

Environmental Watering Plan for the Lachlan Valley 2011/12

Environmental water releases in 2010/11

The NSW Office of Environment and Heritage (OEH) currently hold 1,000 share units of High Security (HS) and 24,575 share units of General Security (GS), while the Commonwealth Environmental Water Holder (CEWH) has water licences of 733 share units of HS and 82,709 share units of GS.

2010/11 saw HS licences increase to 100% and Available Water Determinations (AWD) to GS licences increase from 0% to 117%.

Stock and Domestic replenishment flows sparked large colonial bird nesting events in the Merrowie and Merrimajeel creeks and replenishment flow in the Muggabah contributed to foraging habitat. Over 10,000 Straw necked ibis nests were identified upstream of Cuba Dam on the Merrowie Creek and around 64,000 pairs of ibis successfully nested around the Lachlan Valley State Conservation Area (Booligal Station) on the Merrimajeel Creek. Supported by environmental water releases flows in the Merrowie Creek reached and filled Lake Tarwong, and flows in the Merrimajeel Creek reached and refilled Murrumbidgee Swamp and partially inundated Lake Merrimajeel.

Operational flows to Lake Brewster prompted the largest pelican breeding event in NSW for over 5 years. Hundreds of pelicans were still nesting in May 2011. Around 37,000ML of storage volume was not filled in Lake Brewster to both protect low lying pelican nests and to facilitate wetland establishment. This lost opportunity in stored water was shared proportionately between the Environmental Contingency Allowance, the Water Quality Allowance (ECA & WQ), and GS extractive users by debiting the ECA and WQA and through proportionally lower allocations to GS users. The entitlements and usages of water from the respective environmental water accounts in 2010/11 and the balances of water available in 2011/12 are shown in Appendix 1.

Apart from the replenishment flows to Merrowie Creek, Merrimajeel/Muggabah creeks and operational flows to Lake Brewster, there were also replenishment flows to Willandra Creek, and Booberoi Creek. Since floods in December, there have been continuous flows in the regulated mid Lachlan Creeks.

Two translucent flows occurred in the lower Lachlan from unregulated tributary flows. The first of these occurred in November and then a larger and longer flow occurred in December and January. Even though the Water Sharing Plan was suspended these flows were managed consistent with the rules of the WSP and met targets at Brewster Weir (3500-8000ML/D).

Table 1 summarises the current understanding of the watering requirements, recent watering history and the current condition, where known, for water dependent environmental assets identified for the Lachlan.

Table 1 - Current condition of water dependent assets

Wetland	Assets requiring watering	Gauge no.	Gauge height (m)	Discharge (ML/D)	Date of last inundation	Duration of last inundation	Volume required (ML)	Condition	Delivery Constraints
Nationally Significant Wetlands									
Cumbung Reed Bed	Reed bed	412005 Booligal Weir	0.5-0.67; 1.1 for sign. response	275-661; 713 for sign. response	2010-11	29 days in Sept/Oct with flow exceeding 700ML/d and total flows of 38,500ML. 50 days in Dec/Jan/Feb 2011 with flow exceeding 700ML/d and total flows of 105,000ML.	5,000-30,000	Moderate recovering from drought impacts, air observations indicate significant vigorous regeneration of reeds	Private levees and channels
Cumbung - Lignum Lake	River red gum, Black box, Lignum, Waterbird breeding	412005- Booligal Weir	1.1	713	2010-11	>3 months	25,000-30,000	Unknown	
Cumbung - Marrool Lake	River red gum, Black box, Lignum, Waterbird breeding	412005- Booligal Weir	1.1	713	2010-11	>3 months	25,000-30,000	Unknown	
Lake Cowal	River red gum, Lignum, Waterbird breeding	412036 Jemalong Weir	7.2	14 500	2010-11	Early April local storms in Ungarie/West Wyalong filled the lake on the way to LC and continue to put large volumes of water into Wallaroi Ck below Yarnel		Moderate- Good	Large volumes required, delivery difficult. Lake is filled from very high flows in the Lachlan R or from significant tributary in flows.

