



Carnarvon Artesian Basin water management plan: Evaluation statement 2009–2011

This statement evaluates the extent to which the objectives of the *Carnarvon Artesian Basin water management plan, 2007* were met since the previous statement was released in 2009.

Evaluation statements are part of the Department of Water's adaptive management process and allow us to continually review and improve management of water resources.

1 Allocation status

1.1 Changes in allocation status

Water availability in the Carnarvon Artesian Basin (CAB) is managed using a pressure impact model, with a nominal allocation limit set for licensing and reporting purposes. The water availability will be reviewed periodically, depending on pressure changes in the resource and applications received.

Since the 2009 evaluation:

- the water availability status did not change (limited availability)
- 0.32 GL/yr was issued from the Birdrong aquifer
- 27.3 GL is set aside as part of development conditions (associated with licences)
- ten licences were issued in the Birdrong aquifer, bringing the total number of licences to 37 in the plan area
- one licence is pending assessment and approval.

A number of licences were amended since implementation of the plan as a result of work undertaken as part of the CAB Rehabilitation Project, Phase 2. This project was completed in September 2010. Licences affected by this work will continue to be managed in line with this plan.

For a full list of up-to-date water availability in all resources contact the Mid West Regional office in Carnarvon or see our water register, <www.water.wa.gov.au/ags/WaterRegister>

2 New allocation issues

During this reporting period there were a number of issues raised by both licensees and members of the Carnarvon Artesian Basin advisory group (CABAG) working on the Gascoyne food bowl initiative (Table 1). These issues build on and provide additional information on the allocation issues raised during the 2009 evaluation statement. We will continue to work with the community on resolving these issues through implementing this plan.

Table 1 *New allocation issues that were raised during this evaluation period*

	Issue	Our response
Metering	<p>Metering of bores was raised as an issue by water users. The issues were:</p> <ul style="list-style-type: none"> • The plan requires metering of stock and domestic bores. These uses are generally not metered in other areas of the state. • Unreasonable costs for the supply and fitting of meters in remote areas. 	<p>We amended metering requirements for non-intensive stock and domestic licences in response to the issues raised by water users through an addendum to the plan. See the <i>Carnarvon Artesian Basin water management plan: Addendum 2011</i>. We contributed 80% of the cost of meters on bores drilled as part of the CAB rehabilitation project (about 10 m) that pastoralists now use.</p>
Monitoring	<p>The monitoring program required by licensees was raised as an issue, specifically:</p> <ul style="list-style-type: none"> • unduly disrupts stock watering • measuring for salinity is too frequent and time consuming • water users do not own the equipment (salinity meters) to record this information • the need for salinity monitoring was questioned as the resource is saline. 	<p>We amended the requirements for monitoring in response to the issues raised by water users through an addendum to the plan. See the <i>Carnarvon Artesian Basin water management plan: Addendum 2011</i>.</p>
Unlicensed and exempt use	<p>The issue of licensing stock and domestic bores was raised by the community as in other parts of the state it is not licensed.</p>	<p>As the take of water in the CAB groundwater area is artesian <i>all</i> use is licensed. Exemptions for stock and domestic use only apply to non-artesian aquifers.</p>
	<p>There are a number of free-flowing bores remaining in the CAB and this usage information is not being recorded.</p>	<p>We identified this as a new action for improving the implementation of this plan.</p>
General licensing	<p>Stock water is considered a basic right with regards to pastoral leases and should automatically be transferred with the sale of a property. The licensing process is too long and time consuming when transferring pastoral leases with licences.</p>	<p>Within the constraints of our legislation we aim to improve our licensing process to accommodate transferring licences on a pastoral lease when properties are sold.</p>

3 Implementation actions

A summary of progress towards completing the plan actions undertaken in 2010–2011 are provided in Table 2.

Action 4 (see table 6.1 of the plan) was met during the last evaluation statement. Action 9 of the plan is to be considered in the next evaluation statement 2012–2013.

