

- Inefficiency costs are more than cash savings from removing two boards. There are costs in blurred government and policy lines, duplicate surveys and consultation, layers of branding, separate extension and communication on R&D to reach one set of users, and collection of different levies and fees.
- Estimates of operational savings by bringing SRDC, SRI and BSES together include: PJP report, about \$2m a year (7c/t); KPMG 2009 on SRDC and BSES merging, \$1.3m; Ernst&Young 2003 on BSES and SRI, \$1.8m. In addition, activity efficiencies and synergies should lift both productivity and outcomes.
- There is a level of industry support and expectation now for one sugar industry research entity. The need is evident as are potential benefits in terms of R&D steerage and performance and value for industry investment.

It is important to ensure any new Sugar Industry research organisation attracts Federal matching funds for rural R&D. Through SRDC, the Industry has been receiving \$4-5m a year in matching funding. The initial Government response to the Productivity Commission's 2011 report has cleared uncertainty and reinforced commitment to partnering in rural R&D. Federal matching funds are valuable to the Industry and there is potential for these to increase [2.3].

The Australian Government will not adopt the commission's recommendation to halve the cap on government matching contributions to the RDCs in conjunction with the introduction of a new subsidy above the cap. While it is clear that some aspects of the RDC model could be improved, strong support for the model overall was evident throughout the commission's inquiry. The government's matching contributions are a key pillar of the model, and there is a risk that reducing the government contributions would undermine the model's strength and would potentially jeopardise the government-industry partnership that underpins the model. *Australian government 15.6.2011*

Under the RDC model, the Federal Government provides two structures through which rural industries can obtain matching R&D funds. These are the original Research and Development Corporation (RDC), a Federal government body with industry funding and involvement, and since the 1990s the Industry Owned Company (IOC) run by industry members within an agreed framework.

A key aim of the original Kerin-Miller model for R&D Corporations was to shift rural research from 'isolated, public sector, and declining' in the hands of committees of 'eminent ex-scientists drawn from a predictable set of institutions', into a new structure with incentives for industry users to engage and focus on priorities.

Corporatisation was the model ... best able to redress the priority setting problems ... The RDCs created the right incentives ... to maintain and develop an R&D system. ... Rather than set up a committee of 'wise men' ... the best incentive for any system was money. ... The formula developed was based upon a matching government/industry levy arrangement. Miller argued the matching levy [would] provide ownership of R&D by producers... and lead to promotion of R&D. *Lovett, 1997, Revitalising Rural Research and Development in Australia... the story so far.*

A range of industries formed RDCs from the mid 1980s. At 2011, six RDCs are still operating under the Primary Industries and Energy Research and Development Act 1989 (PIERD Act). Nine have moved from RDCs to form IOCs (egg, dairy, pork, forest, horticulture, meat and livestock, meat processing, live export, wool).

2.1 Proposition – Sugar Research Australia (SRA)

Proposal: That the Industry lead formation of an Industry Owned Company backed by a statutory levy by mid 2013, working name Sugar Research Australia (SRA).

The IOC was developed as a facility for industry ownership and control and to extend industry levy collection for R&D, marketing and other agreed activities. IOCs are formed under the *Corporations Act 2001*. Elements of the PIERD Act are reflected in a Statutory Funding Agreement (SFA) as the basis for a statutory levy.

An Industry Owned Company and statutory levies could work well for the Sugar Industry, giving the Industry a strong single entity with defined governance, a new culture and focus, and more research and development funds.

In general, the Industry would best look to follow existing IOC formats where it can, such as using 'Sugar Research Australia' as a name. Sugar specific features would then need to be agreed with the Federal government. There are flexibilities evident in various IOC Constitutions and Statutory Funding Agreements.¹⁰

IOCs are Companies Limited by Guarantee. The Company owns its assets. All statutory levy payers and other financial contributors are entitled to be company owners/ shareholders/ members with voting rights. Key features of IOCs include:

- **IOC objectives and functioning** are stated in an industry-developed Constitution that is discussed with Government and links to the Statutory Funding Agreement. IOCs must use funds in line with Strategic and Operational plans and are not to engage in Agripolitical Activity.
 - **An IOC Constitution** would address, as per governance and Industry needs, for instance: nature of company, liability; objects, powers; membership, voting, weighting, rights, proxies; levy and voluntary payments; general meetings, polls; director numbers, skills base, appointment, election, cessation, selection processes; managing director; board proceedings; interfaces with industry; plans, accounts, reporting; assets on wind up; notices; amendments.
 - **A Statutory Funding Agreement** would cover, again with flexibilities reflecting Government and Industry needs, for instance: recitals on contract, funds and payments; term and operation of agreement, application of the funds, plans and approved activities, matching payments and R&D, guidelines, bank accounts; agripolitical activity; management of transferred assets, liabilities, funds; plans strategic, operational, other; reports, meetings; review of performance; records, information; audit compliance; indemnity; suspension of fund payments, conflicts; recovery; funding acknowledgement; dispute resolution; interpretation.

¹⁰ In a meeting with Sugar Industry officers in June 2011, the Department of Agriculture, Forestry and Fisheries (DAFF) provided important guidelines on forming an IOC: *Guidance on Establishment and Operation of an Industry Owned Company for the Purposes of R&D and/or Marketing*, June 2011; *Legislative Processes: Transition to and Establishment of a New Sugar Industry R&D Services Body (and merging SRDC)*, plus A model Statutory Funding Agreement (Forest & Wood Products Australia).

- **Directors.** The IOC levypayers, as owners, elect a skills-based Board of Directors by voting on nominees. Each Industry develops and agrees a procedure for nominations. IOC Boards generally include a number of industry-based directors selected and elected on the basis of their knowledge and skills.
- **Ballots and AGMs.** An industry ballot is required to show broad industry support for the IOC, and then statutory levy ballots usually three-yearly. There are Annual General Meetings and Director elections as set by the Constitution.
- **Statutory levy.** Current IOCs have statutory, compulsory, levies as their main source of income. There is need to show stable income to achieve IOC status. The industry agreed levies are collected by the DAFF Levies Revenue Service at a cost to the IOC, as occurs for SRDC. A few IOCs also collect voluntary levies themselves and some are matched. Statutory levies and matching funds become 'public monies'. DAFF then pays these to the declared industry services body (the IOC) for provision of industry R&D, marketing or other services.
- **Single or multiple levies.** The IOC structure supports collection of levies for different purposes. As set out in the DAFF *Levy Principles and Guidelines*, industries can request additional types of levies where they can show need, and market failure (that the issue would not be addressed) and equity.
- **Transfers.** Should the Industry agree to form an IOC, such as Sugar Research Australia (SRA), assets, liabilities and staff of SRDC and BSES as well as activities would generally be moved to SRA. Over 2011 and 2012 Industry would work to achieve agreement of stakeholders to a full set of proposed changes [2.4-2.6].
- **Industry ownership.** An IOC is a private corporation owned by its levypayer members [Figure 7]. The Industry would want to achieve an effective, sustainable research organisation built on assets and capacities in current entities.
- The SRDC is government owned and its assets would transfer to an IOC on formation. Currently, about half of growers and nine mill companies (Initial Members) own BSES. The BSES Constitution has steps for interaction with BSES – members on company changes. On Industry and BSES Board decision assets could be transferred.
- Through a new Industry Owned Company, the whole Industry would own more of existing industry-backed assets after transfers from SRDC and BSES.
- A Statutory Funding Agreement would apply to use of statutory levy based Funds. In these, definitions of Funds vary and approaches to the handling of some elements would need to be proposed and discussed with DAFF.

Figure 7. Ownership features of Industry Owned Companies, and SRDC, BSES, SRL

	Ownership of entity and assets	Cessation of Entity (or of Statutory Funding Agreement with Federal Government)
IOCs in general	<p>Are Companies Limited by Guarantee, assets owned by the company/ members (all levy payers). Under the Corporations Act, these private companies:</p> <ul style="list-style-type: none"> - are not carried on for the profit or gain of individual members. - Constitutions prevent distribution of profits or assets for benefit of particular persons, while the company is operating and on winding up. <p>Any profits made must be used to carry out the company's purpose (objects).</p>	<ul style="list-style-type: none"> ▪ Limited liability of members ~\$1, \$5 ▪ Company property can only be distributed to an entity of similar objects/constitution. ▪ May need to repay some/all statutory based Funds to the Federal Government. <p>Industry assets in IOCs 2009-10 include:</p> <ul style="list-style-type: none"> - Dairy Australia \$26m - Horticulture Australia Limited \$41m - Meat & Livestock Australia \$63m - Australian Wool Innovation \$71m with field station/s, plant, stock, trademarks.
Sugar R&D Corporation	Federal government entity, assets owned by the government. Net assets 2009/10: \$11.1m	SRDC assets revert to government unless transferred to an Industry Owned Company
BSES Limited	<p>Company Limited by Guarantee. Tax paying. Does not distribute profits. Company/members own assets. Net assets 2009/10: \$33m.</p> <ul style="list-style-type: none"> ▪ 6.2010: Initial grower members 2217 (2747 in 2007). Initial mill members 9 (9). Subsequent growers members 498 (336). Growers with Agreements not members 2180 (2903). 	<ul style="list-style-type: none"> ▪ Liability limited to \$1 per Initial member. ▪ Property can be transferred, but not to Members. ▪ On winding up or dissolution of Company any remaining property shall be paid to or distributed amongst Initial Members.¹¹
Sugar Research Limited	Company Limited by Guarantee, Qld law 1995. Not for profit. Owned by members, all milling companies. Net assets 2009/10: \$7.4m.	<ul style="list-style-type: none"> ▪ Liability limited to 1 pound per member. ▪ No distribution of assets to members. ▪ Can pay/contribute/transfer to like entities.

¹¹ The BSES Constitution states that on winding up, any assets remaining after liabilities should be distributed among Initial members. This appears to be a contingency for wind-up situations such as insolvency. At say \$6m of assets left, through weighting formulas, nine millers would share half (\$3m) and 2,217 growers would share the other half. BSES Limited was founded on public and industry assets and not with the intention of winding up at any stage in order to distribute assets to members.

2.2 Towards a Sugar Research Australia

It is proposed the Sugar Industry work to establish Sugar Research Australia by mid-2013, with an interim board, then an election for a skills based board.

To achieve a single Industry research organisation utilising the IOC framework will require Industry-led interactions and levels of agreement across industry groups as well as particular stakeholders such as members/Boards of current entities, the Federal government, State government, plus key R&D associates.

This report puts forward a possible SRA formation process and looks into key features and questions. Many points of principle and detailed questions will need attention,¹² step by step, working closely with key groups and using legal and financial advice when required. The Industry, in co-ordination with the entities, will need to identify a block of funding for the SRA formation exercise.

Key elements of the proposed SRA formation process include:

- **An Interim Sugar Research Australia committee 2011-2013** to overview Industry R&D directions and as a sounding board for SRA development. Invitations to three skilled R&D and government experienced directors from the new SRDC board to sit on the I-SRA committee. These directors were selected by Industry leaders and appointed by the Minister in 2011. Plus 3-4 Industry participants with industry-wide perspectives and able to allocate the time needed, and the SRA Formation Director. I-SRA terms of reference and processes for interaction with Industry and other groups to be defined.
- **A Sugar Research Australia Formation Director.** To co-ordinate and progress implementation of agreed RD&E reforms and achieve SRA including structural changes in current organisations.
- **Use the SRA formation period to define purpose, mission, intended culture, approach to business, and principles of operation.** Outputs to include the SRA Constitution, Interim board and CEO, levy arrangements and Statutory Funding Agreement, activity principles including commercial work if any, plus formal Industry-SRA protocols on industry plans, priorities, and guides for interfaces with governments, policymakers, media and industry stakeholders/members.
- **Effective interaction processes** for seeking industry and stakeholder agreement to establish a Sugar Research Australia, and for statutory levy arrangements and levels, plus associated agreements needed for BSES and SRDC transfers.
- **Sustained effort to progress RD&E reform** alongside formation of SRA, aiming for smooth transfer of already streamlined operations into SRA mid-late 2013.

¹² For example, a question such as need for, or advantages of, other financial contributors as well as statutory levy payers as IOC members, cannot yet be addressed. Industry history, positions of key stakeholders, and other IOC models need to be considered. Similarly, although simple structures would be an aim, some contractual, IP or financial impacts may require different thinking.

2.3 SRA Research Funding Panel and larger research pool

Sugar Research Australia would need a competitive grants program. An open call R&D grant system is a feature of RDCs and IOCs, though not a requirement.¹³

Competitive grants programs attract skilled researchers including from CSIRO and universities into thinking about an industry's problems (also leveraging CSIRO funds and block grants). A transparent R&D program with robust evaluation on merit, including for alignment with industry priorities, should harness ideas, hone proposals, and build wider interest and capacity in sugar R&D.

Accordingly, this integrated package of proposed Sugar RD&E reform includes -

- **Establishing an SRA Research Funding Panel involving independent experts**, staffed to conduct an arms-length competitive grants program, with selection of projects on merit against Industry and national priorities, and SRA criteria (a rigorous selection/evaluation system).
- **Channelling all Sugar Research Australia internal research projects as well as external proposals through Panel processes** – including ensuring alignment with priorities. SRA would directly fund specified variety development, biosecurity operations, and professional extension and communications [Part 3].
- **Onus on the SRA Panel and SRA Board** to make a research pool process work as intended by industry, to ensure transparent R&D project review, selection on merit against plans, and reporting for stakeholders including government.

Sugar Research Australia would be an IOC and 'industry services body' with a statutory levy higher than the current SRDC. This should open access to more Federal matching funds. The Government would pay matching funds to SRA for all RD&E that meets quite broad criteria. At present, 14c/t is collected by statutory levy (growers 7, millers 7) for SRDC usage. The Government will match Industry contributions to a cap of 0.5% of Gross Value of Production (GVP) noting GVP varies across years. In 2010, SRDC identified to Sugar Industry representatives that the 14c/t levy was then 6c/t, short of the GVP cap (or about \$2m).

Matching funds expected to be accessible after forming SRA can be estimated using ABARES records and forecasts of Gross Value of Production [Figure 8].¹⁴

¹³ Various IOCs and RDCs, including SRDC, allocate funds directly to specific RD&E as well as their own activities. The PIERD Act s12 Powers, reads: '(1) An R&D Corporation has power to do all things necessary or convenient to be done for, or in connection with, the performance of its functions and, in particular, may ... (b) enter into agreements ... for the carrying out of R&D activities by the Corporation and other persons; and ...'. The AWI SFA 2010, 7.2 states: 'examples of activities which may be determined to be Research and Development Activities include: ... the carrying out, and the coordination and funding of the carrying out, of Research and Development'. There is no grants program requirement. IOC operations are expected to be efficient, effective and ethical.

¹⁴ Figure 8 utilises ABARES *Australian commodities*, June quarter 2011. The PIERD Act has provisions for averaging over years and sets other criteria. These appear likely to be met by SRA.

The statutory levy for Sugar Research Australia, as a single Industry research organisation, should be well above the 'maximum for full matching' (around 19-22c/t) and utilised for R&D, each year the Sugar Industry should attract full matching funds. (These funds could also be accessed by lifting the SRDC levy with millers and growers paying more.)

Figure 8. Additional matching funds accessible by forming SRA (or by SRDC levy increase).

	2007-08	2008-09	2009-10	2010-11f	2011-12f
GVP sugar cane cut for crushing	\$861m	1,021	1,382	1,118	1,195
Maximum matching 0.5% GVP	\$4.31m	5.11	6.91	5.59	5.98
ABARE cane for crushing	32.6 mt	31.5	31	27.4	at 30
Maximum for full matching	13.2 c/t	16.2	22.3	20.4	19.9
SRDC collection 14 c/t	14 c/t	14	14	14	14
Difference (currently not matched) c/t	-0.8 c/t	2.2	8.3	6.4	5.9
Additional accessible matching funds	\$-0.26m	0.70	2.57	1.75	1.78

If the 2010-11 crush reaches 30mt, the GVP could be \$1,220m, depending on quality and sugar prices, and the Additional Accessible Matching Funds about \$1.9m.

