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Australian Government
Australian Bureau of Agricultural and Resource Economics and Sciences

Committee Secretary
House of Representatives Standing Committee
Regional Australia
PO Box 3021
Parliament House
CANBERRA ACT 2600

Dear Secretary,

On 23 March 2011 ABARES appeared before the House Standing Committee investigating the impact of the Murray-Darling Basin Plan in regional Australia. Subsequent to this Dr Judith Stubbs and Mr John Storer (both from Judith Stubbs and Associates) appeared before the Committee. During their appearance Dr Stubbs and Mr Storer made a number of claims relating to ABARES modelling and analysis of the impact of the Basin Plan on irrigated agriculture and regional communities in the Basin. This submission clarifies some of the inaccurate comments made by Dr Stubbs and Mr Storer and provides an explanation of the major differences between their estimates and the ABARES analysis.

Yours sincerely

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20 April 2011

Encl:

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Australian Government
Australian Bureau of Agricultural and Resource Economics and Sciences

Inquiry into the impact of the Murray–Darling Basin Plan in Regional Australia

Response to statements by Dr Judith Stubbs and Mr John Storer

ABARES submission of supplementary information to the House Standing Committee on Regional Australia

April 2011

www.abares.gov.au

Introduction

On 23 March 2011 ABARES appeared before the House Standing Committee investigating the impact of the Murray-Darling Basin Plan in regional Australia. Subsequent to this Dr Judith Stubbs and Mr John Storer (both from Judith Stubbs and Associates) appeared before the Committee. During their appearance Dr Stubbs and Mr Storer made a number of claims relating to ABARES modelling and analysis of the impact of the Basin Plan on irrigated agriculture and regional communities in the Basin. This report addresses a number of those claims, particularly those that are a factually inaccurate representation of published ABARES analysis.

Claim 1

Mr Storer: "I believe that in the Basin Plan modelling there are actually four policy proposals. These have not been considered individually or incrementally. In that way they appear to represent a socioeconomic impact analysis as articulated by the SKM report rather than the best-practice cost-benefit analysis as suggested by both the SKM report and the government guidelines. Those four policies are, firstly, the diversion of irrigation water to environmental flows; secondly, the relaxation of administrative restrictions around trade in water; thirdly, changes to immigration policy; fourthly, reimbursement to irrigators for water diverted to the environment."

The claim that ABARES has failed to consider the various policy components of the Basin Plan in isolation is incorrect. In its report to the MDBA ABARES modelled the impact of the Basin Plan in the presence and absence of water trade (ABARE-BRS 2010a). The impact of the Plan with and without the offsetting effect of the Water for the Future program was also examined in ABARES report to the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) (ABARE-BRS 2010b). This report was released at the same time as the ABARES report to the MDBA and the Guide to the proposed Basin Plan. Each of these scenarios was compared to a base case in which there is no policy change. Additionally, at no point in the ABARES modelling has changes to immigration policy been considered.

Claim 2

Mr Storer: "No sensitivity analysis is reported. That is, they did not vary their assumptions across a reasonable range to see how that might change their findings. They have looked at only one case and presented only one case."

While no sensitivity analysis of ABARES' modelling was reported in the *Guide to the proposed Basin Plan,* the ABARES report to the MDBA (ABARE-BRS 2010a) contains a wide range of modelled scenarios, and explicitly contains a section on sensitivity analysis [see appendix A in ABARES—BRS (2010a)].

Claim 3

Mr Storer: "ABARE appear to add around 3,000 gigalitres to the 2005-06 year but they calculate that that 30 per cent increase in water will increase production by only one per cent or $60 million by reference to the ABS data. To me that seems an underestimation."

This and subsequent claims indicate a misunderstanding of the ABARES Water Trade Model baseline. The baseline amalgamates 2000-01 and 2005-06 ABS data to create a representative 'normal' year for each commodity. This was to attempt to utilise the most up-to-date data while also allowing for the adverse weather conditions in 2005-06. So by design the

ABARES baseline does have approximately 3000GL more water use relative to 2005-06, reflecting the fact that 2005-06 had about 3000GL less water use relative to a typical 'normal' year.

The statement that ABARES calculates a "30 per cent increase in water will increase production by only one per cent or $60 million" is incorrect. The gross value of irrigated agricultural production (GVIAP) in ABARES baseline is estimated to be around $6,207 million compared to the 2005-06 ABS GVIAP estimate of $5,522 (a 12.5 per cent increase).