Table 2 Summary of progress towards actions for implementing the plan

No.	Action	Status	Evaluation
<i>Actions carried over from 2009</i>			
2	A review of bore logs (where available), as it is now known that some bores in the southern areas of the CAB are drawing water from the Windalia Radiolarite/Sand aquifer or the Kopke Sandstone.	Partially met	The department reviewed the bore logs from the CAB rehabilitation project (Phase 2). A bore completion report is still being developed by the Regional Hydrogeologist. However, a review of the remaining bore logs is required to complete this action.
3	Consider whether unproclaimed areas within the CAB (Figure 1.1 of the plan) need to be considered for proclamation. Pressure on the resource and priorities of other proclamation projects will determine if and when proclamation of these areas will occur.	Met	This was considered. Only a small area remains unproclaimed. As water use in this area is from artesian groundwater any use must be licensed as per the <i>Rights in Water and Irrigation Act 1914</i> .
5	An assessment of unlicensed water use.	In progress	Our work will identify unlicensed use through regular water licensing surveys.
<i>Actions due 2010–2011</i>			
7	Engage users in program of awareness of trading concepts	Not met	When modelling and monitoring show the aquifer is becoming fully allocated, this action will be reviewed.
<i>Actions in progress</i>			
1	Use logs and data from new or recommissioned bores, or information from the Carnarvon Artesian Basin Rehabilitation Project, to update the department's WIN database. This database will provide improved information as to the status of the Birdrong aquifer.	In progress	The department is continuing to update the WIN database with new and existing information as it becomes available. Once the input of the data is complete we will review the status of the Birdrong aquifer.
6	License all relevant use	In progress	Relevant use will be licensed. Licensing staff reviewed use for properties as part of CAB Rehabilitation Project and this will be finalised in 2011.

No.	Action	Status	Evaluation
8	A formal water use survey and follow-up compliance program will be carried out before the review of this plan to confirm changes in use of water and ensure accurate accounting and licensing of water for future planning.	In progress	Water use surveys were undertaken for properties captured by the CAB Rehabilitation project. The remaining licences will be surveyed and compliance undertaken as part of the normal licence assessment process at licence renewal.
Score:		6/9	
Rating:		Good	

Several actions were developed from the new allocation issues raised and will be implemented during the next reporting period (2012–2013). They are summarised in Table 3 below.

Table 3 Summary of progress towards actions required to improve implementation

No.	Action	Evaluation	Timeline
10	Review local licensing policies in the plan to remove conditions for metering and sampling of electrical conductivity on licences for 'stock and domestic' purposes only.	An addendum to the plan will be released with this evaluation statement that presents new approaches to managing artesian licences for non-intensive stock watering and domestic purposes. Where we implement this change licences will be updated at renewal or transfer. The department will continue to include salinity measurements as part of its reporting against the annual monitoring program.	2012
11	Revise monitoring program for static pressure to minimise disruptions to licensees.	We reviewed the monitoring program in 2009 to minimise disruptions to licensees. Feedback from licensees showed that this change was not clearly communicated. We will now notify all licensees of these changes.	2010 (met)
12	Complete the CAB rehabilitation project and cap the final free-flowing bores in the CAB area.	We identified the eight remaining free-flowing bores that require capping as part of finalising the CAB rehabilitation project. Where possible we will cap these bores and/or license any use from them.	2013

4 Plan performance

We rated the performance of the plan and its implementation by reviewing the performance indicators and assessing the extent to which plan objectives were met.

4.1 Performance indicators

The performance indicators were developed during the last evaluation statement process. Table 4 continues to review the measurable indicators to evaluate the performance of the plan.

Table 4 Summary of performance indicators

Performance indicator	Objective	Performance indicator met?	Evaluation
Pressure levels remain stable in artesian bores compared to pressure at time of drilling (baseline level).	1, 2, 7 and 8	Met	Monitoring showed that the pressure levels remained stable or increased (see Appendix 1).
All artesian and sub-artesian use will be licensed.	2, 3, 7, 8 and 9	Partially met	As per actions 5, 6 and 13, work is continuing to determine if all unlicensed use requires licensing.
Score:	1.5/2		
Rating:	Good		

4.2 Objectives

The current status of each of the plan's objectives (Section 1.2 and Section 5.1 of the plan) is listed in Table 5.