In summary, establishing Sugar Research Australia as an IOC and single Industry research organisation and implementing Sugar RD&E reforms should achieve: -

- a substantial SRA research funding pool, potentially increasing from current SRDC project funds (\$8.1m in 2010-11 after overheads) to the order of \$18.5m as funds now directed by BSES to internal research enter the pool [Fig. 9], plus
- ongoing Industry access to the full potential Federal Government matching funds, and likely any further incentive matching funds that may be decided by the Government. A rounded \$2m of extra matching funds above levels being received by SRDC is used in tables within this report,

Figure 9. Indicative building of a Sugar Research Australia R&D funding pool

2010-11 SRDC, BSES budgets	R&D projects \$m	SRDC funded \$m	Larger research pool \$m
SRDC levy for R&D *	3.4		3.4
SRDC Govt contribution *	4.7		+ 4.7 = SRDC pool \$8.1m
BSES QCanes R&D estimate	7	1.6	+ 5.4
BSES QCrops R&D estimate	4.4	1.4	+ 3
Additional Govt contribution			+ 2m = SRA pool \$18.5m

An indicative picture. See also in Part 3. BSES QCanes and QCrops research project funds have been estimated from BSES data. SRDC funds to these areas are subtracted so not to double count the potential research pool. In forming SRA, efficiency savings should also become available for research. * SRDC Operating Plan 2010-11.

SRA researchers would be challenged to ensure their projects are competitive. High proposal and research standards would be expected from all researchers. Over two decades, BSES has been the major recipient of SRDC grants [Fig. 10].

2.4 Sugar Research and Development Corporation

The SRDC has been operating for 20 years and is functioning correctly as a government-industry RDC. However, while some Industry members point to 'improvement over the last year' in interactions, on balance, the arrangement appears to not be delivering for the Industry as needed under rising pressures.

Under current Sugar Industry research structures with multiple entities, there is no recognised 'centre' for top-level research planning and advice to Industry. SRDC has endeavoured to co-ordinate with Industry including, for example, efforts to develop a National Sugarcane Industry RD&E Strategy as sought of all industries. SRDC convened workshops and a work group in 2010. However, while the document sent to the Primary Industries Ministerial Council provides industry information and proposes future committee processes, it is not a strategy. Despite the development process, it has been described as having 'no industry sign-on'.

SRDC has a five year plan reviewed annually that takes into account industry input. SRDC also reports regularly to stakeholders through representative bodies. Even so, industry groups are concerned about SRDC industry awareness and by the weighting SRDC places on research and other activities in terms of funding and time. Joint CANEGROWERS and ASMC input to the Productivity Commission, for instance, explained frustrations with shifts over last decade away from development of varieties, crop management and protection, towards value chain integration, human resource development and change management.

A key driver of SRDC research priorities became the national research priorities; sugar industry priorities appeared to be given less significance. The industry recognizes there are both private and public benefits from R&D. Both are valued and the two can not be easily disentangled. Improved varieties, farm management practices, fertilizer and chemical use and improved factory performance deliver significant environmental benefits as well as the obvious private gains. *Joint submission 11.2010*

There also seem to be 'understanding' difficulties. For instance, SRDC reports by somewhat perplexing Investment Arenas called Regional Futures (59% of funds in 2009-10), Emerging Technologies (29%), and People Development (12%).

National Research Priorities and Rural R&D Priorities do need to be taken into account by SRDC, as they would by a Sugar Research Australia. The priorities are broadly stated and include improving productivity and profitability of existing industries.¹⁵ For most rural industries, key industry concerns identified for research attention generally accord in one way or another with these priorities.

SRDC also has functions associated with being a Federal government entity.

¹⁵ DAFF website 9.2011: 'The new national Rural Research and Development Priorities are: Productivity and Adding Value, Supply Chain and Markets, Natural Resource Management, Climate Variability and Climate Change, Biosecurity'. The National Research Priorities at 2011 in summary : An Environmentally Sustainable Australia, Promoting and Maintaining Good Health, Frontier Technologies for building and transforming Australian Industries, Safeguarding Australia.

Similar reporting interactions with government would continue through a Sugar Research Australia under its Statutory Funding Agreement. Many IOCs expand their required reporting into regular, informative stakeholder reporting.

In recent years, Industry levies to SRDC have ranged from \$3.8m to \$4.5m [Fig.4]. Federal Government matching funds are similar when averaged over five years. The current SRDC levy is not at the Federal matching limit of 0.5% of GVP [2.3].

SRDC net assets at June 2010 were \$11.1m, \$10m in cash (one year of operations). It has seven staff plus three contractors in rented city offices. Operating costs are about \$2m a year. In 2009-10, of \$8m allocated for projects, \$1.2m was for new proposals. A larger \$4.1m was available in 2010-11, then \$1.5m for 2011-12. Of 2009-10 project expenditure, 90% went to R&D including six major providers [Fig.10], scholarships 4%, individual capacity building 1%, and grower group innovation 5%.

Figure 10. SRDC project grants to six major RD providers – SRDC data

\$m	2010-11	2009-10	2008-09	3 years
BSES	2.94	2.66	2.61	8.21
CSIRO	1.29	1.01	0.74	3.03
QUT	0.91	0.88	0.56	2.34
UQ	0.35	0.63	0.69	1.67
JCU	0.15	0.24	0.3	0.69
NSW Sugar	0.34	0.09	0.14	0.57
6 major R&D providers	5.98	5.50	5.03	16.5

SRDC is a Federal government body that was formed on industry request. Levy payer agreement must be obtained to wind-up or privatise SRDC and to form an IOC that would then receive SRDC assets from government.

Industry views on SRDC vary including around change. In part this could reflect the PJP report approach to merging SRDC into BSES which some, including SRDC, reject. Positions may differ for an IOC with all levy payers as voting members. Overall, a firm leaning is evident among Industry groups toward a single research entity functioning professionally and interacting with all industry.

As much as SRDC has 'become fairly accountable' the structure is also seen as limiting proactive operation as an Industry service entity. A major Industry group sees SRDC transition into an IOC as a priority, particularly in an operational sense. There could be potential to make step changes in R&D planning through the proposed Interim-SRA Committee.

Achieving a new research organisation will require attention to detail including optimum staffing and awareness of Board and staff perspectives. It is anticipated SRDC Directors and staff would align with Industry reforms and objectives, and, in transition, will continue to professionally fulfil responsibilities.

2.5 Sugar Research Limited, Sugar Research Institute at QUT

Sugar Research Limited, trading as Sugar Research Institute, was founded in 1949 on a mill levy funding basis. Major changes were made in the 1990s and in 2005.

A merger with BSES was considered in 2003. At the time, BSES and SRL competed for mill and SRDC funding for projects. Rather, the mills decided to reach agreement with Queensland University of Technology to employ SRI staff. Twelve staff transferred in 2005. SRI@QUT now has 14 FTE staff,¹⁶ plus 8 postgraduate students working on sugar and milling. BSES has moved out of mill R&D and now has little or no interface with SRL or SRI in terms of personnel, planning or research.

The industry calls the group at QUT the Sugar Research Institute (SRI@QUT). Within QUT it is the Bioprocessing Division of the Centre for Tropical Crops and Biocommodities. This Division operates on a commercial basis for research projects and consulting. Contracts define the relationship, mainly the QUT SRL Sugar Research Deed, and the QUT SRL Research and Development Agreement.

SRL is owned by all milling companies, has a Board of six, three staff in Brisbane city, and in 2009-10 cost near \$800,000 to run, 33% of \$2.4m trading revenue.¹⁷

At June 2010, net assets were \$7.4m mainly in cash.

Mills paid a membership fee totalling \$150,000 in 2009-10. The Australian mills in groups or separately pay for the major part of SRL trading revenue through formal R&D (funded by SRDC with contribution from mills), mill syndicate development projects (at times with SRDC support), and consultancy for Australian mills and international clients, plus licensing and training [Fig.11].

Figure 11. SRL-QUT projects 2008 to 2010 – total value by SRL category – SRL data

Projects 2008-2010	Consulting incl. research	Design	Instruments	Licensing	Training
Domestic client/mills	\$3.51m*	0.62	0.18	0.69	0.85+0.48**
International clients	\$1.32m	0.21	1.03		0.1

* Over the last two years, mills have invested \$0.72m (38%) of 11 SRDC projects totalling \$1.9m, and \$0.49m in syndicates for development projects conducted by QUT but without SRDC.

** Training over two years \$0.85m, plus a major SRDC Project, Methodology for Shift Supervisor Training \$0.48m.

On-site R&D by mill companies also adds to \$2-3m a year. Such as, across various mills: variety testing, smut, irrigation and field trials, precision agriculture, trash and mud control, productivity work, GPS harvesting, Agdat, and sugar quality.

Different mill companies also run various in-house research and extension support programs, as well as contribute to other external research programs and milling research. ... [This] investment in research activities should also be considered in the discussion around 'equity' in research funding.

¹⁶ FTE staff – full time equivalent (used at points through this report).

¹⁷ SRL Annual Report 2010: SRL employee benefits expense, Directors' fees, Administration expenses and Depreciation add to near \$799,633 including some depreciation on project equipment. Elements of costs of sales are likely to be part of SRL running costs.

Investment by mills in collective or group R&D averaged \$0.59m a year over 2009 and 2010 (ie. for mill contributions to SRDC backed and syndicate projects). Together mills pay a \$150,000 annual fee to SRL, and part of SRL administration through margins on most SRL managed domestic work. For this review, inputs by mills together to RD&E through SRL-SRI@QUT are estimated as follows.

Figure 12. Estimate of recent year R&D funding by mills through SRL

Mill investment in research and syndicate projects	\$m one year	0.59
Proportion of SRL administration costs, 60% of \$800,000 ¹⁸		0.48
SRL profit or interest directed to SRL funded scholarships and projects		0.27
	Estimate total – one year	\$ 1.34 m
	Cents / tonne on 30 mtpa (rounded down for some double counting)	4 c/t

Estimates group all domestic mills. Involvement varies across mill. The \$150,000 is counted in profit used in row 3.

The main activity of SRI@QUT staff through SRL is technical consulting for Australian mills including on instruments (33% dollar value, more on time) and internationally (28%). There is concern at QUT about lack of projects for a few of the specialists. SRDC projects and syndicates add to 40% on dollar value. Formal R&D is important for QUT and Industry as this builds milling knowledge and trains technologists.

After six years, a key issue is whether maintaining the SRL structure as a broker interface between mills and the SRI@QUT team is returning more than it costs. Research and consultancy activities both need consideration.

While SRL provided a formative transition role from 2005, there are signs this arrangement is not working as mills and QUT had hoped. All consulted from Industry and QUT have concerns about the structure of SRL and QUT contracts and the the way they are being operated.

Industry concerns include that the Deed has not realised ambitions in terms of leveraging research funding through QUT, and whether layers of structure are enabling cost effective development and consulting services for mills. A number in Industry question the SRL role now, although locating 'SRI people' at QUT is generally seen as beneficial. Executives at QUT agree the arrangement was sensible to start but it has 'never taken on the scale anticipated – had hoped for \$6-7m, it stays around \$2.3-2.4m'.

Tense QUT-SRL interactions have been underway at Chair level. QUT considers SRL-QUT workings are dysfunctional, and that Deed exclusivity clauses curtail their efforts to build momentum and attract major projects with international backers on cane milling especially for diversified uses. Such projects would develop PhDs, engineers and technicians in Australia with 'knowledge in their heads' of value to the cane milling futures. Utilisation of the Federal-State backed QUT Mackay Renewable Biocommodities Pilot Plant is a particular point of concern.

¹⁸ SRL administration costs in 2009-10 were \$800,000 [see 2.5]. Income proportions averaged over 2008-2010 are domestic 68%, international 32% however SRL has a higher margin on international work and nil on some SRDC research. So an estimated 60% of administration is paid from income on domestic mill funded activities particularly consulting. There is some double counting.

Functional issues raised by mills, SRL and SRI staff and other stakeholders include:

- Mills and SRDC see SRI staff as high priced because of QUT overheads, and 'then SRL adds its sizeable fee'. SRDC research contracts are with QUT not SRL but SRL adds fees, an issue for SRDC and QUT. There are also problems with progressing arrangements through SRL or QUT structures. Missing the start of crushing season, for instance, can mean project cancellation.

(At least) one administration layer too many – for some projects: SRDC-SRL-QUT – before you get to technologists. Doesn't make much sense for such a small group of technologists.

- Contracted consultancy work does move quickly but SRI people are seen as high-cost for smaller mills. SRL reported a fall in member consulting revenue in 2009-10 and in international work for various reasons. The Deed exclusivity clauses also require SRL to offer all projects first to QUT, including consulting. If these were removed, some SRI staff might look to independent consulting.
- Mills are involved in syndicated projects, some seeing this as a way of support. Syndicated and other activities for groups of mills, such as training, likely meet industry needs but these could be organised by QUT directly with mills.
- Although recent years have seen more emphasis on shaping R&D projects and attracting SRDC funding to milling research, the structure is not conducive to longer term step-change research programs.
- SRI services a number of mills, but others do not see such need to sustain a specialist resource, they have in-house capability and/or utilise alternatives.

The Industry is not questioning the SRI team at QUT. At issue is whether services sought from the QUT team can or would continue without the SRL interface?¹⁹

In July 2011, the SRL board provided a position paper for this RD&E reform review. SRL concurs with merger into one research organisation, but with SRL being an embedded entity, and contracts and money arrangements staying the same.

However, discussions indicate the SRL Board level recognises difficulties in the SRL-SRI-QUT arrangements and have concerns that cost outweigh value added. Such costs and inefficiencies will remain if SRL continues in any form.

ASMC considers current milling R&D is 'somewhat variable and not conducted particularly well, in terms of identification of priorities, and allocation of funds'.

¹⁹ A mill technical officer explains, SRI@QUT provides: 'Training of process supervisors re' sugar manufacturing technology, Stack emission testing, Annual consultations re' mill settings. Ongoing research activities [via syndicated projects with and without SRDC funding, small seed funded projects and small projects funded by SRL]. This work covers a broad range of subjects and includes equipment design (eg CVP, clarifiers, evaporators, transducers), applied research (eg removal of vacuum pumps from condensers), more theoretical research (eg, discrete element modelling), development of training materials, conducting industry workshops, for mills or groups, experimental work (eg. trials of mill performance on high trash cane etc), plus consultancies, eg how to improve steam efficiencies, processing issues, crushing train performance, brief phone and email consultations, and maintenance of information library and process models on sugar manufacturing technology, regional research seminars providing annual updates of current activities, and is a significant contributor to ASSCT conferences etc.'

ASMC expects current contributions through the SRL arrangement to be taken into account in calculations and is looking to achieve:

... a reasonable base of investment with a greater degree of consistency, to ensure we are bringing through strong expertise and a good base of milling work ... [such as by] a committed level of milling research investment channelled through the new research body, and allocated against priorities as part of the overall research. *ASMC*

Key miller aims are understood to be:

- availability of cost-effective technical consultancy services for mills from one or more service providers, plus useful, focussed milling research that also builds people capacity and skills to deliver such services into the future
- in forming an industry research entity there be arrangements for understanding and supporting milling projects of merit through research funding processes

... a strong team at QUT, the capacity to commission work external to QUT, and a small team of expertise in-house at the new research organisation to direct the funding. *ASMC*

- recognition that millers also conduct research, development and capacity development including training of mill and regional operatives
- a reasonable base of investment in milling research with a greater degree of consistency, to develop milling technology expertise in younger people.

Reservations expressed by SRL about structural changes include reference to times before SRL in 2005 when researchers had business interactions with mills. There were some issues around project definition, cost estimates and delivery on scope of work, but this was prior to SRL consulting experience gained at QUT.

SRL considers QUT will move away from mill work and 'sugar milling expertise would diminish with lack of QUT commitment to succession planning, replacement and growth', and that mill and QUT interaction could fade. Mills may need to seek other consultants or develop in-house expertise'.

SRL notes 'member mills have expressed an on-going commitment to SRL and a sense of comfort with SRL being the repository or custodian of industry IP and know-how'. For SRL, 'terminating the Deed early would potentially have significant negative impacts for SRL's business'.

SRI@QUT is a significant sugar milling consulting services group, but there are other service providers, large and small, established and emerging.²⁰ It is important for the Australian sugar milling sector to have a range of experts to meet different needs rather than reliance on one group or a few people.

²⁰ Commercial consulting and specialist groups operate in sugar-cane processing. In Cairns, Process Control Engineers Pty Ltd has operated for over 20 years with 5-10 employees. CQ Consulting Group is at Rockhampton, and MIPAC Process Control Engineering has provided services to mills in Australia and Fiji. These could expand types of milling services if industry shows demand.