Extensive detail on the construction of the model baseline is available in ABARES report to the MDBA (ABARE-BRS 2010a).

Claim 4

Mr Storer: "Secondly, the way they assign GVIAP to commodity groups is of concern. The baseline overstates the proportion of donor commodities such as hay, rice, sheep production and understates the proportion of recipient commodities such as horticulture and vegetables."

Again, this claim indicates a misunderstanding of the ABARES Water Trade Model baseline. Firstly, ABARES did not "assign" GVIAP to different commodity groups. GVIAP was derived from 2000-01 and 2005-06 ABS data on $/ha and ML/ha and aggregate land use per commodity. ABARES has not formed a baseline solely from 2005-06 data because these observations are biased by drought conditions and do not provide an accurate representation of irrigation in the Murray-Darling Basin in a 'normal' year.

The baseline contains annual activities consistent with pre-drought 2000-01 levels, and therefore has a higher production of annual activities than seen in 2005-06, in which annual activities were noticeably affected by drought. The baseline contains 2005-06 levels of perennials, reflecting the significant observed increased investment in perennials since 2000-01.

ABARES baseline matches 2000-01 ABS statistics on share of irrigated agricultural land by commodity quite well (table 1). ABS data on the proportion of land irrigated for each crop, as a proportion of total irrigated land in the Murray-Darling Basin is very similar to ABARES WTM baseline data.

Table 1 Comparison of ABS and ABARES WTM baseline data for irrigated land use in the Murray-Darling Basin

Crop	ABS 2000-01 ('000 ha)	Proportion	ABARES WTM baseline ('000ha)	Proportion
Pasture (native or sown)	760	0.42	788	0.43
Rice	178	0.10	177	0.10
Cereals (excl. rice)	260	0.14	261	0.14
Cotton	405	0.22	405	0.22
Grapes	84	0.05	106	0.06
Fruit (excl. grapes)	59	0.03	74	0.04
Vegetables	37	0.02	37	0.02
Total Agriculture	**1,824**	1	**1,849**	1

Sources: ABS (2008a)

Claim 5

Mr Storer: "Finally, their model assumes no growth in irrigation area. Again this is at odds with data… In the Victorian Mallee, for example, irrigation area increased by 30,000 hectares or 75 per cent between 1997 and 2009."

Again the ABARES baseline is based on ABS data for 2000-01 and 2005-06. The baseline takes into account an expansion of horticultural land use between 2000-01 and 2005-06. Large increases in irrigation land use post 2005-06 are unlikely given the drought conditions.

In contrast to the example provided by Mr Storer, it would seem that the area irrigated in the Victorian Mallee increased slightly between 1996-97 and the early 2000s, and has decreased since (table 2). For the specific years in question, ABS data indicates that the area irrigated has declined from 131,700ha in 1996-97 to 81,182ha in 2008-09.

Table 2 Area irrigated in the Victorian Mallee

Year	Area irrigated (ha)
1996-97[a]	131 700
2002-03	142 000
2003-04	Not published
2004-05	137 000
2005-06	143 000
2006-07	115 000
2007-08	85 634
2008-09	81 182

[a] Note that this estimate is taken from a different ABS publication series than the data provided for the following years. There may be methodological differences in the derivation of these estimates.
Sources: ABS (1998; 2005; 2006; 2008b; 2008c; 2009; 2010)

Claim 6

Mr Storer: "With regard to modelling conducted separately for the Garnaut report, this modelling used a similar form of model to that used by ABARE. The researchers for the Garnaut report did not have this restriction on growth in irrigation area. They found that a 28 per cent reduction in water would reduce output by 65 per cent. This is around 13 times the impact predicted by ABARE. That comes from bearing one assumption."

This claim appears to be referring to modelling undertaken by the University of Queensland in Quiggin *et al.* (2008).

ABARES was unable to find any figures similar to those quoted above in the modelling referenced in the Garnaut report (Garnaut 2008) or its accompanying report on the implications of climate change for irrigation in the Murray-Darling Basin (Quiggin *et al.* 2008). It is useful to note that the Garnaut review examined the effects of climate change on water availability in the Basin projected to periods out to the year 2100 so the scenarios examined were quite different to those presented in the Guide to the proposed Basin Plan.