Table 5 Objectives and their status

No.	Objective	Status	Evaluation
<i>Plan objectives</i>			
1	Maintain pressure heads in the Birdrong sufficiently to allow pastoral users to operate efficient distribution systems.	Met	Monitoring shows pressure heads remain stable or increased (see Appendix 1)
2	Ensure groundwater resources are allocated reasonably and used appropriately in the long term.	Met	Limited volumes of water are still available for licensing.
<i>Licensing objectives</i>			
7	Assist sustainable development in the region while minimising the impacts of existing and future abstractions on potentiometric head levels in the CAB.	Met	As per objectives 1 and 2

No.	Objective	Status	Evaluation
8	Ensure that future use of artesian groundwater does not cause declines in artesian head levels in existing bores to a point where water availability to existing users is compromised.	Met	As per objectives 1 and 2.
<i>Objectives met on a continuing basis</i>			
3	The plan is available to the public. A copy of the plan can be found on the department's website or you can contact the Carnarvon regional office for a hard copy.		
4	We implemented the monitoring program for this plan. However, due to floods and high rainfall periods some monitoring could not be undertaken, specifically in January 2011. We will continue to implement the program, and consider additional monitoring later in the year to cover any gaps.		
5	We will continue to produce the plan evaluation statements and make water licensing and planning information available on our website. The department closed the Carnarvon Artesian Basin Rehabilitation Group meetings when Phase 2 of the project was completed in 2010. This group may be used again in the future to complete the capping project (Action 13). The department will also provide the community with water resource management information as part of its involvement in community projects such as the Gascoyne food bowl initiative.		
6	The policies are detailed in the plan. We will continue to meet this objective by reporting on any changes to these policies through this statement and online.		
9	When water is required for drinking water in regional towns and communities it will be reserved and licensed to the public water supplier as per the plan.		
Score:	9/9		
Rating:	Good		

5 Evaluation of management approach set out in plan

The plan is successful in managing groundwater abstraction from the Carnarvon Artesian Basin. The objectives were met, progress was made on most of the implementation actions, and the water availability strategy set out in the plan was maintained.

Pressure heads increased in most areas as a result of the CAB rehabilitation project. The CAB rehabilitation project (Phase 2) was finished in September 2010. An additional 14 controlled bores were drilled and 28 free-flowing bores were decommissioned. This saved 8 GL of water from being lost across the plan area. This project played an important role in the implementation of the plan and several of the objectives.

The CAB rehabilitation project included extensive consultation with users through regular site visits and committee meetings. Since this time, communication with licensees decreased, in particular with new owners. We aim to implement routine

communications with licensees over the 2011 water year to assist with communicating a number of licensing issues to all licensees.

Implementation of the actions resulted in plan objectives being met. However, there is still work to be done (Tables 2 and 3). The actions benefit the long-term management of the CAB resource. The plan and its objectives will continually be evaluated to ensure we are effectively managing the resource.

A number of issues were highlighted through community consultation and during the licensing process. We aim to resolve these issues (Table 1) by meeting the new actions set out in Table 3.

The department implemented an annual monitoring program, in addition to monitoring conducted by individual licensees. We will be implementing the next phase of the monitoring program by using the information collected to update the CAB model.

6 Response to this evaluation

We identified through this evaluation that the *Carnarvon Artesian Basin water management plan* is suitable to remain in place until the next evaluation. Through this evaluation we identified changes that need to be made to the plan that will improve the performance of the plan and how we implement it. We completed a plan addendum to address these changes. The changes included:

- Removal of the reference to licence administration fees.
- An update to local licensing policies regarding metering and salinity measurements associated with licensed non-intensive stock watering and domestic purposes and licences for less than 50 000 kL/yr.
- An updated process for applying licence conditions to reflect measurement, monitoring and reporting changes.

The *Carnarvon Artesian Basin water management plan: Addendum 2011* is to be implemented and used in conjunction with the plan from the date the Minister Water endorses it.