While there could be risks in removing constraints on the SRI team, there is also a need to let the technical service market develop with local and international connections to serve a fast changing mill sector.

Views differ on whether SRI staff, who are QUT employees, can continue to be mill oriented within the QUT university environment with its stress on research projects and publications. Over six years, SRI@QUT has developed a commercial responsiveness to mills in terms of consultancy scoping and delivery. SRI@QUT points to much of mill contact still directly to their group, and they would build their marketing and liaison by appointing a skilled business manager to work with mills and researchers in developing R&D projects and consulting.

QUT says it would also recruit technical staff and more research students should mill demand increase. The current Deed limits QUT and SRI to dealing through SRL on research into sugarcane and sugarbeet only. Although it could have moved to other products, the QUT group has remained focussed on sugarcane because of the potential and interest. QUT sees research shaped with Industry, including mills involved in SRDC and ARC Linkage applications, as vital to keeping an edge in consulting services and to developing researcher/technologists.

In summary, if the SRL-QUT agreement were removed or significantly modified for non-exclusivity, ... (i) QUT would be able to offer a more competitive service to the milling industry, (ii) there would be a much improved level of communication between the QUT group and the milling industry and (iii) the group at QUT would be more committed and more stable. *QUT 8.2011*

Proposed changes and efficiencies – SRL

1. **The SRI group should (and will) stay at QUT.** The PJP report considered shifting all 14 staff into BSES mainly for strategic reasons including building consensus for RD&E reform. However, the SRI team are employees of QUT and most are not looking to move. They value research synergies at QUT, and are organised to operate as professional research and consultancy providers.

If mill consulting demand grows, QUT will likely appoint more staff. Equally, a more open marketplace could facilitate other providers, including some moving from QUT to current or new firms of engineers or technologists.

Industry should benefit from the QUT base. This provides a vibrant thinking environment attractive to innovators, and brings university weight and funding into big programs. QUT also has a system for steering bright young minds to work on sugar projects generating knowledge that will flow into long careers.

QUT drivers are different but likely not in conflict with sugar industry needs. The QUT team, as with other researchers and providers, including any firm with appropriate skills, should work with mills to submit programs and projects for funding through the SRA Research Funding Panel [2.1. 3.3]. The Panel would also consider need to cultivate capacity and expertise in R&D areas by funding longer term programs on merit.

2. **Form a milling R&D steering capacity in Sugar Research Australia**, but not a milling research function. An SRA steering capacity could include a skilled development officer within SRA and/or a mill R&D advisory committee which could directly involve researchers from QUT and other providers.
3. **Transfer SRL activities to SRA via ASMC, and close SRL at an appropriate point.** The SRL entity worked initially to establish a basis for mill and QUT interactions but has reached a stage where direct and indirect costs look to be exceeding value added. There is no basis for embedding the SRL entity within a single IOC research organisation. Contribution of reserve funds to ASMC to hold, and the transfer of assets, IP, liabilities and remaining staff would need careful handling. During transition, management of current projects and contracts would need to be sorted, some to ASMC, some to QUT, and some elements to SRA.
4. **Negotiate agreement to discontinue the Deed with QUT.** Signals suggest this contract would be best concluded by agreement with a low-cost settlement of outstanding arrangements (legal advice may be needed). This should be achievable. If not, the contract could be held by ASMC until 2015.

The SRL-QUT working situation is difficult and continuing it adds direct SRL costs paid by millers and indirect costs to Industry. Exclusivity clauses on QUT and SRL are likely to limit development of a wider milling R&D and technical service sector, including firms that might deliver lower cost services to smaller mills.

5. **Open access to more IP to encourage development.** In the 1990s, the stress was on protecting IP and commercialisation – 'the sound of money machines'. Some feel IP, old and new, must be protected at all costs, yet even in front-line industries this is debatable. Returns on R&D funding (in rural sectors often paid by many) plus costs of commercialising can be difficult to secure.

The IP question needs to be considered during formation of a single Industry research organisation as part of defining purpose and objectives. Should the aim be to make a profit of sorts on IP held by SRL, BSES or SRDC generated by research funded by past levies or payment? Or could open access extend its usage for the Industry and enhance development of further knowledge?

Approaches may vary with different types of IP. In the SRL case, IP is mainly pre-2005 and industry-funding based. Arguably, this knowledge should be available for all who think they can build on it (eg. SRL computer models might attract the interest of analysts at JCU or engineer consultants and open new lines of thinking and services).

An industry aim would be to harness marketplace energy and innovation and to maximise use of R&D knowledge along the supply chain. Those already using the information (such as the SRI@QUT team) have a head start but they should not have an exclusive hold on this knowledge.

Points in Figure 13 suggest potential Industry benefit in opening access to more IP on a non-exclusive basis. Current structures require SRL to make income and profit, mainly from millers, by holding the IP for SRL and QUT use.

Cash earnings from protected IP are often small, and could be tiny next to possible sugar industry benefits from wider interest, innovative investigation and technical development, plus adaptation of know-how for mill clients.

Figure 13. SRL notes on Intellectual Property and Commercialisation (7.2011). Under the Deed provisions, any IP developed through a project undertaken by QUT, since 1 July 2005, which is not wholly funded by SRL or member mills is owned by QUT. SRL has commercialisation rights and shares net commercialisation revenues equally with QUT.

The major value in the IP that has been developed (both before and subsequent to 1 July 2005) is that it adds to the consulting 'tool kit'. Under the Deed, QUT has license to access SRL background IP. The greatest commercial value (for consulting projects) is with the following areas:

- Designs, engineering drawings and manuals for clarifiers (floatation and sedimentation), CVPs, batch pans, evaporators, seed preparation plant, crystallisers, massecuite reheaters, sugar dryers, etc. These are in an extensive library or AutoCAD drawings which have since been expanded as a result of the industry acceptance of our 'standard design' methodology...
- Instrument designs, fabrication drawings and manuals – Dbrix, WPR, chute height sensor, colour & turbidity meter, torque measuring system ... includes recent work on both the Dbrix and chute height sensor product lines (fully funded by SRL) and partial work (project on hold) on the Sucromax purity sensor. These are commercial-grade products, in use worldwide.
- Training course materials and supporting manuals regularly updated ... highly valuable and some is confidential to the Australian industry.
- Process and energy efficiency know-how. Commercial-grade software – TOTools, ACRSS, ACTSS and Milset are all software products with an active user base. Non-commercial grade software – a large number of applications used within consulting engagements.

There is one instance only where we are sharing commercialisation revenue with QUT .. on the basis of good faith ... since 2005 SRL has paid QUT a total of \$24,102. We also pay SRDC a \$2,000 royalty for each SRI NG clarifier international installation.

It is considered miller and ASMC expectations for mill R&D are addressed through the structural changes proposed for SRL above, including bringing some SRL activity via ASMC across to a Sugar Research Australia. SRA should include mill research co-ordination expertise and potentially a mill R&D advisory committee.

The logic of SRA Research Funding Panel is to review all research proposals against Industry priorities and robust SRA criteria. It is not proposed to allocate or ring fence specific funds for milling research. With mill and supply chain R&D included in Industry priorities, and with a larger research funding pool [2.3], more milling research programs and projects of merit should be supported.

2.6 BSES Limited

Sugar Research Australia (SRA), should its formation as IOC be agreed, would be a modern industry-led research and service organisation with defined purpose and accountabilities to industry members and the Federal government.

The restructure would present opportunity to build a new industry service culture. Smooth transfer of streamlined and prepared elements of BSES, SRDC and SRL around mid 2013 would be important for a strong start to the company.

BSES would provide the main part of staff, assets and programs transferring into SRA. It is anticipated the BSES Board would take the running in streamlining BSES structures and activities in line with Industry intentions, funding agreements and RD&E reform guidance. Industry expectations for BSES reform linked to funding would apply even if an IOC is not agreed or achieved.

As in all transformations, attention will be needed to detail, including history, organisation members, staff, assets and liabilities. Views of BSES staff are mixed with some seeing opportunity, while others are disturbed by a year of review. To some, this is a needed and important turning point, and there is concern that Industry could 'take a soft option when the going gets tough'.

Periods of uncertainty and disorder are realities of organisation and industry restructuring, and this is already the case for sugar RD&E entities. Agreeing major changes and timing targets, cohesive leadership, and communication as steps progress, are important. So is moving as quickly as responsibly possible.

Proposed reforms to BSES operations are discussed in Part 3.

Considerations and background to Part 3

The Industry has conveyed mixed messages to the BSES board – to be more commercial, more focussed, cut costs but not in sensitive areas, find external income, be an industry service provider, and be ready for emergencies. An overarching expectation, though, is that BSES be run to be financially viable.

Over three years, 2006 to 2008, the agreed BSES service fee increased 85% (from 20/ct to 37c/t collected). However, Industry challenged a BSES decision to require PBR based fee increases from 2010, and questioned the ongoing situation.

The financial struggle in BSES has been going for some time. [Projects are found bringing] extra funds and allow[ing] reallocation of R&D people, partially easing the pressure. ... Then SMUT ... and the government assisted, plugging a little hole again. [Now] ...we have a bigger gap and the same underlying issues. *Miller*

A key concern is that BSES Board and staff 'expect' funding to rise as they ask, and BSES emotionally ties funding to core services like biosecurity, or to losing external income, rather than critically addressing costs.

BSES in turn has issue with some Industry positions.

BSES operates in an environment that has traditionally seen R,D&E as an investment not a cost. Not all industry participants appear to accept this view in the current industry environment. Others see R,D&E as a form of insurance that enables rapid recovery from, say, a disease incursion. Many have the expectation that the costs required to maintain the capacity for such responses can be continuously reduced and subjected to the fluctuations in price/production. This is not possible. *BSE Background report for PJP, 8.2010*

BSES operated at around break-even, with sizeable reserves, from 2005-06 to 2008-09 [Fig.14]. Although service fees had near doubled, 2009-10 saw a significant deficit, and this was before the decision to fund the Strategic Initiatives.

Overall, BSES operating expenditure, with the Initiatives, rose by 38% from 2005-06 to the 2010-11 BSES budget of \$30.3m.²¹ Since 2008, BSES has drawn on reserves, although at \$14.5m at end 2011-12, BSES cash would still be above the Board decided minimum of \$10m needed to cover staff and other commitments.

Figure 14. BSES income and expenditure 2005-06 to 2010-11 and budget 2011-12 – BSES data

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11(b)	2010-11	2011-12(b)
Fee collected c/t	19	28	38	37	37	42	42	62
Income from Industry \$m	7.3	10.1	12.7	11.9	11.1	12.2	11.9	17.1
Income all sources \$m	21.6	25.7	25.8	24.9	23.4	22.3	25.1	27.8
Operating expenditure \$m	21.9	25.4	24.4	25.5	26.3	25.6	23.3	26.4
Operating Str. Initiatives \$m						4.7	4.2	5.0
Total operating spend \$m	21.9	25.4	24.4	25.5	26.3	30.3	27.5	31.4
Profit (Loss) before tax \$m	(0.3)	0.2	1.4	(0.6)	(2.9)	(8.0)	(2.4)	(3.6)
Reserves end year \$m (r)	20.5	21.8	23.7	23.4	21.1	11.7	17.6	14.8
BSES staff employed	170	172	167	175	174		170	
BSES staff FTE	162	165	159	166	170	182 (b)	169	187 (b)

(b) Budget figures for 10-11 and 11-12. Staff are shown as numbers employed and FTE (full time equivalent). To start 2011-12, BSES budgeted for a full set of staff including about 17 vacant positions pending this review.

(r) Reserves figures are correct. BSES advises that reserves are cash plus investments, therefore balance sheet movements and timing will affect the reserves balance, not just the profit/loss movement.

In this report, the BSES Budget for 2010-11 is a key reference point. The 2010-11 budget represents the 'status quo' BSES in Industry minds and in the PJP cases. BSES has managed its financial situation by deferring costs such as replacing staff or repairs. The extreme weather of 2010 also delayed projects and expenditure.

²¹ In this Report, the BSES 2010-11 budget (b) and actual, and 2011-12 budget (b) are shown with the Strategic Initiatives (Dupont) as projects within operating costs as they use existing BSES staff and facilities and are not readily separated from BSES operations.

Current BSES Directors date from 2005 to 2007 except for the CEO appointed in 2001. BSES conducted cost reduction programs over 2004-2006. In 2007, the Board decided against cost and location tightening proposals. In 2010, some \$1m of finetuning cuts were agreed in industry discussions of budget issues.

In 2009, the BSES Board looked to assure its income through a higher charge to growers enforced by Plant Breeders' Rights (PBR), and/or a new investment company (NewCo). During RD&E Reform consultation this year a number of staff and some growers have asked 'What about PBR?' or 'Just bring in PBR!' In 2009, the BSES Board made a decision to introduce PBR. The Industry disagreed. The BSES Board still considers PBR should be the basis for charging growers.²²

BSES projected that it would be collecting 55c/tonne from growers from the 2011 season onward. In 2011 reality, this figure would be short of income needed by BSES to fund its 2011-12 budget without marked organisational change.

This report responds to requests to consider PBR and NewCo approaches as possible funding facilities. Issues around BSES utilising PBR as the main basis for its overall funding were reviewed, along with elements of a New Co type special investment vehicle. Key findings include:

i) **On use of Plant Breeders' Rights** to legally back a higher charge to growers:

- History and economics mean BSES is currently the sole provider of sugar cane varieties. BSES would need to set a 'reasonable price' for PBR varieties taking into account multiple factors including scope of BSES activity. A process similar to this review may be needed to consider the complex balances.
- The industry has a role in determining the usefulness of PBR as a fee collection method, in agreeing any 'reasonable price', and in considering BSES decision roles around supply of variety options. PBR, if pursued by BSES without industry agreement, could quickly enter costly and lengthy arbitration.
- PBR is not a simple, fallback answer to BSES funding. Charging a PBR Licence Fee rather than an industry agreed service fee does not open a new pool of secure money for BSES. Growers would have to pay the full fee as set by BSES to use BSES PBR protected varieties. Mills may, or may not, decide to assist.
- PBR links to the Varieties part of BSES activities (the part Industry accords highest priority). PBR would not necessarily back BSES expenditure on other activities. Overall too, what signals does 'the threat of PBR' send Industry about BSES?

ii) **On an investment scheme to fund Strategic Initiatives:**

- The idea of a sizeable special funding stream for the GM and Seed Strategic Initiatives through a voluntary investment by sugar industry stakeholders and others, has attractions and possibilities could be investigated.

²² Chair of Directors' Statement, BSES Annual Report 2010-2011. BSES appears to have spent about \$300,000 on Plant Breeding Rights and NewCo studies to date and the Board stated in July it is commissioning legal opinion on applying PBR.

- Some feel sufficient growers and perhaps millers could be interested to invest, with hope of a return, and to help the industry. For instance, to raise \$20 million, 1,000 growers might invest \$20,000 each with no millers involved, or, say, 2,000 growers @ \$2,000 and 6 millers @ \$2.7m each.
- However, the global financial climate will be unsure for some time. Industry leaders also need to be conscious of potential duties of care in promoting an investment scheme where cash could be lost. NewCo entities also bring costs.

The handling of PBR and NewCo propositions in 2009 aside, such facilities do not provide a mechanism to address RD&E funding challenges in 2011-2012. While the concepts may become useful in future circumstances, PBR and NewCo are not appropriate as the funding backbones of Sugar Industry RD&E.

BSES views on RD&E reform

BSES considers its current RD&E program is integrated, linked and structured in the best interests of the industry. BSES believes it should be funded to continue in its near current form by industry or other industry-backed fee mechanisms.

Senior BSES officers and other staff have co-operatively provided considerable input to the PJP team and to this Sugar Industry RD&E reform phase 2 review. As well as submissions, key documents putting BSES views on change have been considered, including Comments on Draft PJP report 12.2010, BSES consequences statement 2.2011, and BSES 2010 reduction lists (waterfall charts).²³

Key points from these BSES assessments and statements have been taken into account throughout this phase 2 review. Over May to August 2011, BSES senior staff also provided considered thoughts and data in response to questions about budget circumstances and streamlining to optimise activities and services to meet industry priorities. In particular:

- BSES plant breeding leaders and staff have provided optimising and efficiency scenarios and these have been utilised in Part 3.1 below.
- **BSES acknowledges having 'too many locations' with attendant costs.** This reflects push-pull pressures and history. Locations are listed in Figure 15 with information to assist understanding. BSES has provided considered views, noting that decisions on locations link with decisions on size and complexity of breeding program, and of cropping systems R&D, as well as decisions on provision of extension one to one.