Wetland	Assets requiring watering	Gauge no.	Gauge height (m)	Discharge (ML/D)	Date of last inundation	Duration of last inundation	Volume required (ML)	Condition	Delivery Constraints
Booligal Wetlands (Merrimajeel and Muggabah creeks)	River red gum, Lignum, Waterbird breeding	412005 Booligal Weir	2.1 (BB); 0.47 (CTF)	2 500 (BB); 236 (CTF)	2010-11	Lagoon. 5 months	12,000-57,000	Moderate-Good. Lignum in core of wetland in good condition and responded vigorously to flows in 2010-11. Supported large bird breeding event in 2010-11	Delivery between Dec-March inefficient. Limited by capacity of Torrigan Weir to deliver managed flows to both creeks concurrently. Long periods of constant flows can lead to excessive in-channel veg growth.
Lake Merrimajeel	Lignum, nitre goosefoot, canegrass, Waterbird breeding	412005 Booligal Weir		1570	2010-11	3 months. Period of full inundation was limited, core of wetland was inundated for 6 months.	510-1250	Poor-moderate. Variable response to most recent inundation after prolonged drought	Delivery between Dec-March inefficient. Current S&D replenishment flows do not reach lake.
Murrumbidgee Swamp	River red gum, Waterbird breeding	412005 Booligal Weir		1560	2010-11	8 months	585-1400	Moderate – surviving red gum responded well to 2010 watering. Epicormic shooting apparent on highly stressed red gums. Lignum reshooting.	Delivery between Dec-March inefficient. Current S&D replenishment flows do not fill swamp
Cuba Dam	Lignum, Waterbird breeding	412039 Hillston Weir	1.07	1500 (with Gonowlia Weir open)	2010-11	8 months	4,000	Moderate – Lignum in core of wetland in moderate-good condition and responded vigorously	Delivery between Dec-March inefficient. Delivery of e-water requires coordination and negotiation with

Wetland	Assets requiring watering	Gauge no.	Gauge height (m)	Discharge (ML/D)	Date of last inundation	Duration of last inundation	Volume required (ML)	Condition	Delivery Constraints
Merrowie Creek (Cuba Dam to Chillichil)	River red gum, Black box, Lignum, Waterbird breeding	412039 Hilliston Weir	1.07 (3.1 required at Willandra Weir)	1500 (with Gonowlia Weir open)	2010-11	4-6 months in lake Tarwong. Only limited inundation of the upper Tarwong lakes and in Box Creek below Lake Tarwong	6,000	Poor-Moderate River red gum at lake Tarwong putting on new growth. Limited shooting of lignum in channel country between Cuba dam and Lake Tarwong. Lignum in area between Cuba Dam and lake Tarwong in very poor condition and only showing limited initial response to recent wetting.	private weir owners and Creek Trust. At flows above approx 150ML/D some water escapes into Box Ck. Delivery between Dec-March inefficient. Current S&D replenishment flows stop at Cuba Dam. Delivery of e-water requires coordination and negotiation with private weir owners and Creek Trust. At flows above approx 150ML/D some water escapes into Box Ck (upper).
Lachlan Swamp	River red gum, Black box, Lignum, Open lagoons	412005 Booligal Weir		850	2010-11	6 months in Lake Wajeers, limited inundation occurred in Peppermint Swamp and flows reached, but did not enter Lake Bullogale	20,000-30,000	Poor-Moderate. River red gum around L Wajeers stressed but showing signs of regeneration. River red gum at Peppermint Swamp stressed.	Delivery between Dec-March inefficient. No single entry point for water from Lachlan R into Lower Lachlan Swamp.
Regionally Significant Wetlands									

