



16 June 2017

The Hon. Robert Brown
Chair

Portfolio Committee No.5 Industry and Transport
Inquiry into the Augmentation of water supply for rural and regional NSW
PortfolioCommittee5@parliament.nsw.gov.au

Re: Response to supplementary questions from hearing in Moree, NSW

Dear Chair,

We thank you for the opportunity to present to the Portfolio Committee No. 5 – Industry and Transport in Moree, NSW on 15 May 2017 and for the opportunity to provide the following supplementary information and answers to questions on notice.

Basin Plan Submission:

During our hearing, we also directed the committee to additional pieces of work by our organisation, in particular our submission to the Murray Darling Basin Authority on the Northern Review. A link to our submission can be accessed [here](#) or the document is attached for your reference.

Over-recovery of Environmental Water

The Basin Plan has outlined new sustainable diversion limits for each Murray Darling Basin valley in which governments (NSW and Commonwealth) have invested in buying back entitlement either directly or in-directly through infrastructure projects to reduce entitlements down to these new limits. In the Gwydir Valley, more environmental water has been purchased than required to meet the sustainable diversion limit for our valley, hence we consider our valley is 'over-recovered' of environmental entitlements.

The following tables refers to the comments around 'over-recovery' of environmental water both during the hearing and as part of our submissions both to this inquiry and the MDBA Northern Review.

Current environmental water entitlement recovery towards the Basin Plan is estimated for the NSW and Commonwealth portfolios in Table 1. Entitlement purchased is converted to long-term equivalents, reflecting allocation and usage by applying a conversion factor.

Table 1: Gwydir Held Entitlement Analysis with different Conversion Factors

Entitlement	CEWH	NSW	Total Held	LTDE*	IQQM**
High Security	4.5	1.2	5.7	5.7	5.7
General Security	89.5	17.0	106.5	38.3	43.7
Supplementary	20.4	3.1	23.5	4.5	12.0
TOTALS	114.4	20.1	134.5	48.5	61.4

* Assumes MinCO adopted conversion factors: 100% HS, 36% GS and 19% Supplementary

** Values provided from the most recent updated outputs from IQQM: 100% HS, 41%GS and 51% Supplementary

Currently, the conversion factor applied in the Gwydir Valley is in dispute and is to be reviewed by NSW DPI Water. Hence, we have provided two calculations; LTDE (using the MinCO accepted numbers) and IQQM (using the current outputs from IQQM) with the factors applied outlined within the table notes.

Progress using these two options can be compared with the current sustainable diversion limit as outlined within the Basin Plan 2012 (Cth), assuming default apportionment or not, and changes to the proposed sustainable diversion limit, if recommendations to reduce the recovery requirement in the Northern Basin by 70GL are adopted. The outcomes are presented in Table 2 and sees the Gwydir either at recovery or over-recovered between 2.7 and 19.4GL of long-term equivalents or approximately 4,000ML or 31,000 ML of general security entitlement that could be returned into production.

Table 2: Gwydir recovery progress in GL/year by the MDBA

Target	Instream requirement	Total recovery	Contribution to shared	Default apportionment target	Remaining gap	Over recovery
Basin Plan (2012) - LTDE	42	48.5	6.5	16.7	N/A (NSW recovery target met)	0
Basin Plan (2012) - IQQM	42	61.4	19.4	16.7	0	2.7
Amendment for Northern Review - LTDE	42	48.5	0	0	0	6.5
Amendment for Northern Review - IQQM		61.4	0	0	0	19.4

Question on Notice:

When approaching the question of “If water was not a concern could you estimate the potential economic output of this area would be?” we have decided to address this looking at four scenarios which, could be considered achievable, given the appropriate political and community appetite for change but would require significant changes to current policy framework to be implemented (in particular scenario two, three and four would require exemptions to the current sustainable diversion limits). These being:

1. A return of 19.4 LTDE of over recovered environmental water back into production;
2. A return of all environmental water (held and contingency allowances);
3. An increase in reliability due to the construction of a mid-river storage as proposed at Gravesend capturing all supplementary flow and sharing 50:50 with the environment; and

- An increase in volume and reliability of water due to the construction of a pipeline of water from the Macleay and Clarence River into the Gwydir Catchment (estimated at 73,000ML/year).

The analysis utilised actual production behaviour from 2008/09 (when major government purchased were initiated) to estimate what production could have been if additional water was available, this therefore assumes the same seasonal conditions and allows for comparative analysis between actual production and the four scenarios.

However significant assumptions were made:

- Water was allocated back from environmental accounts on initially a pro-rata percentage 37.5% to High Security and General Security and 25% from supplementary for over-recovery scenario (which used IQQM conversion factors).
- Water was allocated to general security accounts in all scenarios using the actual allocation for that year and all water was applied that year, rather than the reality being that water would be carried over to the following year. Water returned included held water purchased by the government and the environmental contingency allowance.
- The Gravesend Dam scenario would be capturing all supplementary flows, including effluents available for calculation and sharing these 50:50 with environment. These flows were calculated from event workbooks from each of the years and excluded any flows embargoed.
- Macleay and Clarence River pipeline estimate used the combined 73,000ML/year flow allocation from Ghassomi and White which was shared 10,000ML for High Security and 63,000ML for general security accounts with 100% reliability.
- Each scenario is assessed on its own merit and is not cumulative.
- No changes were made to groundwater usage or allocation, although additional water recovered through the Achieving Sustainable Groundwater Entitlements program could be assessed and would add to production capabilities.
- Horticulture scenarios are for pecans only for ease of comparison.