As noted in 1.3, BSES has also advised that Base Case plus \$1.9m is the order of minimum income/expenditure needed to maintain critical mass in core activities.

²³ In April 2010, BSES management prepared 'waterfall charts' for the Board listing cost reductions by priority should funding issues continue. These are indicative guides to BSES management considerations around priorities and efficiencies if and as income reduced. In outline and summary: first, finetuning each project and corporate, fewer EOs, close southern selection, sell Bundaberg Station, re-lease land, extension ratio to 1 per 2mt, less HR, cease CSIRO JV, stop Gen2 biomass, close lab, tighten technology, cease GM not staff, reduce breeding 25%, extension only E1, reduce corporate numbers, exit SmartSett, cease investment in NIR.

Figure 15. BSES locations and key features

Zone	BSES location	Site	Activities	Prof staff 2011	Total staff FTE 2011
Wet Tropics	Meringa	station, 36 ha owned, 27 leased	plant breeding, entomology/biosecurity, NIR, extension	8	17
	Tully	station owned 51	pathology/biosecurity, rodent biology, extension/agronomy	4	6
	Herbert – Ingham	station owned 4, leased 40	extension in plant breeding agronomy	3	10.1
	Tablelands	office, provided	extension	1	1
	Babinda	office, provided	extension		1
	Innisfail	office, leased	extension	1	1
Dry Tropics	Burdekin	station, owned 36, leased 103	plant breeding, agronomy extension, ag eng/water	10	23
Dry Tropics irrigation	Mackay	station, owned 28, leased 9	plant breeding, agronomy, nutrition, entomology, extension, pathology, weeds	10	23.6
	Proserpine	office, provided	extension	3	3.5
	Sarina	office, provided	extension	1	1.1
Sub Tropics Southern	Bundaberg	station, owned 32, leased 21	plant breeding, agronomy, nutrition, entomology, extension, pathology	9	22
	Woodford	station owned 161	pathology	1	3
	Childers	office, provided	extension	1	1
	Maryborough	office, provided	extension		1
	Rocky Point	office, provided	extension		1
NSW	Condong	office, provided	extension	1	1
	Broadwater	at mill, provided	plant breeding	1	3
	Harwood	office, provided	extension		1
Brisbane	Indooroopilly	head office, labs	chemistry, biotechnology biometrics, pathology, corporate	27	63.1

During interactions, some BSES staff expressed views that there should be Needs Analysis and Costs/Benefits Analysis before any changes. In ideal times, more detailed analysis might be conducted, including by BSES itself, questioning costs and returns of a range of current activities in response to financial circumstances. For this report, many statements on priorities have been analysed and taken into account along with available papers on RD&E outcomes.

Proposed BSES structural and streamlining reforms are discussed in Part 3.

3. Sugar Research Australia and BSES

Part 3 considers current BSES operations in the context of Industry priorities and performance and financial objectives]. Structural and streamlining changes are proposed for Plant Breeding, Varieties, Biosecurity and Stations [3.1], Extension and Communications [3.2], and Farm and Mill Technologies [3.3]. Section 3.4 provides a financial overview for proposed reforms and money pictures at levels of change, plus proposals for Industry funding over the next 3-4-5 years.

Economically and culturally, the best models for Sugar RD&E are in Australia.

Australian rural industries lead the world on many fronts including research and development structures – RDCs, IOCs and Co-operative Research Centres (CRCs).

The R&D Corporation structure has been tested and refined over two decades, including through introduction of Industry Owned Companies. This reflects shifts across the Australian economy and rural culture from public sector control and towards globally competitive industries led by Industry agreement.

The RDC and IOC models recognise 'market failure' occurs, in that farms and even major rural firms cannot provide the industry level planning and action needed for long term research based advance, for aspects of international marketing, or to address issues such as biosecurity threats or residues.

R,D&E is often an area of 'market failure' where a relatively small contribution from many allows the delivery of products and services that are beyond the capacity of an individual to pay. *BSES 2010*

The Australian rural sector comprises a diverse range of industries, owned and operated by a myriad of small family businesses. These structural characteristics of the rural sector mean that the market failure in the provision of socially optimal levels of RD&E is likely to be more severe ... the incentive for individual businesses to invest in R&D on their own is less. It is also difficult to apply property rights to the technology and knowledge from R&D ... statutory levies overcomes this market failure and under-investment by providing industry with a means of collectively investing in R&D that will benefit the industry. ... The statutory levy system brings together a large number of small industry participants collectively to pursue industry priorities, while ensuring that there are no free riders gaining benefits they did not contribute to. *DAFF to Productivity Commission 2010*

Demonstrating there is 'market failure' overall, and around activities that would be supported by a levy, is a key test for statutory levies. *Federal Levy Principles and Guidelines 2009* state as Principle 1, that there must be market failure, that is, 'the nature and dispersal of program benefits are such that a private investor would not profit from supplying them' [DAFF 2010]. Said another way, those proposing a statutory levy need to show 'why the benefits cannot be captured by individual firms acting alone; and why collective action is the best solution'.

Or as put by the Grape and Wine Research and Development Corporation on its website, industry-backed RD&E and Federal matching funds are for collective RD&E, not to stand in the space where innovative providers should take the lead.

The GWRDC ... refrains from investing where there is no market failure (this refers to activities which could reasonably be expected to be provided by the market on a cost recovery/profit basis).

Stakeholder feedback on priorities shows supports for an Industry organisation focussing on research, development and science based activities in areas that require specialist skills. There is reducing support for Sugar Industry funding of activities that groups, farms or mills can undertake or arrange themselves.

Australian RDCs and IOCs focus RD&E investment on what they can best progress: investigative and applied research, development based on research, along with professional extension and communication of outcomes. RDCs and IOCs also aim to harness the capacities, energy and business acumen of a web of advisors and field specialists who provide services for producers.

Restructuring to achieve a new Sugar Research Australia focussed on research, development, and professional extension and communication, would align with high performing models in Australia – and with evolving expectations of sugar industry stakeholders including governments.²⁴

Sections 3.1- 3.3 propose approaches to streamlining BSES taking into account:

- industry feedback on priorities and need for change [1.4]
- Industry research organisation models and focus points [above and 3.2]
- BSES financial challenges and industry funding issues [2.6]
- potential industry agreement to achieve an IOC, Sugar Research Australia, by mid 2013, including a SRA Research Funding Panel and wider research pool with all Industry-backed research assessed on merit [2.2]
- BSES providing most staff, assets and programs transferring into SRA, and
- BSES, interacting with the SRA formation director, progressing the streamlining of its operations to meet agreed Industry RD&E reform objectives [2.6].

The BSES 2010-11 budget and PJP Base Case are used as reference points in this Part. For the 2013 year, the PJP Base Case would require Industry payments of 57c/t for 30mtpa, compared to the BSES Status Quo requiring 81c/t [1.3].

However, many in industry see 40 cents/tonne as the usual BSES service fee (as over 2008 to 2010, 20c growers, 20c millers). With large rises in recent years they are not interested in 'inflation effect'. Some question any presumption the 2011-12 special fees might continue. Others are prepared to pay more [1.4].

Industry priorities and blocks of costs need to be analysed and ideas generated to find service levels and payments likely to be agreed.

... until we know what is proposed to be core and non-core and how that is set up it is pointless to estimate what we can pay or are willing to pay. *Services Joint group, June 2011*

²⁴ The PJP analysis also recommended a move from RD&E generalist to focused R&D specialist concentrating on plant breeding, biotechnology and biosecurity.

3.1. Plant Breeding, Varieties, Biosecurity

Sugar industry stakeholders place high weight on Industry funded plant breeding research, new variety development and biosecurity readiness especially through varieties. Faced with a potential doubling of service fees or reduction of BSES expenditure, stakeholders stress that these are their top priorities [1.4].

Given the industry size, sugarcane plant breeding, ongoing variety development and biosecurity are seen as specialised, collective functions, with market failure features. Cane variety development is complex and unlikely to be initiated by commercial providers in the foreseeable future. In the longer term, forms of competition could be to industry benefit.

Breeding, varieties and biosecurity are a substantial part of BSES operations [Fig.16]. Industry groups appear to accept that focussing R&D investment on breeding and conventional varieties will assure incremental gains but big jumps in farm productivity may not arise. There is also recognition that with more money spent on breeding, including GM, the risk of making little gain for high investment rises. Others consider such risks to be real and urge a balance of research.

[A] horrifying potential outcome ... is that the industry perception that varieties (plant breeding) provides the answer and that is where the bulk (if not all) resources should be spent. ... an appropriate balance [is needed] between 'plant breeding' and 'farming system/extension'.

Figure 16. BSES 2010-2011 Budget for plant breeding, varieties, biosecurity, and stations 2010-11 dollars	BSES operating budget	Income non service fee	Expenditure net of income	Expenditure cents/tonne on 30 mtpa	Partners
Improved variety development – delivery of new more productive varieties to the industry with appropriate levels of disease and insect resistance, and acceptable milling and sugar quality	\$5.75m	\$1.08m	\$4.67m	16 c/t	Productivity services, CSIRO JV Indon, China
Molecular Breeding – plant breeding research including DNA markers, GM technologies/ varieties and seed and tissue propagation	0.62	0.40	0.22	1	CSIRO
	2.00	0	2.00	7	UQ
	2.46	0	2.46	8	Dupont
Biosecurity – breeding trials for disease, advance disease study, quarantine operations, work with governments on defence/control	1.93	0.90	1.03	3	Prod services Govts, AQIS, other
Variety Adoption – propagation, release, take-up	0.78	0	0.78	3	Prod services
Sugar Experimental Stations – management and admin 7 SES locations, all types of activities on-site	3.96	0.91	3.05	10	
TOTALS	\$17.50m	\$3.29m	\$14.21m	48 c/t	

These BSES 2010-11 Budget figures provide the key calculation points in this report [2.6, Fig. 14] because: (i) this is closer to a BSES status quo before extreme 2010 season effects on projects and interim BSES financial measures including vacancies, holding travel, and new funds from SRDC; (ii) the PJP analysis is based on 2010-11 budget.

The 7 Sugar Experimental Stations are included fully within this group because the main activity on stations is plant breeding/varieties. BSES corporate overheads are allocated proportionately and are counted into the BSES operating budget column. Income sources are SRDC 51%, DEEDI 9%, cane sales 32%, commercial clients 9%.

Proposed changes and efficiencies

After considering information on conventional and molecular plant breeding, sugarcane genetics, BSES breeding and variety development, and on biosecurity, plus inputs from growers and millers across regions, CSIRO, Dupont, DEEDI and BSES senior and specialist staff, and taking into account cane production trends plus the PJP Base Case, *the following changes and steps are proposed:*

1. **Keep the cane variety development program at 100,000 stage 1 seedlings per year, reorganised on three sites** Meringa, Burdekin, Mackay Research Stations, with final stage trials in all regions. BSES expert breeding managers to apply their knowledge and experience to adjust breeding and achieve optimum variety development and service delivery for regions [see below].
2. **Progressively concentrate field staff** (breeding and technical) on three major locations: Meringa, Burdekin and Mackay research stations plus Woodford.
3. **Close and sell Bundaberg and Herbert sites** in 2012 with transfer of small numbers of remaining staff. Closure of sites without rationalisation of staffing will not ensure efficiencies or achieve cost reductions [below, and 3.2, 3.3]. Lease sheds if needed for farm trials. Proceeds of sales to reinforce finances, and proposals for directing a portion of sales or assets to local field services innovation could be considered on a case by case basis.
4. **Transfer Variety Adoption** into new Professional Extension and Communication Unit and reduce staff by two. This Unit is to integrate variety adoption into whole-farm extension material, cane farming tools and field events [see 3.2].
5. **Cease the CSIRO Joint Venture.** This JV started in 2003 and functioned well until recent years. CSIRO and BSES work together but the Dupont JV has changed relationships. Move to project-by-project arrangements.
6. **Plant Breeding-Varieties-Biosecurity-Stations to reduce from 2010-11 budget of \$17.5m by \$2.6m (15%) by end 2012.**

Estimates of potential savings are provided in Figure 17. These are not precise figures. The 15% efficiency target is important to achieve optimum restructuring outcomes. BSES managers should be responsible for finetuning the proposed major reforms, achieving overall staff reductions, and identifying further efficiencies. Prescribing detailed change is inappropriate and encourages game-playing.

Figure 17. Breeding-Varieties-Biosecurity-Stations – estimates of efficiency savings

Reorganise breeding to 3 sites, close Bundaberg and Herbert, reduce staff (save 9.1 FTE and site running costs including admin staff. For further reductions see 3.2, 3.3)	\$1.8 m
Reduce variety adoption section by 2 (staff transfer is not a saving)	\$0.3m
Cease CSIRO Joint Venture	\$0.2m
Indicative reduction from these changes from 2010-11 budget \$17.5m	= \$2.3m
Further reductions of \$0.3m to achieve target \$2.6m efficiency savings from \$17.5m.	\$ 0.3 m
	- \$2.6m (9c/t) to \$14.9m

The proposal to close two stations, Bundaberg and Herbert, is based on a set of considerations in the context of Industry priorities and RD&E reform objectives.

Employee salaries, on-costs and overheads are the largest expense of most organisations, and facilities such as research stations tend gather staff and costs that do not always relate to current Industry priorities for R&D. Bundaberg Station has 22 and Herbert has 10.1 FTE staff [Fig.15]. BSES staff charts show:

- Bundaberg: 6 Variety Development, 5 Biosecurity, 5 Cropping Systems, 3 Extension, 2 admin, 4 farm operation, counting vacancies but not casuals.
- Herbert: 4 plant breeding technicians, 1 farm systems technician, 3 extension, 1 contract extension and 2 administration.

Closure of Bundaberg and Herbert sites would involve reductions across breeding, farming and extension of 19-21 staff (reducing ongoing costs by \$2.4-\$2.7mpa).

The Southern cane region has reduced significantly in size relative to other areas and this trend is not expected to reverse [Fig. 2]. This is a basis for resource shifts to hold budgets, however, the Bundaberg and Herbert closure proposals also take into account potential to reorganise the breeding and varieties programs to achieve efficiencies and deliver similar levels of variety development service.

- BSES breeding specialists have provided advice on a realistic reorganisation to three research stations for early breeding stages then final stage farm trials across regions. Currently, 25,000 seedlings from stage 1 progeny assessment trials (PATs) are located at each of Meringa, Burdekin, Mackay and Bundaberg. 20,000 stage 2 clones (CATs) and clones in final stage (FATs) are spread across these sites. Rearrangement would likely locate 25,000 seedlings at Meringa, 45,000 Mackay, 30,000 Burdekin. To address regional needs, structured final stage selections would occur through regions.²⁵ Breeders will attend to this closely.

Central Queensland is a large and growing proportion of harvest, and projections for cane growing expansion lean to the north [1.1]. Concentrating activities and staff at Meringa, Burdekin, Mackay, should achieve an efficient and effective variety development operation. In contrast, reducing variety development to two sites would significantly impact on number and quality of varieties delivered and on genetic gain, with risk of major breeding stock loss from new disease.

Notably too, BSES has been considering sale of Bundaberg station with breeding program changes for some time, taking all these factors into account.

²⁵ **On regions and breeding.** There are many local views about varieties doing well, or less well, in different areas and on the importance of local breeding. These traditional views have been researched. The scientists found that 'genotype x region interactions were small relative to genotype main effects and GE interactions within regions for both cane yield and CCS', and 'these results support a move toward a more integrated breeding program in Australia'. They advocated further data analysis of early stage results as lead in to final assessment trials in wider regions as basis for faster genetic gains and 'faster commercial release of cultivars across all regions to which they are suited'. Jackson, Chapman, Rattey, Wei, Cox (2007) Genotype x Region Interactions and implications for sugarcane breeding programs, *Proc. Aust. Soc. Sugar Cane Technol.*, vol. 29.