Wetland	Assets requiring watering	Gauge no.	Gauge height (m)	Discharge (ML/D)	Date of last inundation	Duration of last inundation	Volume required (ML)	Condition	Delivery Constraints
Lake Ita	River red gum, Black box, Lignum, Open lagoon	412005 Booigal Weir		650 (at Corrong); 2-2500 (at Booigal)	2011 (partial filling)	6 weeks	6000-14,400	Moderate-Poor – mustard weed dominates lake bed	Further investigation of wetting regime required. Sustained flows above 650-800ML/D at Corrong required to deliver water into lake via NW inlet channel.
Burrawang West Lagoon	Drought refuge	Bumbuggan Creek		340	2010	Semi-permanent	420 to fill	Good – regen. of wetland dependent spp. Following fencing. Willow removal program implemented.	Some drying may be required to increase env. value. Requires licence/approvals to be resolved and gauging to be established.
Willandra Creek	Red gum, Black box, Lignum	412038 Willandra Weir	1.17 (with regulator closed)	2400	2010	4-6 months	3,000 (regulated section); 9,000 (downstream of Willandra NP)	Moderate	Currently lower CTF than under natural conditions
Moon Moon Swamp	Red gum, Waterbird breeding	412005 Booigal Weir	0.85	2000	2010-11	4 months	1,980	Moderate-Good	Sign losses occur to Willandra, Middle & Merrowie Creek
Yarnel Lagoon	Drought refuge	Wallaroi Creek			2010-11	6 months	360 to fill	Good – support diverse frog breeding habitat	Yarnel mgt plan to be taken into account
Baconian Swamp	River red gum, Black box, waterbird breeding	412045 Corrong Weir	1.46	600	2010-11	6 months	4,800	Poor-Moderate	Piggy-backing EW best option for delivery
Upper Merrowie Creek	River red gum, Black box, Lignum, waterbird breeding	412039 Hillston Weir	1.07	1500 (with Gonowia Weir open)	2011	2 months	6,000	Moderate-Good	Delivery between Dec-March inefficient

Wetland	Assets requiring watering	Gauge no.	Gauge height (m)	Discharge (ML/D)	Date of last inundation	Duration of last inundation	Volume required (ML)	Condition	Delivery Constraints
Wilga Lagoon		412004 Cottons Weir	3.14 (wet) 3.82-4.085 (dry)	12983 (wet) 17211 (dry)	2010	4 months		Moderate-Good	Unknown

Water Management Arrangements for 2011-12

Translucent dam releases, ECA and WQA will be available as the Water Sharing Plan (WSP) recommenced from 1 July 2011. Under the Lachlan WSP translucent dam releases occur from 15 May to 15 November when inflows to Wyangala Dam have exceeded 250,000 ML since 1 January, and subject to inflow triggers. The translucency target is between 3500 and 8000ML/d at Brewster, depending on inflow volumes. Reflecting the dry condition experienced through autumn and winter Wyangala Dam has only received about 60,000ML of inflow since 1 January 2011 to end of July 2011.

As yet there has been no AWD for GS while HS allocation has been set at 100%. The preceding 2010/11 water year concluded with GS AWD of 117% so any unused allocation was carried over and available for use this year. The 'Take Limit' for GS accounts in 2011/12 has been set at 100%, meaning that regardless of water account holdings, the maximum volume of GS water that can be used in this water year is 100% of licenced entitlement.

General Security licences in the Lachlan operate under continuous accounting, where water is allocated to GS licences throughout the years as inflows occur and there is no forfeiture of water in accounts at the end of the water year. Volumes of water credited to GS accounts remain there until used or transferred out. In order to maintain total long-term average annual extraction below the WSP Plan Limit a Take Limit is applied to all GS accounts. The Take Limit is expressed as a % of entitlement and NSW Office of Water has determined the Take Limit for GS accounts shall be 100% of entitlement for 2011/12.

As the take limit for 2011/12 is 100% of entitlement, any new AWDs during the year will be credited to the Hold Account and will be available for use in 2012/13 onwards.

Continuous accounting, by providing licence holders with greater flexibility on when to use water, enables a wide range of options to be considered by environmental water managers. This may include the option to hold water in an account for 2 or more years to allow annual watering of specified assets over 2 or more years.