The plan is not scheduled for replacement, as the current management approach is meeting its objectives. The need to replace the plan will continue to be considered each year through the evaluation process

6.1 Work required to improve our performance implementing the plan

We identified the following work required to improve our implementation of this plan. We will:

- complete the capping of free-flowing bores (Action 12; Objective 1). This includes identifying and licensing use from free-flowing artesian bores.
- report on metered annual groundwater abstraction compared with licensed entitlements
- review and update our monitoring program in line with the objectives of the plan.

6.2 Work required for next plan

There are particular components of the plan that will require consideration when the plan is replaced. The following work is required before the next plan can be initiated:

- Conduct drilling investigations to inform revision of the CAB model.
- Determine where the recharge areas for the CAB are located and accurate boundaries for the Birdrong and Kopke aquifers (Action 2; Objective 1).
- Update of the CAB model (Action 1 and 2; Objective 2).

Rating system

Rating	Description
Good	70 to 100% of performance indicators, objectives and/or actions met
Adequate	40 to 70% of performance indicators, objectives and/or actions met
Poor	Less than 40% of performance indicators, objectives and/or actions met

Appendix One: Pressure changes in the Carnarvon Artesian Basin aquifer

Carnarvon Artesian Basin Pressure Samples 2000-2010			<i>1 psi = 6.895 kpa /1 meter of head = 9.804 kilopascal</i>	
DATE	STATION NAME	BORE NAME	PRESSURE KPA	KPA INCREASE
6/01/2001	Boologooro Station	Boologooro 2000	248	
22/07/2010	Boologooro Station	Boologooro 2000	280	32
27/05/2001	Callagiddy Station	Callagiddy HS 2001	248	
19/07/2010	Callagiddy Station	Callagiddy HS 2001	280	32
14/08/2001	Carbla Station	Carbla H/S 2001	172	
20/07/2010	Carbla Station	Carbla H/S 2001	300	128
21/11/2007	Carbla Station	Carbla 18/2007	228	
20/07/2010	Carbla Station	Carbla 18/2007	335	107
28/03/2008	Carbla Station	Carbla Six Mile 2008	202	
19/07/2010	Carbla Station	Carbla Six Mile 2008	265	63
27/01/2004	Carnarvon Shire	Airport Bore	420	
30/06/2010	Carnarvon Shire	Airport Bore	420	0
12/04/2006	Edaggee Station	Edaggee H/S 2000	174	
19/07/2010	Edaggee Station	Edaggee H/S 2000	212	38
12/04/2006	Edaggee Station	Edaggee No2 2000	324	
19/07/2010	Edaggee Station	Edaggee No2 2000	352	28
7/06/2006	Hamelin Station	Hamelin H/S	205	
1/07/2010	Hamelin Station	Hamelin H/S	275	70
19/07/2001	Hamelin Station	Sweeny Mia 2001	241	
21/07/2010	Hamelin Station	Sweeny Mia 2001	265	24
20/06/2006	Marron Station	Marron H/S 2000	84	
19/07/2010	Marron Station	Marron H/S 2000	118	34
19/06/2001	Mia Mia Station	Jappa	162	
22/07/2010	Mia Mia Station	Jappa	208	46
24/07/2006	Nanga Station	Nanga H/S 2005	343	
20/07/2010	Nanga Station	Nanga H/S 2005	350	7
31/07/2000	Wahroonga Station	Homestead 2000	119	
19/07/2010	Wahroonga Station	Wahroonga H/S	155	36
22/09/2000	Warrorra Station	Homestead 2000	341	
16/01/2010	Warrorra Station	Homestead 2000	400	59
20/08/2000	Warrorra Station	Outcamp 2000	306	
22/07/2010	Warrorra Station	Outcamp 2000	375	69
16/09/2001	Wooramel Station	H/S 2001	345	
19/07/2010	Wooramel Station	H/S 2001	382	37
21/10/2001	Wooramel Station	North Coast 2001	379	
19/07/2010	Wooramel Station	North Coast 2001	410	31
Average Increase throughout the Basin 2000-2010				46.72