For this phase 2, the Strategic Initiatives and Dupont Joint Venture were not quarantined from review. However, it has become evident that the main part of costs are salaries for members of the BSES Molecular Plant Breeding team, so the SI are best categorised just as large projects rather than as special add-on activities that could be readily stopped.

The SI are included in the BSES Plant Breeding 2010-11 budget and should be reviewed for cost savings to meet the efficiency target as much as any area. Over the last year, staff allocated to SI projects have risen from 19 to 26. Of 2010-11 expenditure of \$4.7m, salaries and on-costs were \$2.7m, travel and operations \$0.13m plus a major operating contract payment of about \$1.8m.

Under a Sugar Research Australia, plant breeding research proposals would be considered through the Research Funding Panel [2.3]. It is envisaged a Variety Development and Biosecurity Unit would be defined within SRA. This Unit would be funded directly for development operations for a period, subject to clear KPIs and performance reviews. Any research proposed by Unit staff would go to the Research Funding Panel as well as breeding research proposals.

Indicatively, about \$7.9m of \$14.9m would be directed to the Variety Development and Biosecurity Unit (say \$3.2m varieties, \$1.8m biosecurity, \$2.9m stations). Some \$7mpa of research funding, including current Strategic Initiatives amounts, would be placed in the larger research pool.

All SRA researchers would put proposals to the SRA Research Funding Panel for evaluation against industry priorities and Panel criteria [2.3].

3.2 Extension, Communication, Advisory

Growers, millers and service groups stress their need for access to research, for effective links between researchers and users, and for knowledge they can tap in the field. Links can be through business providers, local technical people, agronomists, other growers, BSES staff, and/or practical and informative websites. A feedback path to researchers for relaying issues is also important.

The emphasis is on 'access' to research results and information. There is a view across the industry that this tends to occur where BSES employs extension officers, and happens less when 'there is no BSES person in the area'. Some feel 'this is the only way to get up to date information' from BSES.

At the same time, more cane farmers are using other service providers for on-farm advice. This is evident from discussions and local publications such as Maryborough Productivity Services', *The Billet*. More producers, including mill groups, are also employing crop agronomists, although some also call on BSES for 'free' on-farm visits. Even with BSES in the field, Productivity Services Groups are employing rural scientists and technicians. These advisors are able to analyse reports and apply and extend findings, if they have access.

We must have info available to use. An outside person should be able to rock up to BSES and say give us their knowledge. This should be written into projects. *Joint group*

There seems to be a contrast between these expectations and BSES approach to knowledge access, suggesting different thinking on the purpose of BSES and long-time industry funding of R&D and extension. There are signs of BSES concern about 'opening markets to competitors'. When ideas of harnessing other providers arise, so do views that 'BSES should charge them for its information'.

'Outsiders' likely can and do attend some BSES seminars and shed meetings, but there is a feeling of 'a closed shop' culture rather a mission to spread knowledge.

Variety information, communication of trial work results and new research findings are the paramount things that growers see as lacking in current extension services. In addition it is felt that one industry library containing all the final results/findings of past research projects be made available so that R&D work is not duplicated or can be used by future researchers and extension providers. Currently there is a large volume of inaccessible prior research stored in various research organisation libraries that should be centrally housed and easily accessed. *Local Board*

The BSES website as it is now makes little research information or results available in scientific form for use by, say, agronomists in the field. Fact sheets are also hard to locate. Publications such as *The Bulletin* do not meet the deeper need, or are 'too glossy'. The SRDC website does have a search process for projects and reports, for those who persevere. It is interesting to compare the e-libraries of other RDCs/IOCs, or on-line tools of industry CRCs, eg. www.sheepcrc.org.au.

An easily accessible Industry research library should be established... and should have a one page preview of all reports. This would allow those wanting to do research and find if there is something matching with what they were wanting to do, read the paper and then drill into the whole report. This may help restrict repetition or enhance the start point of a new project.

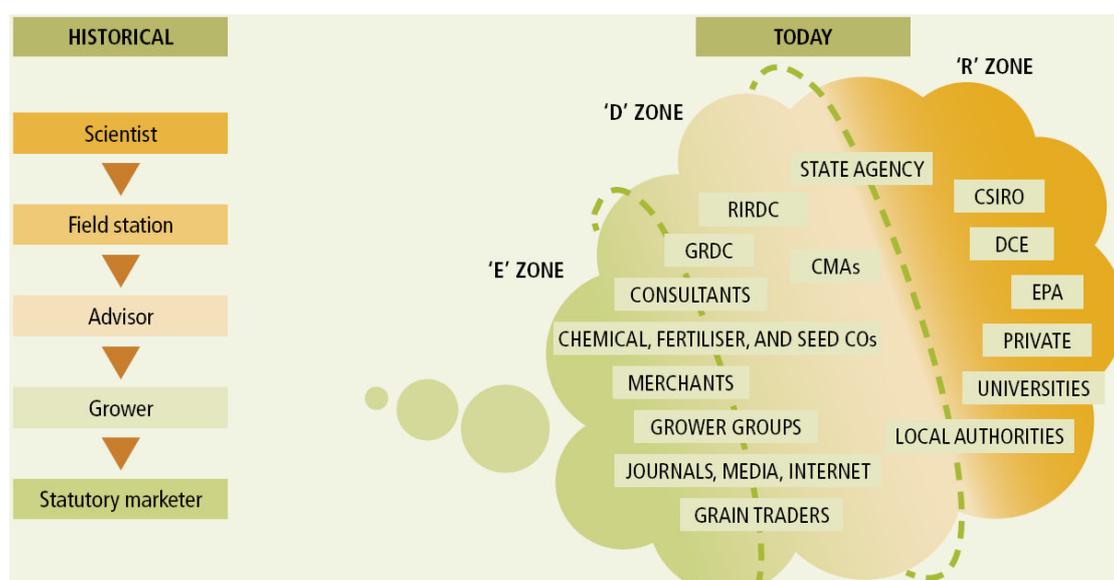
The recent *Draft National Extension Principles*, as well as noting that 'effective extension takes a significant amount of time and resources', stresses the importance of open access to findings and insights from research.

... all clients in the primary industries value chains require high levels of access to R&D information and knowledge which is relevant, up to date, understandable and provides a pathway to adoption. *PISC Draft Extension Principles 1.2011*

The Principles recognise that industries and participants need to adapt extension arrangements to align needs, costs, performance and returns. They point to rising roles of a range of advisory providers in today's dynamic rural structures.

It is worth noting that the extension 'environment' has changed rapidly in the last two decades [diagram below]. In particular, there is significantly reduced emphasis on a linear extension model (from scientist to farmer), to a complex, iterative, multiplayer and multi partnership model.

Figure 18. Historical and new world extension models



Acknowledgements: Grains RDE Strategy 2010, Prof P Phillips UWA 2009, Draft National Extension Principles.

Some cane district groups are actively looking for ways to open competition and get knowledge to and from a wide range of professional advisors. Proactive regions are questioning historical situations, such as employment by BSES being 'the portal' to knowledge and interactions with researchers. Also, whether BSES employing local extension officers, in itself, creates barriers to information flow to and from all active in the field. Such points are made even where the quality of local BSES staff is applauded, and also from representative groups.

[It is] suggested that [local determination] will assist in improving growers' receptivity to direct extension advice. Having extension officers provided centrally implies, to some growers, a paternalistic approach that breeds indifference and resentment.

BSES officers differ in their views on extension and on 'free' one-on-one advice that is occurring on farms and at BSES sites, if only for 10-20% of growers (BSES staff indicate). At senior BSES levels, the ideal is multi-faceted activity.

I don't think that many in industry have a good grasp of the extent of what 'extension' is. Many think of it as someone from BSES or a productivity service driving around the district and stopping by for a cup of tea! There is much more. My concept of 'extension' is that there are six core areas: Packaging ... R&D outcomes and outputs into usable, comprehensive technology packages ... Strategic: usually group-focused awareness and demonstration activities ... Reactive: telephone enquiries and farm visits instigated by a grower ... Fee-for-service eg. training courses ... Routine [eg. data collection], and Consultant/Coach.

Staff provide a range of insights and views on BSES track record, role, costs and impacts through current extension, as in these three extracts.

In a model where extension is not performed within BSES, any linkages between various extension providers and BSES R&D activities are almost certain to be weaker and to deliver less than the status quo. BSES would be likely to charge other service providers for access to R&D outcomes and intellectual property. ...

This process may add yet another layer of bureaucracy to the system while delivering an inferior service to the industry. ... If productivity services bodies take on extension and other roles, a very fragmented link between R,D&E is likely. This will be exacerbated across districts as there are no formal links between each productivity service. There is also a very fragmented approach within the sugarcane industry – among growers and particularly with factories. This hinders a unified and strong approach to R,D&E.

Lack of suitable grower engagement; being largely why many activities are poorly adopted or understood, which reflects unfavourably on the merit of BSES Limited and has led to this crisis and review. ...

Partial 'divorce' or widening of the link between extension and 'research' or R&D will weaken both the relevance of research and the ability/capacity of extension to enhance adoption. Including "Extension associated with systems and technology," and "Train-the-trainer type activities" but "not group or one-on-one extension service" in the centrally-funded ... activities will compromise the ability...to provide customer satisfaction. Customers will not be so willing as to fund another service in order to achieve satisfaction.

A more strategic, multi-layered approach to communications and extension materials is required, incorporating three major levels: Generic, industry wide, Generic, region focussed [and] Training packages developed as accumulated knowledge from the generic materials and licensed to local RTOs to deliver. Maybe the local productivity groups or private training providers. (e.g. EDGE network in ...red meat...). Such training packages (eg 6ES could be registered with FarmReady and attract federal funding support).

Elements of these extracts show some differences between BSES staff views on what is needed and practical stakeholder concerns with BSES performance [1.4 and above]. Simmering issues such as access to information, field performance and equity would likely amplify as service fees increase.

'Why not fund BSES to keep doing what it does?' some ask. Others question a 'complacency that more of the same will get us to a desirable future!'

Cost-return balances underlie this Sugar RD&E Reform process including questions such as where collective funding is warranted, rather than local or individual action. As well as stakeholder views, other signposts point to change in Sugar Industry extension. These include: Performance of current arrangements, emerging services in regional markets, and other industry models.

i) Extension performance. BSES in current and past form has been custodian of industry funded farming systems work and extension for decades, so also has accountabilities for the effectiveness or otherwise of current extension.

In 2007, BSES observed that available R&D and 'best practice' could lift farm productivity and profitably 10-20%, but also that approaches over preceding years in trying for co-ordination, consistency of message, local delivery and feedback flows had not worked.²⁶

... despite significant effort by millers, growers and researchers to improve extension and adoption of best practice, the industry has seen little overall change in sucrose per hectare, and certainly not the 10-20% leap that was hoped for. It is now clear that if this opportunity is real, a new approach is needed to deliver it. ... BSES has a particular role in delivering outcomes dependent on plant improvement and farming strategies. The core business function of BSES is to deliver realised value that will improve grower and miller profitability. *BSES 2007*

In 2011, BSES officers continue to point out variability of farm performance and how few growers adopt 'best practices'. While there is a tendency to say, 'this industry needs better farm managers', after many years, extension modes and/or relevance and applicability of research being extended could also be at issue.

Or, as put by a key mill-grower interface manager, 'it is not working the way it is'.

ii) Evolving regional actions in response to needs. A marketplace for sugar industry services is developing quite quickly to serve changing grower and miller needs. This is seen in new approaches within some Productivity Groups, and in commercial services delivered by a range of providers for farms and crops.

BSES has endeavoured to apportion 'full BSES extension services' across areas and to work with local groups as their ideas have evolved.²⁷ Some areas choose a version of BSES extension, other don't. Equity issues arise, as also identified by PJP. These include concerns about allocation of 'free' BSES officers and then levels of skills and extension capabilities.

²⁶ Wallis, 2007, *Discussion Paper of the role of BSES in a sustainable future for the sugar industry*.

²⁷ For instance, BSES pays Mossman Agricultural Services a sum as it provides the consulting services BSES would have staffed under a per tonne formula. BSES runs and staffs the productivity service under direction of the Proserpine Productivity Committee. The district pays more. In Mackay, the joint Agriserve delivers expanded services.

Other mill and grower groups have built arrangements to service their region's needs, but are looking for more access to R&D information for local analysis. PJP discerned four types of local area arrangements with stages of evolution.

Figure 19. PJP categorisation of local area arrangements 2010

LOCAL AREA ARRANGEMENTS				
	Basic	Commercial	Contracted	Expanded
Examples	Childers	Mossman	Proserpine	Mackay
Service Offerings	Core Services <ul style="list-style-type: none"> • Propagation • Pest & disease inspections • Advice to growers 	Core Services	Core Services	Core Services Precision Agriculture Farming R&D
Delivery Mechanism	Combined <ul style="list-style-type: none"> • Productivity Boards • BSES staff 	Varies <ul style="list-style-type: none"> • Combined staffing • Stand alone PB • Support from 3rd party extension services e.g. <ul style="list-style-type: none"> – Norco – Incetec – Ravensdown 	BSES Contract	Overlapping responsibilities <ul style="list-style-type: none"> • Productivity Boards (main offerings) • BSES <ul style="list-style-type: none"> – group extension – R&D support
Funding	Three sources: <ul style="list-style-type: none"> • Grower-miller levy • Propagation fees • BSES subsidy 	Four sources: <ul style="list-style-type: none"> • Grower-miller levy • Propagation fees • BSES staff funding • Margin on input sales (fertilisers, pesticides) 	Three sources: <ul style="list-style-type: none"> • Grower-miller levy • Propagation fees • BSES staff funding 	Three sources: <ul style="list-style-type: none"> • Grower-miller levy • Propagation fees • SRDC grants
Comments	Lack of transparency Some mill funding for risky initiatives (e.g. tissue culture)	Shared costs <ul style="list-style-type: none"> • Other crops (peanuts, soya beans) • Other farmers (dairy) 	Transparent user pays Service level dictated by local area	Leverage 3rd party resources <ul style="list-style-type: none"> • Commercial extension • Government facilities

Source: PJPL Field Research and Structured Interviews

In the PJP report, extension is a non-core activity for BSES. PJP advocated further opening of extension and advisory services to local decision making.

All group extension, on-farm extension, propagation, diagnostic services, and data collection should be a local area responsibility, (either incorporated into existing local arrangements, outsourced to the New BSES Contract Services Unit, or purchased from third party service providers). The point is they should be scoped, managed and funded in keeping with local priorities.

Under the proposed arrangements, each local area will be free to decide the range and quality of the service they get and how these services are to be delivered. The range of possibilities for local arrangements is quite broad... All this is in keeping with the evolution of local services and Productivity Service Organisations ... during the relatively brief period since deregulation.

There is general understanding of the PJP idea of user-pay field services being contracted from BSES but mixed views on taking this up. Concerns range from cost for value and quality, to access to research and information if competing with BSES staff as contractors, to need for guidance in contracting, to equity and cross-subsidisation. For many, obtaining R&D results as research reports, packages, fact sheets and events, and being able to input, is the key.

Overall, although there is variability in capacity, there are signs that local areas could adapt to and implement changes in field service delivery. Efforts to widen and raise sugarcane knowledge and advisory capability should spark interest.

iii) Models in other industries. In decades past, rural statutory bodies and State Departments employed field staff to interact with producers, run field days, give advice, enforce rules and collect statistics. Services were reduced as industries and taxpayers questioned costs and collective returns. Packaging and extending research became part of research funding, adding the E to RD&E.

In April 2005, the Primary Industries Ministerial Council endorsed the concept of 'National R with Regional D&E', as explained on the DAFF website.

The concept recognises that basic and strategic research (R) can be provided from a distance, with regional adaptive development (D) and local extension (E) required, improving the uptake of innovation by industry.

This sets an expectation on R&D bodies and research groups to ensure research is based in interactions with multiple users across an industry so it is relevant and potentially useful, and that outcomes are relayed in cost-effective forms that assist users. This does not mean industry RDCs or IOCs, or CRCs, should have traditional field staff located with researchers. Most do not.

Successful Australian industries provide international benchmarks for extension practice attuned with Australian socio-economic and cultural drivers. The focus is on strong R&D and professional extension though a range of others in the field.