Entitlement = volume of ML on the licence

Available Water Determination = volume of water allocated to a licence each year

Table 2 - Volumes of environmental water available 2011-12

Account	Maximum limit (ML)	Available (ML) 1/7/11
Translucent dam	350,000	Rules-based
ECA	20,000 ¹	20,000
WQA	20,000	20,000
RiverBank AEWL ²	25,575 (1,000 share units of HS and 24,575 share units of GS registered at July 2011)	1000ML of HS and 24,575ML (<i>Only 100% of GS entitlement can be used this water year although account holdings will be greater than 100%</i>)
Commonwealth Holdings	82,726 (733 share units of HS and 82,709 share units of GS registered at July 2011)	733ML of HS and 82,709ML of GS. (<i>Only 100% of GS entitlement can be used this water year although account holdings will be greater than 100%</i>)
Lake Brewster (LB) AEWL ³	12,000 (GS)	12,000ML (<i>Only 100% of GS entitlement can be used this water year although account holdings will be greater than 100%</i>)

¹ 10,000ML Wyangala ECA; 10,000ML Lake Brewster

² Includes Parks and Wildlife Group licences

³ 12,000 shares of AEW licence with general security status is established

Likely environmental watering conditions

Current resources: Wyangala currently holds 1121120 ML (92%); Carcoar Dam holds 27609 ML (76%), Lake Cargelligo holds 37608 ML (104%) and Lake Brewster holds 67800 ML (46%).

Predicted long-term rainfall for NSW is a 50% chance of exceeding median rainfall. The BOM seasonal outlook for late winter to early spring (July to September) reports a moderate shift in the odds favouring a drier than normal season over the southeast of the country.

Inflows to Wyangala Dam during the recent drought have been much lower than the previous droughts. Consequently the resource assessment process for determining the allocations now include the new drought of record and the drought contingency measures that were successful in managing the recent drought in the fourth year of a five year drought plan.

The minimum inflows, based on historical data for 2011/12 are outlined in Table 3 below.

Table 3 – Minimum inflows

Minimum expected inflows (ML)	Wyangala	Tributaries
2011/12 (July to June)	44,400	20,000

Estimated water availability for 2011-12

The following resource assessment scenarios are based on historical statistical inflows to Wyangala Dam. Percentages used in the assessment scenarios are as follows:

- Drought inflow conditions – based on minimum drought inflows
- Dry inflow conditions – based on 80th percentile inflows
- Median inflow conditions – based on 50th percentile inflows
- Wet inflow conditions – based on 20th percentile inflows

Under Drought Inflow Conditions

Under drought conditions there may not be new GS AWD's made, however 100% HS would be available and 100% of GS entitlement would be available for use by OEH and CEWH.

There is a low probability of replenishment flows being supplied by unregulated tributary flows or translucent flows under drought conditions. See Appendix 2 – Table 1 for volumes.

Under Dry Inflow Conditions

Under dry conditions new GS AWD may be 3% at end of Oct and may remain at 3% in end of January. 100% HS would be available. 100% of GS entitlement would be available for use.

There is a moderate probability of unregulated tributary flows supplying replenishment flows to the distributary creeks and a low probability of translucent flows. See Appendix 2 – Table 2 for volumes.

Under Median Inflows Conditions

Under median conditions GS account balances may be reset (equalised) to 136% due to storage spill at Oct and in January. 100% HS would be available. 100% of GS entitlement would be available for use.

There is a high probability of unregulated tributary flows supplying replenishment flows to the distributary creeks and possible delivery of translucent flows. See Appendix 2 – Table 3 for volumes.

Under Wet and very Wet Inflows Conditions

Under wet conditions GS account balances will be reset to 136%. 100% HS would be available. 100% of GS entitlement would be available for use.

There is a very high probability of replenishment flows to the distributary creeks being supplied by unregulated tributary flows. Also delivery of translucent flows is highly likely. Appendix 2 – Table 4 for volumes.

Objectives for environmental water use for 2011/12

Table 4 outlines the proposed environmental water use targeting identified assets according to different water availability scenarios. The watering objectives are in essence additive as the availability of water increases under the scenarios from Drought to very wet.