The greater the increase in water available the greater the increase in farm-gate value and therefore community flow through benefit as explained in the summary table below, Table 3: Combined commodity farm-gate value and percentage increase comparison for scenarios. It's important to note that if increased production from horticulture expansion occurred then localised processing would be established which would have additional flow through to the economy. The return of over-recovered water in Scenario 1 has maximum benefit to the community if a range of entitlement types are returned increasing the farm-gate impact from 2% to a total 10% if horticulture production is also able to increase in proportion through the return of high security entitlements.

All data for each commodity is provided in the following tables and presented graphically in Figure 1 for cotton.

Table 3: Combined commodity farm-gate value and percentage increase comparison for scenarios

		Farm Gate Value	Percentage increase compared to Actual
Actual Scenario	Cotton	\$276,861,813.00	0
	Horticulture	\$24,000,000.00	0
	Total	\$300,861,813.00	0
Scenario 1	Cotton	\$281,347,869.00	2%
	Horticulture	\$48,250,000.00	101%

	Total	\$329,597,869.00	10%
Scenario 2	Cotton	\$311,605,520.00	13%
	Horticulture	\$43,000,000.00	79%
	Total	\$354,605,520.00	18%
Scenario 3	Cotton	\$341,934,142.00	24%
	Horticulture	\$24,000,000.00	0%
	Total	\$365,934,142.00	22%
Scenario 4	Cotton	\$306,821,694.00	11%
	Horticulture	\$57,333,333.33	139%
	Total	\$364,155,027.33	21%

Table 4: Horticulture production scenarios

Horticulture		
Actual Scenario	Total water use	14000
	Actual Ha	1200
	Farm Gate Production	\$24,000,000.00
Scenario 1	Total water Use	21275
	Ha	2413
	Production	\$48,250,000.00
Scenario 2	Total water use	19700
	Ha	2150
	Production	\$43,000,000.00
Scenario 3	Total Water Use	14000
	Ha	1200
	Production	\$24,000,000.00
Scenario 4	Total Water Use	24000
	Ha	2867
	Production	\$57,333,333.33

Notes: Water usage estimated at 6ML/Ha for pecan production with a farm gate gross of \$20,000/ha. One off calculations are provided assuming 100% security of entitlement.

There would be challenges to meet the developed land requirements under scenario three and four for cotton, as area planted exceed current development levels of 90,000Ha. Water availability in 2011/12 was result of major flooding and it is unlikely that all this water could have been captured and utilised as assumed by our projections.

This analysis is considerably rudimentary in its nature and we ask that this is not made public. However, it does anecdotally highlight the significant increased value that can be generated from a re-introduction of water into a agriculturally dominated economy.

We thank you and the committee for your time and look forward receiving your recommendations.

Regards



Zara Lowien
Executive Officer

Table 5: Cotton production scenarios from 2008/09 to current

		2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	Min	Max	Average	Farm gate return
Actual Scenario	Total water use	153825	61763	256548	207566	444526	401522	180715	101692	288676	61763	508455	251077	\$276,861,813
	Actual Irrigated Ha	23600	24500	52200	48000	72800	64000	20950	19500	55000	7500	90000	50803	
	Actual Irrigated bales	278000	232750	511560	456000	800800	640000	261845	224000		49500	800800	425941	
Scenario 1	Total water Use	156448	62039	278123	239542	476978	401928	180985	104090	221128	62039	508455	251920	\$281,347,869
	Irrigated Ha	24002	24610	56590	55395	78115	64065	20981	19960	42130	7500	90000	50986	
	Irrigated bales	282741	233791	554580	526248	859261	640647	262236	229283	442256	49500	859261	432843	
Scenario 2	Total water use	160646	62481	399948	448753	686949	402578	181417	113491	339900	62481	686949	275192	\$311,605,520
	Irrigated Ha	24646	24785	81378	103775	112502	64168	21031	21762	64760	7500	112502	55571	
	Irrigated bales	290327	235457	797502	985861	1237518	641683	262862	249989	679801	49500	1237518	479393	
Scenario 3	Total Water Use	172453	62411	263076	1263645	577230	405677	225210	101746	324840	62411	1263645	295886	\$341,934,142
	Irrigated Ha	26458	24757	53528	292220	94533	64662	26108	19510	61890	7500	292220	60566	
	Irrigated bales	311665	235192	524576	2776091	1039862	646624	326315	224119	649679	49500	2776091	526053	
Scenario 4	Total Water Use	216825	124763	319548	270566	507526	464522	243715	164692	351676	82175	508455	270629	\$306,821,694
	Irrigated Ha	33266	49491	65019	62569	83118	74042	28253	31581	67003	7500	90000	54727	
	Irrigated bales	391857	470162	637183	594404	914293	740418	353128	362772	703352	49500	914293	472033	

Notes: Average production is utilised to calculate farm-gate value at \$650/bale (to include seed and lint).

Combined Actual Production and Water Use with Scenarios