The MDBA contracted the Risk and Sustainability Management Group [RSMG] from the University of Queensland (the same group that modelled the effect of climate change on irrigated agriculture for the Garnaut report) to undertake analysis on the economic effects of the Basin Plan. At a Basin level the RSMG results are similar to the ABARES results. The

RSMG results indicate that a 35 per cent reduction in water availability in the MDB will lead to a 16 per cent reduction in GVIAP.

Claim 7

Mr Storer: "The ABARE second-stage model compares results with what would have otherwise occurred in the economy in the absence of the scenario. Because of their assumptions regarding international migration and the easy movement of labour from agricultural industries and regions, it is likely that the low level of employment loss predicted by the model arises from rather than having a growing economy fuelled by migrants, it is now going to be fuelled by internally sourced displaced labour."

Employment estimates contained in ABARES report to the MDBA (ABARE-BRS 2010a) were long run estimates. These estimates assume that labour markets are highly flexible in the long run, and that most people who lose their job due to the Plan will find employment elsewhere.

Analysis undertaken by ABARES subsequent to the release of the report for the MDBA suggests that the short run impact of the Plan on employment could be around 5000 jobs. This estimate assumes restricted labour and capital mobility. However, this 5000 estimate is likely to be an upper bound as labour markets will have some flexibility, even over the short to medium term.

The relevance of Australia's immigration policy to the impact of SDLs on unemployment in the Murray-Darling Basin is unclear. As far as ABARES is aware, the Basin Plan will not include any changes to Australia's immigration policy. ABARES has not included any assumptions about changes in immigration policy in its economic modelling.

Comparison of Stubbs *et al.* (2010) and ABARE–BRS (2010)

The results of Stubbs analysis (Stubbs *et al.* 2010) are typically well in excess of those cited in other quantitative studies. The Stubbs analysis involves a range of assumptions that lead to considerably larger production and employment effects from reductions in water availability relative to mainstream economic modelling.

Studies undertaken independently by a variety of research institutions (ABARES, University of Queensland, Monash University (Centre of Policy Studies), and ANU) have all generated consistent results at a basin wide scale. Specifically, reductions in water availability (of the order of 30 per cent), lead to reductions in irrigated production (GVIAP) of less than half that percentage (i.e. less than 15 per cent). For a detailed summary see ABARE-BRS (2010a).

Stubbs et al. (2010)

Stubbs *et al.* (2010) sought to quantify and describe likely socioeconomic impacts on irrigated agricultural communities in the Murray-Darling Basin from changes in water availability. The key methodological presupposition is that reductions in irrigation water can be measured in terms of unemployment costs [see p. 67 of Stubbs *et al.* (2010)]. Following on from this, an additive series of static and linear relationships are then established between employment and other variables that culminate with a measure of monetary cost.

This method of analysis is limited in that it does not allow for substitution between inputs as the relative costs of inputs change and assumes that all output is attributable to labour, without regard to other inputs to production. In addition, Stubbs *et al.* (2010) does not

account for the potentially substantial impacts of water trading or government expenditure on water purchases and infrastructure.

An example of the implications of the Stubbs analysis is their analysis that diverting 790GL of water a year to sustain the Coorong would cost between $5 billion and $41 billion in net present value terms [see p. 96 of Stubbs *et al.* (2010)]. A simple analysis of the direct cost of diverting a megalitre of water away from irrigation to the environment is to identify the value of an entitlement. High security water entitlements typically trade for around $2000 per ML. This value is a reflection of its net present value (the future stream of profits that can be earned). As such, the direct cost to irrigated agriculture of diverting 790GL to the environment would be around $1.6 billion. If a 0.9 multiplier is applied [as in Stubbs *et al.* (2010)] to this figure to capture any flow on effects, the cost is around $3 billion.

ABARES has used standard techniques to identify the socioeconomic implications of the Basin Plan for various groups. The quantitative analysis involved the use of the Water Trade Model, a comparative static partial equilibrium model, to estimate the direct effects of changes in sustainable diversion limits on the GVIAP by sustainable yield region. These GVIAP estimates were fed into AusRegion, a computable general equilibrium model of the Australian economy, to estimate flow-on effects to regional, state and national economies. The methodology used is described in detail in ABARE–BRS (2010a and 2010b) and is similar to the approach used by other economists.

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