Table 4 – Objectives for environmental water use for 2011/12

Scenario ¹	Ecological Objective	Management Action	Wetland Delivery Options	Possible In-channel Target
<p>Drought Inflows – Wet antecedent conditions</p> <p>100% allocation available;</p> <p>Replenishment flows likely to be delivered from storages;</p> <p>Translucent flows unlikely</p> <p>1,733HS</p> <p>107,284GS</p> <p>12,000LB</p>	<p>Avoid damage</p> <p>Ensure capacity for recovery</p>	<p>Inundate priority semi-permanent wetlands and refugia</p>	<p>Inundation for up to 3 months</p> <p>Possible targets:</p> <p>Complete June-September 2011 watering of Merrowie Creek to deliver to Cuba Dam and Lake Tarwong (20GL) and Merrimajeel Creek to deliver to Murrumbidgee Swamp and Lake Merrimajeel (9.6GL)</p> <p>Muggabah Creek - combines with watering of the Merrimajeel Ck to provide comprehensive watering of the Booligal Wetland system including Lower Gum Swamp (up to 5GL).</p> <p>Other – support bird breeding events</p>	<p>Maintain in-channel refugia (50ML/d at Booligal to maintain visible flow)</p>
<p>Dry Inflows – 100% allocation available;</p> <p>Replenishment flows likely to be delivered from storages;</p> <p>Translucent flows</p>	<p>Ensure capacity for recovery</p>	<p>Inundate priority and good condition semi-permanent wetlands and refugia; increase duration and connectivity</p>	<p>Inundation for up to 3 months</p> <p>Options include those above and also:</p> <p>Willandra Creek (to deliver to Morrisons Lake vtf 3,000ML; a further 12GL)</p>	<p>Maintain in-channel refugia (50ML/d at Booligal to maintain visible flow)</p>

<p>possible 1,733HS 107,284GS 12,000LB</p>	<p>Maintain ecological health and resilience</p>	<p>Inundate priority, good and fair condition semi-permanent wetland; increase duration and connectivity</p>	<p>may be required to deliver). May be delivered with replenishment flows in Autumn/Winter 2012. Requires further information on delivery options</p>	<p>Cottons Weir drown-out 9250ML/d; Condobolin Weir drown-out 4100ML/d; Willandra Weir drown-out 8500ML/d²; Hillston Weir drown-out 4750ML/d</p>
<p>Median Inflows – 100% allocation available; replenishment flows likely to be delivered using unregulated trib flows; translucent flows possible 1,733HS 107,284GS 12,000LB</p>	<p>Inundation for 3 months Options include those above and also: Lachlan Swamp (Lake Waljeers vtf 6.2GL), secondary targets include Peppermint Swamp/Lake Bullogai; Moon Moon Swamp - vtf 2.5GL; Lake Ita – vtf 6 – 14.4GL; Lilydale wetlands inundated by flows targeting above assets. Delivery may require up to 50GL using a pulsed flow. These can only effectively be delivered with piggy-backing onto unregulated tributary flows, translucent flows or freshes Other – support bird breeding events. If environmental requirements are met through unregulated tributary flows and translucent releases there may not be a need to use licenced water in 2011/12, allowing the water to</p>			