The Grains Research and Development Corporation (GRDC) research portfolio covers 25 leviable crops across temperate and tropical cereals, oilseeds and pulses, worth over \$10.5b pa. In 2008-09 its statutory levy income was \$89m matched by \$44m Federal funds. GRDC employs 50 full time staff including a Manager Extension and Grower Program and a Practices section. GRDC runs Crop Update workshops with researchers for growers and advisers across regions.

In June 2011, GRDC advertised for nine GRDC Regional Cropping Solutions facilitators to be based across the grain areas of southern and western Australia. GRDC would contract (not employ), individuals or organisations to: 'provide, on a part-time basis, within a specific cropping region, ongoing facilitation and coordination support for farming systems groups, agribusiness and private consultants working on-farm to respond to regional grain grower issues in a timely manner and to build regional D&E capacity'.

Each RCS facilitator is to establish, link, support and develop a regional development and extension network of regional farming systems groups, local agribusiness and R&D entities. They are to work with and harness the capacities of grower groups, private consultants, retail agronomists, public agronomists, researchers, NRM bodies, GRDC panels, financial advisors, marketers, research advisory committees, State Farmer Organisations, Sustainability/Landcare groups, and downstream value adding entities, and provide an effective interface between these and GRDC.

Dairy Australia and Victorian Dairy Industry. Dairy Australia is an industry owned corporation with marketing and research roles for the \$4b industry. In 2008-09, DA's statutory levy income for research was \$14.5m matched that year by \$19.5m from government. DA has 87 staff in all roles including a specialist Farm Productivity and Delivery group. Dairying is mainly located in Victoria and this DA manager is on the board of a separate organisation, The Dairy Extension Centre. This specialised extension operation co-ordinates widely and employs/contracts field officers working with farmers on production and first stage food manufacturing in a highly regulated sector. It is backed by DA (industry funds) and governments of Victoria and South Australia.

Meat and Livestock Australia's EDGENetwork® is long-established and harnesses skills of independent agricultural specialist advisers across Australia to provide 'practical learning opportunities to help producers gain knowledge and develop skills necessary to improve their livestock enterprises'. These are delivered via workshops, farm walks, demonstrations, group discussions and projects. 'EDGENetwork sessions provide a learning pathway for producers. This pathway enables producers to apply various business practices and principles, as well as outcomes from industry research and development, directly in their production environment.'

'An educational and informative format encourages producers to expand their current expertise and learn new skills, be motivated by other producers and access the latest information. Producers gain the best of group and individual learning by working in small groups that enable them to receive personalised service. This allows them to focus on the specifics of their business while sharing their experiences, triumphs and challenges with like-minded producers.' EDGENetwork workshops are 'developed by industry specialists and tested by producers Australia-wide to guarantee their quality and relevance'. *Extracts from MLA website*

BSES Extension – positions and expenditure

Sugar cane producer associations also put forward a spectrum of views on what should, or should not, change in extension and communication.

- One group in a large region insisted it would pay 80c/t, or \$1 ('so long as the mill pays half') to continue current services including group extension, but with 'user- pays for one-on-one'.
- Another stresses that 'the critical component of how to plan the future of RD&E in the Australian sugar industry is not cutting costs (although it can be of value to do so), but rather the planned return on investment'. They weight varieties, productivity and expanding land under cane through extension, and consider consolidation of all services into BSES could be more effective.

To increase efficiency, through savings and by enhancing the flow of information and the delivery of services, the better model is one where BSES manages, internally, the entire suit of services, including productivity and variety dissemination services. This could:

- Obviate the need for individual prod-board entities with their attendant costs of administration. Productivity advisory committees comprising stakeholders would suffice, as per Proserpine et al.
- Allow for fully bi-lateral information transmission, potentially allowing for more responsive fine-tuning of research and extension as mutually informing components (better connectedness).
- Facilitate staff training and development and hence career development under a 'single roof', reducing the risk of 'brain drain'. BSES has the admin organs of a large entity, so incorporating more staff would not be problematic and would likely increase efficiency within BSES (i.e. total payroll per fixed admin cost).
- Allow smaller single mill areas to fund a fully connected (to BSES) extension officer in a part-time capacity or in a full-time capacity, funded by an increased levy or perhaps by a supplementary levy, funded under the cane supply contract.

- In contrast, another grower association puts top priority on breeding for tonnes of sugar, biosecurity and biotechnology 'but not automatically trying to keep pace with the world – we could later buy the technology'. Its members are 'very commercially minded' and strongly support user-pays, including for group events. This organisation supports the PJP Far Reaching Case.

A lot of BSES shed meeting research is not relevant to our members. The Productivity Services and others, agronomists, fertiliser companies, should be one-stop shops for information. User pays is important ... including for research like biomass, mills should pay.

For grower and on-farm advisory, some innovative approaches have been proposed, including industry action to enhance services alongside streamlining.

User-pay component vs pooling...: If we move one-on extension to user-pay we risk failing to make gains in production and productivity, in the name of making savings; unless we compensate with an active process.

If we continue pooling funds for extension, in absence of an active process, we risk drifting and we risk a select few hogging the resource or worst-case, a large number not continually learning and improving. One option is the idea of 'pooling' where local extension services 'segment' the local growers into groups rated for opportunity to achieve the greatest increases in production and productivity. This might be based on farm size, current action plans, capacity, historical data etc.

There might be different programs and strategies for each group. Each year, BSES could conduct periodic group sessions to actively advance the segments. At the close of each year, after productivity data is analysed, the extension people could assess the progress of the groups and adjust the plans for the coming year. The focus would be to work in small groups and avoid 'one on one' extension where possible. 'One on one' extension, not related to serious bio-security or pathology issues, might then become user-pay. *Industry association 8.2011*

Through this range of positions, runs the question of level of grower funding. BSES arrangements that were popular when the service fee was 20 cents/tonne for growers, start to be debated at 40 cents, and more so at 60 or 80 c/t.

The fee growers will need to pay for RD&E will also depend on mill contributions. Miller readings on whether current extension is working are informative in terms of industry futures, and whether they might pay for extension collectively, or not.

The vast majority of the funding in the traditional [R&D] area goes into grower related activities. Yes, more cane from profitable growers is important to millers which is why millers support this R&D. However there are things like grower extension training sessions etc that come out of this pool. This is like someone paying me to train my factory operators.

Given this diversity of views, it is important to take note of more formal signposts for change including modern extension models in other industries [above].

The BSES 2010-11 budget included \$11.25m operating expenditure on cropping systems, technology support and extension areas before external income.²⁸

Figure 20. BSES 2010-2011 Budget for farm systems, technology support, extension 2010-11 dollars	BSES operating budget	Income non service fee	Expenditure net of income	Expenditure cents/tonne on 30 mtpa	Partners
Improved cropping systems – 3 sub-programs: • Sustainable sugarcane production • Future sugar cane production systems • Innovative ways of facilitating adoption of technologies on-farm [see 3.3]	\$5.96m	\$3.82m	\$2.14m	7 c/t	Growers, millers harvesters, DEEDI, DERM, CSIRO, NRM
Technology Support – includes laboratories, NIR, analysis systems. Also to develop systems for sugarcane based biorefineries, alternative processing methods, other products from cane [3.3]	2.46	0.77	1.69	6	SCU, QUT, CSIRO mills, companies
Technology Packaging and Adoption (field extension) . Develop and deliver information packages based on relevant R&D and responsive to needs. Deliver R&D-based tailored solutions.	2.83	0.55	2.28	8	Prod services, growers, DEEDI, NRM groups
TOTALS	\$11.25m	\$5.14m	\$6.11m	21 c/t	

As discussed in 2.6 and 3.1, BSES 2010-11 Budget figures provide the key calculation points in this report [Fig. 14].

BSES extension is located across sections in the BSES organisation chart: Variety adoption (5 staff), Improved Cropping Systems (3 agronomists plus 1), Northern Extension (14), Southern Extension (14). Corporate Communications has 3-4 staff. Staff is the main extension cost, then offices, travel, vehicles and materials.

Added together, field extension would cost about \$3.9m in 2010-11 budget terms.

In Figure 20, Technology Packaging and Adoption is the main extension area, with a budget of \$2.8m including vacancies. Four staff within Cropping Systems add say, \$0.5m, including overheads, and five in Variety Adoption about \$0.6m.

The PJP report used a 'BSES extension' number of 30 FTE officers in 2010. In the Base Case, 7 FTE staff move to farming systems to work fully on packages and BSES extension/training would be five. This left 18 FTE staff to be fully user-pays as Contracted Services, or redundant if not funded by a district. In this way, costs of 18 staff were in theory reduced to zero, saving over \$2.4m a year.

A different presentation of efficiency savings is needed for extension areas, than used in 3.1. Extension staff are spread across sections, and BSES is progressively relocating extension staff to farm systems areas. While numbers in 'BSES extension' are falling, costs of these staff continue within the organisation.

These shifts are taken into account in proposals and calculations below.

²⁸ Of external income in the 2010-11 year, sources were: *Cropping Systems*: SRDC 28%, SRDC through another party 4.2%, DEEDI 51.7%, DERM 5.6%, Federal 5.5%, Commercial 4.6%, CIRAD 0.3%. *Technology Support*: SRDC 7%, SRDC via CSIRO 19%, Federal 64%, Commercial 11%. *Extension*: SRDC through another 5.9%, DEEDI 13.4%, NRMs/Reef Rescue 53%, Training 27.6%. Extension income includes funds for four EOs on term employment with BSES paid for by Reef Rescue 3 and CG 1.

Proposed changes and efficiencies – extension

After consideration of issues discussed above, multiple reports and papers on rural industry extension, adoption and grower groups, modern models in other rural industries, plus over 100 inputs including from BSES senior and local staff, and taking into account the PJP Base Case, financial outlooks, and rural industry trends, the following changes and steps are recommended:

1. **Establish a Professional Extension and Communications Unit (PEC)** as part of BSES reorganisation, then within SRA. This Unit of 12-17 staff would develop packages of research results tailored for user groups, actively and cleverly integrating research and knowledge on varieties, farm systems, pests etc. They would design and conduct group extension courses and events. The PEC Unit would have clear accountabilities (KPIs) including to:
 - be an 'open shop' and to ensure all across the industry and specialist and business service providers can freely access knowledge packages, research information and be involved in events
 - monitor and interact to ensure upward flow of feedback on problems for research, whether R&D is useful and messages clear, and adoption issues.

Within BSES, the PEC Unit would bring together say, 3 variety adoption staff, 7 development officers (3 from cropping systems, 4 from extension), plus 5 trainers (if justified on review), 2 from corporate communications. On formation of SRA, if agreed, an adjustment of staffing may be needed including consideration of SRDC staff capacities.

2. **From mid-2012, cease local extension and advisory from BSES employees, with separation of about 16 including non-filling of vacancies.** The PJP report proposed Contracted Services for local extension has been considered. BSES was to offer services of existing EOs and BSES to local productivity or grower groups on full cost recovery with no cross-subsidies. Local groups would decide based on needs, circumstances and experiences with BSES. This will not work.

A clean, clear stop of BSES local extension is important for the Industry, BSES and a future SRA. Many factors have been considered with reference to views of stakeholders received during consultation. Key reasons include:

- Take up of contract services is likely to be moderate or low from the start, for cost and other reasons. BSES is shifting some EOs, and for those remaining would need to charge \$130,000-\$150,000 pa, more with full cost recovery. The Burdekin area, for instance, appears unlikely to adopt this approach.
- BSES contracted services may start with six or so officers but would wither within a few years, although not before more cost, diversion of focus and time, stress, grower confusion on BSES roles at various sites, embarrassment, and rise of more politics around access to research information and central services and suspected competitive conduct from BSES.

- The Sugar Industry needs a new, wider and modern field network, and leaders need to facilitate this. Regional groups are already looking at best ways to utilise an extra 10-20-30c/t they may have to 'pay to stay the same'.
- There is no basis for collectively funded local and individual extension or advisory services in light of changing expectations, priorities, marketplace development, other industry models, costs and financial circumstances.

3. **Offer a Sugar Advisory Services development program over 2011 and 2012.**

There is a role for the Industry as a whole to assist in transition and invest in harnessing resources and widening local sugarcane advisory capability.

It is proposed the Sugar Industry sponsor and run, over 12-18 months, a special program to encourage individuals, groups, and businesses to move actively into and expand sugarcane advisory services, including by employing or contracting current BSES extension staff (or groups of staff forming new firms).

A key aim would be to harness, widen and build local advisory capacity including commercial advisers who can develop approaches to work with a wide range of current and future growers. Encouraging planting of more land to cane and discouraging exits is critically important to mill operators.

Such a Development Program should also build a broad field network for the PEC Unit, including a diversity of attuned practitioners dealing with many rural producers and cane growers (including small-scale growers, a potential market for switched-on lateral thinking providers). In addition to a network for outward flow of knowledge, this network should analyse and articulate issues and provide sharper, considered feedback for researchers.

An outline of key features of a possible Sugar Advisory Services Development program is provided in Figure 21 in the form of a 'draft news article' to illustrate how this might look in local and Industry media. Details need to be developed. Implementation of the program would include detailed communications and specific advertisements to attract interest and participation.

It is also recommended that:

- The Sugar Industry shape, implement and progress this Sugar Advisory Services Development Program for the initial 12-18 months, calling on skills and capacities in BSES, SRDC and among other Industry and wider groups.
- The Program be initiated by end 2011 to enable all BSES officers to think about possibilities and ways they might engage with the program.
- One-off funding of \$2 million be contributed by mills from SRL reserves to develop and implement a Sugar Advisory Services Development Program and assist restructuring of BSES extension.

Figure 21. Draft news article**Australian Sugar Industry Alliance
and partners****The Sugar Advisory Service Development Program**

The Australian Sugar Industry is modernising research, development and extension to align with changing local service needs and industry financial contributions.

A Professional Extension and Communications Unit (PEC) will be formed in BSES for development of research-based information packages and tools, including on varieties, and to conduct group workshop extension. The PEC Unit will:

1. ensure all across the industry and specialist and business service providers can freely access knowledge packages, research information and be involved in events
2. monitor and interact to ensure upward flow of information on problems, whether research is useful and the message clear, and identifying constraints to adoption.

BSES Limited will not employ general extension officers in the field from mid 2012.

This reform arises from reviews and recognises changing local needs, innovation in grower services in sugar regions, and models in other rural industries.

The Sugar Industry needs to focus limited research and development funding on activities an industry research organisation must do including variety development.

The Industry as a whole has a role to assist in transition and to invest in widening and building local extension and advisory capacity.

A major initiative, the Sugar Advisory Services Development Program will be offered over 18 months to assist development of regional and local capacity as well as business arrangements for group and independent sugarcane advisory services.

- the program will be open to existing or new grower, miller, or productivity services groups, to agronomists, farms consultants or other support businesses, and to current or former BSES staff who decide to develop as independent advisory providers.
- on application, the program will fund short course training as needed, in:
 - consultant business skills, analysing farm operations and options
 - sugarcane production and supply, varieties and their use, heading off pests and diseases, and specialities such as *Sugarcane as a lifestyle business – Plant to Harvest!*
 - using research for evidence-based change, designing trials, analysing results
 - adult learning and communication tools. (Some courses could be accredited.)
- This program will not fund employee salaries or contractors, nor buildings, equipment or ongoing costs of an advisory practice. It may fund travel to courses.
- Where current or new entities employ or contract a 2011-2012 BSES staff member, consideration will be given to transfer of existing vehicles on a case by case basis.
- Consideration will also be given to proposals seeking a license for propagation and distribution of seed cane or tissue culture as part of building sugar services.

Details of the Development Program will be advertised from late 2011.