<p>Wet Inflows – 100% allocation available; replenishment flows likely to be delivered using unregulated trib flows; translucent flows likely</p> <p>1,733HS 107,284GS 12,000LB</p>	<p>Improve and extend healthy and resilient ecosystems</p>	<p>Inundate priority, good and fair condition semi-permanent wetland; increase duration, connectivity and in-channel targets</p>	<p>be held for planned environmental watering in future years.</p> <p>Inundation for 3 months</p> <p>Options include those above</p> <p>If environmental requirements are met through unregulated tributary flows, translucent releases and ECA there may not be a requirement to use licenced water in 2011/12, allowing the water to be held for planned environmental watering in future years.</p>	<p>Cottons Weir drown-out 9250ML/d; Condobolin Weir drown-out 4100ML/d; Willandra Weir drown-out 8500ML/d³; Hillston Weir drown-out 4750ML/d</p>
<p>Very Wet – 100% allocation available; replenishment flows available; translucent flows available</p> <p>1,733HS 107,284GS 12,000LB</p>	<p>Improve, extend and restore healthy and resilient ecosystems</p>	<p>Inundate priority, good, fair and poor condition semi-permanent wetland; increase duration, connectivity and in-channel targets</p>	<p>Inundation for 4 months</p> <p>As above</p>	<p>Cottons Weir drown-out 9250ML/d; Condobolin Weir drown-out 4100ML/d; Willandra Weir drown-out 8500ML/d³; Hillston Weir drown-out 4750ML/d</p>

¹ Scenario name (drought, dry etc.) is a notional range of environmental water based on climate scenarios and assuming CEWH water is managed conjunctively

² Lake Brewster water savings AWL – available firstly for use in Lake Brewster inflow and outflow wetlands

³ Discharge over 2400ML/d results in losses to Willandra Creek

Risks and mitigating strategies

Following the Risk Assessment matrix in the OEH Environmental Water Management Manual a number of risks have been identified in association with the proposed management of adaptive environmental water. These risks and mitigating strategies are outlined in Table 5.

Table 5 - Risks and Mitigating Strategies

Risk	Rating	Response
Unpredictable weather – turns drier than expected	High (likely & major)	Review asset condition and future priorities for watering. Replenishment flows may not occur and piggy-backing of e-water not possible. May require greater than expected volumes of e-water to water assets
Landholders extracting environmental water in creeks	Medium	NSW Office of Water to issue suspension of extraction notices to landholders in the creeks.
Unpredictable weather – turns wetter than expected	Medium (unlikely & major)	Additional wetting options possible – continually assess volumes available. Delivery of environmental water under extremely wet conditions may pose a threat to property and infrastructure.
Water management by landholders may restrict benefits of environmental water	High (possible & major)	Develop an understanding of water management in target area. Develop an agreement with target wetland landholders
Flow management is uncoordinated	Medium (possible & moderate)	LRWG has been established and regular communication is maintained with CEWH, State Water and CSC. Develop Implementation Manual for the delivery and accounting of ECA and WQA
Water use and works approvals not linked to AEW licences	High (possible & major)	Confirm status with OEH licensing; seek discretionary one-off approval if necessary
Estimated flow target volumes are substantially wrong	Medium (unlikely & moderate)	Monitor flow delivery daily and seek adjustments; revise targets for future attempts
Unforeseen physical impediments to flow delivery	Medium (rare & major)	Early communication with creek Trusts and State Water; alert licencing if illegal obstructions identified
Water use plan not amended in time to take advantage of other opportunities	Medium (possible & moderate)	Seek urgent approval from appropriate agency
Insufficient water available to complete colonial waterbird breeding, if initiated	High (unlikely & severe)	Reserve 5,000 ML in storage; purchase GS allocation, utilise ECA

Monitoring, reporting and revising

Monitoring as per RiverBank monitoring plan for adaptive environmental water, and IMEF program for key wetland sites.

Reporting to

- Director, Water for the Environment, OEH: monthly updates on conditions (climate, available environmental water) and weekly updates during flow delivery events.

- LRWG will be provided with monthly updates on conditions and weekly updates during flow delivery events.
- Lachlan CMA, via the LRWG, will receive monthly updates on conditions and weekly updates during flow delivery events.
- Lachlan Customer Services Committee – regular updates at meetings.
- Broader community – updates in E-water Newsletter.

<http://www.environment.nsw.gov.au/environmentalwater/newsletters.htm>

This plan is to be **revised** when conditions dictate. Triggers for revision will be sustained catchment or localised rainfall that produces significant flows into storages or in tributaries. Good communication with State Water and local community representatives will help clarify the timing and scale of revision.

Primary responsibility for identifying and reporting opportunities for revisions to this plan rests with OEH Senior Wetlands and Rivers Conservation Officer, South Branch.

Prepared by: Paul Packard


Position: Senior Wetlands and Rivers Conservation Officer, South Branch, OEH

Consultation: LRWG

Date:

Approved by: **Derek Rutherford**

Signature:



Date: 16/8/11

Position: **Director, Water for the Environment**

NSW Office of Environment and Heritage

Appendix 1

Entitlement		HS GS Other	20000			20000		
Take Limit		75%	ECA			WQA		
Month	AWD HS	AWD GS	Credit	Use	Balance	Credit	Use	Balance
Balance From 2009-10					0			0
Jul-10	10%				0			0
Aug-10	20%				0			0
Sep-10	70%				0			0
		10%			0			0
Oct-10		10%			0			0
Nov-10					0			0
Dec-10		75%	20000	20000	0	20000	9600	10400
Jan-11		13%			0			10400
Feb-11					0			10400
Mar-11					0			10400
Apr-11		9%			0			10400
May-11					0			10400
Jun-11								
2011-12								
Take Limit	100%							
Potential Opening balance			20000			20000		

Entitlement		HS GS Other	1000 24575			State Owned AEW				
Take Limit		75%	Credit (Take) HS	Credit (Take) GS	Credit (Hold) GS	Use	Balance (Take)	Balance (Hold)	Balance (Total)	
Month	AWD HS	AWD GS								
Balance From 2009-10							0	0	0	
Jul-10	10%		100	0	0		100	0	100	
Aug-10	20%		200	0	0		300	0	300	
Sep-10	70%		700	0	0		1000	0	1000	
		10%	0	2458	0		3458	0	3458	
Oct-10		10%	0	2458	0	1312.5	4603	0	4603	
Nov-10			0	0	0		4603	0	4603	
Dec-10		75%	0	13516	4915	1425.2	16694	4915	21609	
Jan-11		13%	0	0	3195		16694	8110	24803	
Feb-11			0	0	0		16694	8110	24803	
Mar-11			0	0	0		16694	8110	24803	
Apr-11		9%	0	0	2212		16694	10322	27015	
May-11			0	0	0		16694	10322	27015	
Jun-11										
2011-12										
Take Limit	100%									
Potential Opening balance							24575	2440		

Entitlement		HS	12000							
Take Limit		75%	GS							
		Other								
Lake Brewster AEW										
Month	AWD HS	AWD GS	Credit (Take) HS	Credit (Take) GS	Credit (Hold) GS	Use	Balance (Take)	Balance (Hold)	Balance (Total)	
Balance From 2009-10							0	0	0	
Jul-10	10%		0	0	0		0	0	0	
Aug-10	20%		0	0	0		0	0	0	
	70%		0	0	0		0	0	0	
Sep-10		10%	0	1200	0		1200	0	1200	
Oct-10		10%	0	1200	0		2400	0	2400	
Nov-10			0	0	0		2400	0	2400	
Dec-10		75%	0	6600	2400		9000	2400	11400	
Jan-11		13%	0	0	1560		9000	3960	12960	
Feb-11			0	0	0		9000	3960	12960	
Mar-11			0	0	0		9000	3960	12960	
Apr-11		9%	0	0	1080		9000	5040	14040	
May-11			0	0	0		9000	5040	14040	
Jun-11										
2011-12										
Take Limit		100%								
Potential Opening balance							12000	2040		

Entitlement		HS	733							
Take Limit		75%	GS	82709						
		Other								
CEWH										
Month	AWD HS	AWD GS	Credit (Take) HS	Credit (Take) GS	Credit (Hold) GS	Use	Balance (Take)	Balance (Hold)	Balance (Total)	
Balance From 2009-10							0	0	0	
Jul-10	10%		73	0	0		73	0	73	
Aug-10	20%		147	0	0		220	0	220	
	70%		513	0	0		733	0	733	
Sep-10		10%	0	8271	0		9004	0	9004	
Oct-10		10%	0	8271	0		17275	0	17275	
Nov-10			0	0	0		17275	0	17275	
Dec-10		75%	0	45490	16542	4100.3	58664	16542	75206	
Jan-11		13%	0	0	10752		58664	27294	85958	
Feb-11			0	0	0		58664	27294	85958	
Mar-11			0	0	0		58664	27294	85958	
Apr-11		9%	0	0	7444		58664	34738	93402	
May-11			0	0	0		58664	34738	93402	
Jun-11										
2011-12										
Take Limit		100%								
Potential Opening balance							82709	10693		