Establishing the Professional Extension and Communications Unit (PEC), ceasing local extension, and separating extension staff not suited to the PEC focus and activities should reduce BSES costs by an estimated \$2.2m on the 2010-11 Budget basis. This compares to PJP BSES Base Case savings of about \$1.7m to be achieved through restructuring of extension. Reductions are shown as:

The PEC Unit would have about 17 FTE staff, subject to BSES scrutiny for further efficiencies within scope of Industry agreed funding.²⁹

Figure 22. Extension – summary of BSES efficiency estimates

<p>Establish a Professional Extension and Communications Unit within BSES, then SRA. Transfer 17 staff to the PEC Unit, 3 from variety adoption, 7 development officers (3 farm systems, 4 extension), 5 trainers from extension, 2 from corporate communications. Note. Savings are not secured by transfers within BSES or of 4 staff funded externally. BSES reductions on 2010-11 budget numbers <i>including vacancies</i> are calculated as of 37 staff, retain 17, do not count 4 external, so budget staff numbers reduce by 16. Cost reduction is calculated as 0.8 full time x 16 x \$130,000 with overheads = \$1.7m.</p> <p>Office leases and service costs, locations, travel and other operating cost savings</p> <p>Indicative reduction by these changes from 2010-11 budget estimate \$3.9m</p> <p>On costs of implementing reforms see 3.4</p>	<p>Staff reductions on 2010-11 Budget estimate \$3.9 m</p> <p>\$ 1.7 m</p> <p>\$ 0.5 m</p> <p>-\$2.2m (7c/t) to \$1.7m</p>
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Notes

- Without reduction of BSES costs, Industry will need to pay higher service fees for current activities including extension. A restructured BSES would leave a portion of these funds for growers and millers to invest in local action and for growers to contract independent advisers from time to time [see 3.4].
- On externally funded extension. Clarity in the role of a new industry research organisation, Sugar Research Australia, is important. Accepting income from other groups to place an extension officer at a research station is inconsistent with the logic of the PEC Unit and with BSES not conducting field extension. The four current officers should be relocated to Productivity Services or other sites where they can have ongoing interactions with passing growers.
- This restructure with cessation of local services should meet market failure tests.
- Visibility is important. SRA should initiate a full branding program, including all extension materials and varieties provided by any group to growers and millers.

**SRA – Research
Varieties
Know How**

²⁹ Questions that might be asked include returns to be achieved by moving 12 current extension staff into 'technology packaging' and 'training'. For instance, do the nominated 7+5 people have the skills balance need for Professional Extension and Communication team roles? How to manage calls for reactive extension to those of the PCEC Unit located at field station offices? Will a mix of different staff with technical, communication and management skills be needed to achieve the PEC Unit KPIs?

3.3. Cropping Systems and Technology Support

BSES Improved Cropping Systems work attracts a mix of comment from industry. The BSES Technology Support area is more mysterious to stakeholders. In Budget 2010-11 these sections employ 24 and 13 staff respectively and are significant areas of operational cost, even with external funds from DEEDI and SRDC.

Over 2011, BSES service fee increases have sparked closer discussion of priorities within productivity and grower groups. All place less priority on industry funding of R&D on 'farm practices' or 'farm systems', than on funding plant breeding, variety development, biosecurity, ie. the type of work that 'only BSES can do'.

Areas of concern about farming systems R&D include:

'It is going round and round, is nothing new...'

Growers and millers generally acknowledge there 'has been some good work' but there are also views across the industry that BSES is 'relying on old stuff' for some years now, such as, 'on nitrogen and on row spacing'. The BSES website itself gives a picture of the main era of farm systems outcomes and associated extension activity being the early-mid 2000s (eg. bookshop page at 8.2011).

- A BSES commissioned survey of randomly selected growers in 2009 found only 7-8% of growers had 'unprompted awareness' of BSES nutrient research and new farming systems compared to 65% awareness of BSES plant breeding and varieties. For millers, unprompted awareness of farm systems work was 20-25%, of plant breeding/varieties was 95%. When pointers to BSES activity were made, grower awareness increased to 88% and to 100% for varieties.
- Survey participants were also asked their views on importance of particular BSES services continuing (although likely not in the context of service fee levels). Of growers, 94% put high priority on plant breeding/varieties, 86% on biosecurity. Crop improvement and fertiliser work received 'high support' 70-72%, then weeds 59%, 44% for harvesting practices, 43% for farming systems, 43% for irrigation and drainage. For millers the pattern was similar but support at a level lower.³⁰

Best practice but grower disinterest ...

Some industry groups see farming systems research messages as 'not practical for many farmers', or 'not much relevant for farmers in our area'. A number note that even 'top farmers are not using new ways'. Concerns include BSES 'babying' farm R&D but then when translated to the field, the 'best practice' only works at the right times. Similarly, that new ways need more care than many can give, or special equipment. Also, a lack of cost and return analysis to explain basic money reasons for making a change.

'The research needs economic analysis – to tell growers what's in it for me'.

³⁰ Colmar Brunton for BSES, 2009, *Sugar Cane Transformation Opportunity Research* presentation.

There is an impatience with being continually told about 'accepted best practice' or 'best science'. 'Farmers can work out what to do, they will decide' and without being constantly told they are doing less than best.

It is interesting that BSES and SRDC officers who will adjust research for different soil types or climates, see little room in research or 'best science' for differences among farmers – even though use of R&D outcomes is said by researchers, industry and governments to be a key measure of success. Extension too appears to be targeted to full-time farmers and early adopters. For others, 'we tell them about what is best practice, and how, but they can pick what they do'.

Alignment with Sugar Industry priorities is a key question emerging around farm systems and technology projects. There is criticism of BSES 'doing its own thing'. Some large projects in these areas could be seen in this light although BSES would argue otherwise, citing for instance, income from external sources as verification. BSES would also say they are using both internal and external funds to keep a BSES/industry research resource operating for the future.

Senior BSES officers express concern that Industry does not look at the bigger, longer term picture, that there is no process for true strategic thinking [see Part 2].

We start with the conviction (born out of past experience) that new technologies are needed to improve productivity, profitability, environmental sustainability and supply security, as well as providing the tools for industry to meet government and community expectations and changing environments. Thus, there is a strong emphasis on 'needs into the future', not short-term 'wants'. This leads us to what we see are the main RD&E issues for 2011-25:

- Focused on Products - Carbon farming, Biomass/sugar accumulation and production
- Focused on Efficiencies - Integration of herbicide-tolerant GM varieties into the production system, Integration of new planting systems based on new planting technologies into the production system, Adoption of known 'better' farming practices
- Focused on Risk Management - Farming within a more variable climate, On-going awareness for supply security, Minimising environmental footprint and meeting community expectations.

Industry agrees with lack of a 'centre' for deliberating long term R&D investment – but also has serious concerns with lack of industry engagement by BSES about assessing and deciding on 'the main R&D issues'.

[There must be] effective engagement between industry and researchers on what is needed by industry and possible in terms of research, to determine what should be done and how much to spend on it. ... [plus ongoing] formal interaction on the policy/research interface ...

The BSES project: '*Cane2Fuel: Developing an optimised and sustainable sugarcane biomass input system for the production of second generation biofuels*' is a case to be considered. This project was announced in August 2009 after BSES succeeded in obtaining funding of \$1,326,000 under the Federal government Second Generation Biofuels Research and Development Grant Program.

However, the Federal funding was predicated on a 2 to 1 dollar input from BSES. For the \$1.326m from government, BSES would use \$2.65m of its funds over three years and at a time of financial loss. Although this project aligns with national programs, and with the BSES strategic plan, questions arise about its priority for sugar industry funding, including from within BSES (these comments perhaps on reflection under financial pressures, although 'biomass' also features firmly in lists of proposed future farm systems work).

...the Cane2fuel project is very important ... However ... components of the current work ... fall outside the core business of BSES and are driven from a commercial interest rather than delivery of strategic options to the industry. ... there will be increasing amounts of external monies to do biomass/renewable energy R&D. ... the majority of funding for work in this space for the next five years must come from other funding sources than the BSES core funding. ... done on a user pays basis for clients that want the work.

'External income' is raised quite often by BSES as verification of projects. This is the proportion of non-BSES funding going to farm systems R&D in particular [Fig.20].

Industry's focus on their contributions to BSES' budget (and wider to other organisations) misses the point that they fund only a proportion of BSES' RD&E spend. This is particularly true in QCROPS, where something like 70% of the total spend comes from non-service fee, non-SLA sources. Others - Government, NRM companies, commercial providers - see their investments in BSES as delivering value to them and to the wider industry. This needs recognition, acknowledgement and encouragement – PJP failed to do this.

Use of industry funds for projects to secure external income may not align with industry priorities. BSES explains it works on project ideas that fit with the BSES strategic plan, and then interacts with funders (particularly DEEDI and SRDC) on projects to attract their funding. A process for involving the Sugar Industry is not clear, and could part explain Industry concerns about alignment.

The Queensland Government currently provides \$2.85m a year to BSES in an arrangement dating to 2003. DEEDI agrees programs or projects put forward by BSES in line with BSES and DEEDI priorities. DEEDI has indicated satisfaction with performance under the contract to date. It is to be reviewed by mid-2012.

A proportion of BSES farm systems work, including parts of DEEDI backed projects,³¹ is also part-funded by SRDC after the SRDC evaluation process which includes a level of industry involvement in priority setting and project evaluation.³²

³¹ Current DEEDI backed projects encompass: New Farming Systems (genotypes for controlled traffic farming, adoption of new cropping systems, nutrient management, water quality), best-practice integrated weed management, canegrub control, precision agriculture, quarantine, measurement of in-field sucrose loss, rate of parental improvement in sugarcane breeding. In 2011-12, BSES will pay \$0.67m towards the conduct of these projects. Some are also SRDC backed.

³² Under its Farming and Harvesting Systems category SRDC funds a few BSES projects directly (eg. Accelerated adoption of best-practice nutrient management), plus a series of region (eg. NSW) and grower group initiated projects, plus soil biology work at UQ. BSES funds 30% of farm systems activity directly from industry service fees.

This returns to questions of performance and delivery, and how fee payers might see value for Industry money invested in farms systems RD&E. In 2010, BSES listed projects underway in farm systems with expected outcomes in 2010 and 2011. These are summarised below, with short notes from BSES on progress:

Insecticide for soldier fly evaluated, decision on non commercialisation (*no further work planned*)

Canegrub management package for new farming systems developed (*achieved*)

Harvesting Best Practice guidelines updated and workshops held (*achieved and continuing*)

Yield monitors validated for accuracy for yield mapping (*initial assessment completed, ongoing work in term of PA is continuing*)

Past data reviewed. Direction set for ICS involvement in the Cane2Fuel project (*initial objectives achieved and project continuing according to plan*)

Integrated on-line nutrient management support system released (*achieved*)

Greyback and Childers canegrub decision-support package in use (*initial objectives achieved, project progressing well according to plan*)

Appropriate varieties defined for use within new farming systems (*project well progressed and will be achieved within the planned timeframe*)

RatMonitor developed as a monitoring-support package (*well progressed, will be achieved within the planned timeframe*)

Guidelines for efficacy of herbicides on trash blankets developed (*initial objectives achieved, project progressing successfully*)

Guidelines for the amelioration of acidic and sodic soils within new farming systems developed (*progressing according to plan*).

The BSES Technology Support section is mainly located in Brisbane including management and chemistry and biochemistry laboratories. The Near-Infrared Spectroscopy (NIR) chemical engineering team are at Meringa station. Some projects with partial external funding involve the laboratories, including the Cane2Fuel sugar biomass systems, and Spectroscopic Predictive Tools for rating Sugarcane Varieties.

In the PJP Base Case most Chemical Laboratories activity would be outsourced to commercial lab service providers, reducing from 11 FTE to two staff. PJP also said the Mill NIR Technology Unit of four should be 'transferred to SRI pending its amalgamation with the BSES'. This in itself would not be a saving to Industry.

In the BSES waterfall cost reduction lists stopping the biomass project with staff reductions and closing laboratories with outsourcing of general analytical work are midway options. The Cane2Fuel biomass project completes in 2012 so questions arise about ongoing activity and costs of staff involved. Cessation of investment in NIR R&D is lowest on the BSES list, last for change.

The Near-Infra Red technical service and support activities are intended to operate as a full-cost recovery unit and to contribute to BSES income. In the last three years, revenue has covered costs. Some milling companies are paying for NIR machinery, manufactured by FOSS, and for NIR based technologies. BSES provides 24/7 support service for factory-installed NIR based cane, sugar and bagasse analysis systems.

NIR technology also appears central to innovation in the Technology Support group. The NIR Unit is funded by BSES for development work. Others in Technology Support are involved, also funded mainly by BSES. Ongoing programs include development and delivery of diagnostic tools based on NIR technology to assist plant breeding and selection outcomes, laboratory analysis and throughput, rapid biomass analysis, and deliver sugar factory process and analysis benefits. On this BSES advises:

We have almost completed work on plant breeding tools with minor polishing to go. New tools for laboratory analysis have been developed in the past 18 months and they are being commercialised by our instrument partners – we anticipate first sales during 2011. Biomass tools are progressing well and are on track with our Cane2Fuel milestones. We continue to extend the range of our sugar factory tools and add value to our milling clients (much of this work is collaborative with them as willing partners).

Again, questions of priorities arise on diversification expenditure (biomass, other products). Industry could have mixed views on the relative importance of work on GI sugar and other uses for industry funds, even if income for BSES is generated.

Target: Direct involvement in a consortium of companies to produce food and nutraceutical products using bioactive extracts generated from sugarcane by 2012. Progress: Work on low GI extracts hopes to provide BSES with income by the end of 2011 – we have a commercial agreement over this sale and are conducting targeted R&D under a fee for service arrangement. We hope that the product will undergo large scale pilot testing during early 2012 and be available for release in 2012.

NIR Unit commercial activities are the remaining part of Sutech Solutions division started by BSES about five years ago. In 2010, BSES was still positioning Sutech as a branch of its strategy, its IP commercialisation and know-how consulting arm.

Sutech Solutions – ‘Sugar Technologies from BSES’. ... devises solutions for individual growers, millers or companies on a needs-basis. Services range from analysis and auditing, to technical support and training through accredited programs, to specific farm assessments and commercial consultancies. It draws on the expertise of BSES staff and others as required. *BSES 8.2010*

In reality, Sutech did not gain traction for a range of reasons including challenges of professional consulting, need to find markets, and issues with selling services in distant countries, plus budget pressures. Although some feel NIR could expand into other industries and earn commercial income, beyond services to some mills in cane and sugar analysis. Others suggest institutional culture is a factor in BSES not being able to achieve a functional for-profit arm.

Proposed changes and efficiencies

BSES 2010-11 budgets for Improved Cropping Systems (including four extension staff) and for Technology Support totalled \$8.42m before external income.³³

Figure 23. BSES 2010-2011 budget for Cropping Systems and Technology Support 2010-11 dollars	BSES operating budget	Income non service fee	Expenditure net of income	Expenditure cents/tonne on 30 mt/ha	Partners
Improved cropping systems. 3 sub-programs: • Sustainable sugarcane production • Future cane production systems • Innovative ways of facilitating adoption of technologies on-farm	\$5.96m	\$3.82m	\$2.14m	7 c/t	Growers, millers harvesters, DEEDI, DERM, CSIRO, NRM
Technology Support – includes laboratories, NIR, analysis systems. Also to develop systems for sugarcane based biorefineries, alternative processing methods, other products from cane	2.46	0.77	1.69	6	SCU, QUT, CSIRO mills, companies
	8.42	4.59	3.83	13	

As discussed in 2.6 and 3.1, BSES 2010-11 Budget figures provide the key calculation points in this report [Fig. 14].

Again, after consideration of multiple inputs and factors and taking into account the PJP Base Case, the following changes and steps are recommended:

- 1. Tighten Cropping Systems by ceasing activities from Bundaberg and Herbert and by reducing staff.** As for Plant Breeding, senior management need to adjust to financial circumstance and achieve efficiencies, as well as Industry Service outcomes, from reorganisation and reduction of staff numbers.

 - Bundaberg Station has 22 FTE staff [Fig.15]. Staff charts show six in Cropping Systems. Herbert has a farm systems technician. Closure of these sites with transfer of two of seven staff, indicates savings of five positions or \$0.7m pa.
 - Three extension agronomists in Cropping Systems would enter the PEC Unit. Such transfers are calculated in the Extension changes, and would not be a reduction for Cropping Systems under overall budget tightening [point 4].
- 2. Reduce Technology Support projects and staffing costs on completion of the Cane2Fuel project in 2012.** This internal group was allocated \$1.69m of BSES funds in its 2010-11 budget. It appears to be an active section of 13 staff though relatively expensive particularly as the NIR unit is meant to be full cost recovery (this includes payments within BSES).

The PJP Base Case reduced the Chemical Laboratories to 2 FTE staff with most of the work to be outsourced. This may be feasible for routine analysis, but the laboratories are also conducting research.

³³ External income 2010-11 year: *Cropping Systems*: SRDC 28%, SRDC through another party 4.2%, DEEDI 51.7%, DERM 5.6%, Federal 5.5%, Commercial 4.6%, CIRAD .3%. *Technology Support*: SRDC 7%, SRDC via CSIRO 19%, Federal 64%, Commercial 11%.