Entitlement		HS	GS	Other
Take Limit		75%		
		Combined		
Month	AWD HS	AWD GS	Licenced balance can not be used in this year	Licenced balance to use in this year
Balance From 2009-10			0	0
Jul-10	10%		0	173
Aug-10	20%		0	520
	70%		0	1733
Sep-10		10%	0	13661
Oct-10		10%	0	24277
Nov-10			0	24277
Dec-10		75%	23857	84358
Jan-11		13%	39364	84358
Feb-11			39364	84358
Mar-11			39364	84358
Apr-11		9%	50099	84358
May-11			50099	84358
Jun-11				
2011-12			2011-12	
Take Limit	100%			
Potential Opening balance			15173	119284

Appendix 2

Table 1 – Drought Inflow Conditions

Drought	Probability	State		Commonwealth		Total*	
		Oct	Jan	Oct	Jan	Oct	Jan
HS 100%; GS 100% entitlement available for use	100	1,000HS 24,575GS 12,000LB	1,000HS 24,575GS 12,000LB	733HS 82,709GS	733HS 82,709GS	1,733HS 107,284GS 12,000LB	1,733HS 107,284GS 12,000LB
Account Holdings		1,000HS 27,015GS 14,040LB	1,000HS 27,015GS 14,040LB	733HS 93,402GS	733HS 93,402GS	1,733HS 120,417GS 14,040LB	1,733HS 120,417GS 14,040LB

Table 2 – Dry Inflow conditions

Dry	Probability	State		Commonwealth		Total	
		Oct	Jan	Oct	Jan	Oct	Jan
HS 100%; GS 100% entitlement available for use	80	1,000HS 24,575GS 12,000LB	1,000HS 24,575GS 12,000LB	733HS 82,709GS	733HS 82,709GS	1,733HS 107,284GS 12,000LB	1,733HS 107,284GS 12,000LB
Account Holdings		1000HS 27,752GS 14,400LB	1000HS 27,752GS 14,400LB	733HS 99,228GS	733HS 99,228GS	1733HS 126,980GS 14,400LB	1733HS 126,980GS 14,400LB

Table 3 – Median Inflow Conditions

Dry	Probability	State		Commonwealth		Total	
		Oct	Jan	Oct	Jan	Oct	Jan
HS 100%; GS 100% entitlement available for use	50	1,000HS 24,575GS 12,000LB	1,000HS 24,575GS 12,000LB	733HS 82,709GS	733HS 82,709GS	1,733HS 107,284GS 12,000LB	1,733HS 107,284GS 12,000LB
Account Holdings if reset occurs		1000HS 33,422GS 16,320LB	1000HS 33,422GS 16,320LB	733HS 112,484GS	733HS 112,484GS	1733HS 145,906GS 16,320LB	1733HS 145,906GS 16,320LB

Table 4 – Wet and very Wet Inflow Conditions

Dry	Probability	State		Commonwealth		Total	
		Oct	Jan	Oct	Jan	Oct	Jan
HS 100%; GS 100% entitlement available for use	20	1,000HS 24,575GS 12,000LB	1,000HS 24,575GS 12,000LB	733HS 82,709GS	733HS 82,709GS	1,733HS 107,284GS 12,000LB	1,733HS 107,284GS 12,000LB
Account Holdings if reset occurs		1000HS 33,422GS 16,320LB	1000HS 33,422GS 16,320LB	733HS 112,484GS	733HS 112,484GS	1733HS 145,906GS 16,320LB	1733HS 145,906GS 16,320LB