The large Cane2Fuel project completes in 2012. At that stage, costs linked to Cane2Fuel should be reduced across BSES (time of many BSES staff are allocated to this project adding to 7-8 FTE in 2011-12). Other projects funded mainly by BSES should be reviewed and the section streamlined. Target reduction of 3.5 FTE staff or about \$0.5m pa.

3. **Leave the NIR Unit within BSES on a clear full cost recovery basis.** During the SRA formation period, consider the fit and role of such technical service units within SRA. Keeness of some staff to expand activities to other industries could merit assistance to 'spin out' as a commercial technology provider.
4. **Cropping Systems and Technology Support to reduce from 2010-11 budget of \$8.4m by \$1.5 m (18%), by end 2012.** This is the PJP Base Case level.³⁴

Figure 24. Cropping Systems and Technology Support – estimate of efficiency savings

Closure of Bundaberg, Herbert, reduce Cropping Systems including 5 FTE staff	\$ 0.7 m
Reduce Technology Support projects and staffing costs, target 3 FTE	\$0.5m
Indicative reduction by these changes	= \$1.2m
Further reductions of \$0.3m to \$1.5m savings from 2010-11 budget \$8.4 m	\$ 0.3 m
	- \$1.5m (5c/t) to \$6.9m

Under SRA, all Farming Systems and Technology Support research proposals should be evaluated through the SRA Research Funding Panel processes. Funding added to the research pool could be around \$3m a year [see 2.3].

Panel review will be a vital mechanism for ranking priority and comparative merit with other claims for funds, such as milling R&D, and can apply also to projects before proposal to DEEDI. This should assist alignment with Industry and DEEDI priorities and providing assurances of design and scientific merit.

³⁴ The PJP Base Case merges farm systems and extension. The Base Case is also in 2013 dollars, so percentages are needed to compare with reductions on the BSES 2010-11 Budget. Calculations are: PJP Status Quo, add management, farm systems, NIR and laboratories = \$6.7m. PJP Base Case, add management, farm systems (-7 from extension), NIR (zero) and laboratories = \$4.7m (a 30% reduction). PJP Base Case with NIR not transferred to SRL = \$ 5.5m (18% reduction).

3.4 Financial overview – BSES, Sugar Research Australia

Achieving a Sugar Research Australia as a modern, industry owned research organisation with a new foundation, culture, purpose, and accountabilities to the whole industry, will require aligned restructuring at multiple levels.

Alongside considerable interaction with grower and miller stakeholders and governments, streamlined BSES, SRDC and SRL activities need to be ready to merge successfully into SRA in the target formation year, 2013.

It is anticipated the BSES Board will restructure BSES operations in line with Sugar Industry RD&E reform decisions, potentially from October 2011. Sections 3.1 to 3.3 discuss proposals for tightening in Plant Breeding-Varieties-Biosecurity, Extension and Communications, and Farm and Mill Technologies.

BSES corporate costs are considered below, then proposed changes overall and how financial pictures may unfold over the next five years.

The PJP report Status Quo Case identified Overheads as \$6.0m costs in 2013 dollars and 32 FTE staff including administration staff at field locations. The Base Case reduced those overheads to match a smaller organisation to 18 FTE staff and \$4.5m. This 25% reduction was found mainly from 'other admin' including station administration, accounting and aspects of a top level restructure.

BSES has provided inputs on areas for savings in corporate staffing and operating costs, noting items such as insurance reduce little unless buildings are sold. These inputs have been taken into account, along with reforms outlines in sections above. The following order of change at corporate level is proposed.

Figure 25. BSES Corporate streamlining – before SRA

BSES corporate 2011	Change by mid or end 2012	FTE staff	Est. reduction
Board	with industry		
Senior managers	rationalise, noting other shifts	- 1	\$0.25
Finance/Accounting/Records	consolidate	- 1	\$0.13
Human Resources/OH&S	rearrange workload		
Projects, PAs, reception	reduce, noting other shifts	- 1.4	\$0.11
Information Technology	tighten until SRA	- 1	\$0.10
Site manager	rearrange workload		
Marketing/Communications/Library	2 to Professional Extension and Communications Unit	- 1	\$0.08
*Station admin is now counted in PB-V-B			
25.8 FTE excluding Board		- 5.4, -22%	\$0.67m

Overheads are calculated into BSES section budgets [Figures 16, 20, 23], so here the focus is staff numbers. The estimated \$0.67m reduction would contribute to savings in the operational BSES sections, and could achieve efficiency targets.

Over 2011 and 2012, it is envisaged BSES will progressively reorganise to meet financial targets and in line with Industry objectives for an SRA, including:

- Aligning senior appointments with Industry structural objectives. Tightening in all areas would open senior officer time, enabling reduction in numbers.
- Establishing , earlier rather than later, the areas identified for specified funding: a Professional Extension and Communication Unit by mid 2012, then a Variety Development and Biosecurity Unit, and a Research Project Management Unit to service the SRA Research Funding Panel in 2013.

Reviews such as this must bring a multitude of numbers into considered estimates to present sensible pictures for a range of audiences. Numbers keep shifting, allocations change, so do dollar values over years, and detail can take weeks or months to track. The tables in this report aim to present a rounded set of high level estimates. Costs of changes and some income shifts are not accounted for, (eg. small loss of closed site cane sales). Reform costs should be offset a little later by operating costs savings linked with staff and program tightening.

The focus within BSES is on operating costs, not net costs after income. This is key to ensuring restructuring and cost reductions are achieved, and to not continue a situation where finding a parcel of income for a few years can stall reform.

For this analysis, it is assumed BSES income levels will stay about the same, and in particular that BSES, then SRA, will maintain a program supported by DEEDI based on quality of work and project alignment with Industry and DEEDI objectives.

Figure 26. Overall BSES efficiency reduction estimates

Plant breeding-variety-biosecurity-stations	less \$m	targets	less c/t
Reorganise breeding to 3 sites, close Bundaberg, Herbert, reduce staff & admin	1.8		
Reduce variety adoption section (staff transfer is not a saving)	0.3		
Cease CSIRO Joint Venture	0.2		
Further efficiency reductions off 2010-11 budget to \$14.9m	0.3	-\$2.6m	9 c/t
Extension			
Professional Extension & Communications Unit, separation of staff	2.2	-\$2.2m	7 c/t
Cropping Systems and Technology Support			
With closure of Bundaberg and Herbert, tighten Cropping Systems	0.7		
Reduce Technology Support projects and staffing costs	0.5		
Further efficiency reductions off 2010-11 budget to \$6.9m	0.3	-\$1.5m	5 c/t
Corporate	0.67		
Reductions on 2010-11 Budget (in \$ 2011)	- 20% of budget	-\$ 6.3 m	21 c/t

This Report is proposing the Industry support these BSES efficiency reductions including restructuring extension and development of a strong advisory network.

Implementing the changes advocated should achieve an estimated \$6.3m a year of savings from the BSES 2010-11 Budget of \$30.3m, or 21cents/tonne in 2011 dollars at 30mtpa, ie. a significant and ongoing 20% reduction of costs that should enable activities to be sustained during fluctuations in harvest.

The actual 2010-11 year result was not representative of BSES operations, and it is not effective to use 2010-11 as a base point for restructuring and streamlining. BSES deferred staffing, travel and repairs, and extreme weather delayed projects. This led to actual 2010-11 BSES operating expenditure of \$27.5m (and with higher income, of a loss of \$2.4m rather than \$8.0m). However, these results are not due to structural changes, as evident in the subsequent 2011-12 budget [Fig.14].

Percentage reductions can be directly compared to PJP Case percentages, but the cents/tonnes in Figure 26 need to be converted to the same dollar years as the PJP Cases before comparing with Status Quo and Base Cases. PJP is on a different base to BSES 2010-11 budget or actual. To provide a single year picture but also to give income estimates that could work over four years, PJP escalated for inflation and then used an average middle year around 2013.³⁵

Figure 27. Conversion of 2010-11 efficiency savings to PJP values

Targets	Targets in 10-11 dollars	cents/tonne in 10-11 dollars	cents/tonne in PJP dollars
Plant Breeding-Varieties-Biosecurity-Stations	-\$2.6m	9	10
Extension	-\$2.2m	7	8
Cropping Systems & Technology Support	-\$1.5m	5	6
Reductions on 2010-11 Budget	-\$ 6.3 m	21 c/t	24 c/t

Reductions of 21 cents/tonne in 2011 dollars and at 30mt, becomes 24c/t at 30mt in PJP dollars. This 24 c/t can be subtracted from the PJP Status Quo estimate of 81c/t of Industry income needed to support BSES. On the positive side of this complexity, use of 'PJP dollars' does include allowance for inflation to 2015-16.

³⁵ PJP dollars: Each PJP Case is presented as a BSES 2012 structure with a one-year financial summary as an average of 2011-12 to 2015-16 after inflation increases. PJP escalated salaries by 0.5% pa, and operating costs by 0.3% pa. PJP then calculated weighted escalations for five years. The weighted average escalation factor used in the PJP cases is 1.156. So the PJP number of 81 c/t needed from Industry to fund the Status Quo case is for a year (around 2013-14) and the 81c /tonne would be about 70c/t today.

A series of funding pictures

Many growers and millers see the 2009-10 level of fees as 'usual', after BSES service fee rises over 2006 to 2008. In 2009-10, growers were paying 20c/t to BSES plus 7c for SRDC. Mills paid SRDC 7c, BSES 17c, and the 4c estimated for R&D through SRL [Fig.12]. Total Industry payments were 55c/t as seen in Bar 1 below. For the 2011-12 year, special funding was agreed [Bar 2]. Total payments rose to 80c/t, of which 62 c/t is to BSES. However, BSES will continue in a loss situation.

The PJP Cases provide a start point for looking forward. Bar 3 shows 99c/t of Industry funds needed for BSES, SRDC and SRL to operate *in 2013* in the same way as 2009-10 and with BSES not spending more than income. The 99c/t includes PJP assumptions for external income to BSES, and assumes no rise in levy or funds for SRDC or SRL.

Under the PJP Base Case, with cost reductions, BSES would break even on receiving 57c/t from Industry for BSES at 30mtpa. PJP proposed 50:50 from growers and mills. Levies to SRDC would continue, also the mill payments through SRL. Total 75c/t [Bar 4].

The Sugar RD&E Reform proposals in this report including streamlining of BSES and restructuring of extension for across-industry benefits should save 24c/t from the PJP Status Quo case [Bar 5]. BSES would need 57c/t from Industry, SRDC and SRL would stay the same. Total Industry funding would be 75c/t, or the same as PJP Base Case.

Alongside other advances, achieving a single research organisation, an IOC, Sugar Research Australia, could deliver efficiencies of around \$1.5m in PJP dollars, or 5c/t at 30mtpa. This would reduce payments needed from Industry to 70 c/t [Bar 6].

Through SRA, the Sugar Industry should access full Federal matching funds, about \$2m pa or 7c/t [2.3]. This could offset Industry funding, but in this report, it is assumed the potential additional matching funds are directed to the research pool.

1. Usual 2009-2010	SRDC 14	Mills 17, SRL 4	Growers BSES 20	$14 + 21 + 20 = 55$	loss
2. Special 2011-2012	SRDC 14	Mill BSES 22 SRL 4	Growers BSES 40	$14 + 26 + 40 = 80$	loss
3. PJP status quo 2013	SRDC 14	BSES 81, 4 SRL		$14 + 81 + 4 = 99$	
4. PJP base 2013	SRDC 14	BSES 57 ... 50-50, mills 4 SRL		$14 + 57 + 4 = 75$	
5. 2011 streamlining	SRDC 14	BSES status quo 81 - 24, mills 4 SRL		$14 + 57 + 4 = 75$	
6. Streamlining+SRA	2011 proposals - 5			$75 - 5 = 70$	

This report proposes the Industry support the Sugar RD&E reform framework for BSES set out in Part 3 as part of restructuring towards a Sugar Research Australia, and that growers and millers contribute equal statutory levy funds to SRA. For instance, 35c/t each to start in 2013. Compared to fees that would have to be collected to keep current arrangements including an unchanged BSES, these RD&E reform proposals would 'leave' substantial money in the field with joint groups for local action and/or with growers for buying professional on-farm advice [Bar 7].

7. Streamlining+SRA	2011 proposals - 5 = 70	50:50 growers, mills is 35 + 35 = 70	local action
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Some Industry stakeholders have expressed concern about 'shifting costs' and then having to paying more.

This concern is understood. The Sugar RD&E reform proposals in this report aim to deliver a stronger Industry research organisation, processes for aligning with Industry priorities, plus higher capacity extension and advisory networks. And, at the same time, to reduce overall charges on Industry participants.

Under the Streamlining+SRA model [Bar 7], it is proposed growers and millers each pay half, 35c/t to a total 70c/t, significantly less than the Status Quo total.

BSES for 2012-13 and 2013-14, then SRA

The BSES streamlining proposals in this report, if agreed, are estimated to achieve a '\$26m a year' BSES operation by mid 2013. Questions have arisen about forward finances, and if viability issues might arise again within a short time.

The key response is that BSES, and then SRA, will need to manage the business within both income and budget. Again as estimates only, and based on Figure 14 numbers, foreseeable shifts in cash could be illustrated as in Figure 28.

Assumptions for this scenario:

- BSES reform to a \$26m operation is completed by mid 2013, with 60% of annual reductions (\$6.3m) achieved by mid 2012
- BSES funds its internal restructure mainly from reserves (allowing \$0.9m in 2012-13 for separation costs)
- Sugar Research Australia is achieved by mid 2013, SRDC transfers with \$9m of reserves.
- SRA formation costs are funded by Industry from a mix of entities.
- Inflation is taken into account in the estimates in Figure 28 using the PJP approach. A 2013-14 financial year is also estimated for BSES in case of delays.
- Site sale income after reorganisation: Bundaberg net \$4m. Herbert net \$0.5m.
- Strategic Initiatives or similar research will continue within BSES budget at an average \$4m pa, ie. no large cost increases or income.

Figure 28. Indicative cash – BSES to 2013-14, SRA from 2013-14

Estimates only	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
BSES only – budget	(b)	(b)		if delays		
Industry fee income c/t	42	62	62	62	(status quo 81c/t)	
Industry fee income \$m (30mt from 12-13)	11.5	18	18.6	18.6		
Other income \$m	11	9.5	9.5	9		
Operating expend incl. SI \$m	30.3	31.4	27.2	26	(is \$23m in 10-11 \$)	
Profit (Loss) before tax \$m	(8.0)	(3.9)	0.9	1.6		
Reserves end year \$m	11.7	14.5	15.4	17		
Bundaberg, Herbert sale				4.5		
Sugar Research Australia - cash				Target		
Reserves from BSES \$ m				21.5		
Reserves from SRDC \$ m				9	30.5	32
Levy income at 70 c/t (30 mt) \$ m				21	21	21
Federal matching funds*				6	6	6
Other ongoing income incl DEEDI **				5	5	5

(b) Columns 2 and 3 are actual BSES Budgets. The 2010-11 actual result explains the Budget 11-12 increase in reserves [Fig.14]. * Ongoing matching funds broadly estimated as 20c/t at 30mtpa [Fig.8]. ** For BSES budgets, SRDC grants are external income. On SRA formation income patterns will change.

With BSES implementing structural change and reductions from late 2011, savings should be reflected in the 2112-13 budget and then in operations and financial performance. With a combined Industry service fee of 62 c/t, BSES should readily return to positive results in 2012-13, and this should be sustainable.

- **It is proposed the Sugar Industry continue to fund BSES at 62c/t for 2012-13 and if needed 2013-14**, as part of transition to a Sugar Research Australia IOC. The 62c/t allows some time and costs to restructure, and notes that the harvest could be less than 30mtpa across those years.³⁶
- If SRA is not formed, it is proposed Industry funding of BSES be reviewed and agreed within a range of 60c-64 c/t for three years from 2013-14.
- It is proposed the Industry consider funding of 70c/t for a Sugar Research Australia IOC for three years from 2013-14, by statutory levy 50-50 on growers and millers.

³⁶ At 62ct fees and 29mt in a year, income from industry would be \$18mt, at 28mt it would be \$17.4m, and at 31mt, \$19.2m.