



GOVERNMENT OF WESTERN AUSTRALIA

Statement No.

**MINISTER FOR THE ENVIRONMENT; SCIENCE**

000687

**STATEMENT TO AMEND CONDITIONS APPLYING TO PROPOSALS  
(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE  
ENVIRONMENTAL PROTECTION ACT 1986)**

*STATEMENT FOR THE WATER AND RIVERS COMMISSION*

**GNANGARA MOUND GROUNDWATER RESOURCES  
[INCLUDING GROUNDWATER RESOURCE ALLOCATION, EAST GNANGARA  
CITY OF SWAN]**

**Proposals:** The management and abstraction of groundwater for public and private water supply from the Gnangara Mound, with provision for environmental water requirements, as documented in this statement.

**Proponent:** The Water and Rivers Commission (Joint)

**Proponent Address:** Level 2, 3 Plain Street  
EAST PERTH WA 6004

**Assessment Number:** 1540-1

**Previous Assessment Numbers:** 041 / 697 / 932

**Previous Statement Numbers:** Statement No. 021 (Published on 8 March 1988)  
Statement No. 437 (Published on 6 February 1997)  
Statement No. 438 (Published on 6 February 1997)  
Statement No. 496 (Published on 17 February 1999)

**Report of the Environmental Protection Authority:** Bulletin 1155

**Previous Reports of the Environmental Protection Authority:** Bulletins 295 / 817 / 904

The implementation and management of groundwater and groundwater allocations for the Gnangara Mound Groundwater Resources is subject to the following conditions and procedures, which replace all previous conditions and procedures applicable to the abovementioned proponent (See note 2 at foot of this statement):

Published on

## **1 Implementation**

- 1-1 The proponent shall implement the proposals as documented in “Section 46 Review of Environmental Conditions on Management of the Gngangara and Jandakot Mounds – Stage 1 Proposal for Changes to Conditions” (August 2004), as modified and documented in Environmental Protection Authority Bulletin 1155, which revised the Environmental Review and Management Programme (1986), published in Environmental Protection Authority Bulletin 295 as Appendix D; and which were consolidated in May 1996 and reported on in Environmental Protection Authority Bulletin 817, as revised in November 1996, and also revised in the Public Environmental Review (1997), published in Environmental Protection Authority Bulletin 904 as Appendix 3.

## **2 Proponent Commitments**

- 2-1 The proponent shall implement the environmental management commitments, as revised in December 2004, and documented in schedule 1 of this statement, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

## **3 Proponent Nomination and Contact Details**

- 3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposals until such time as the Minister for the Environment has exercised the Minister’s power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposals.
- 3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposals will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposals shall also be provided.
- 3-3 The nominated proponent shall notify the Environmental Protection Authority of any change of contact name and address within 60 days of such change.

## **4 Commencement and Time Limit of Approval**

- 4-1 The proponent shall provide evidence to the Minister for the Environment within five years of the date of this statement that the proposals have been substantially commenced or the approvals granted in the statements of 8 March 1988 and 17 February 1999 shall lapse and be void.

## **5 Compliance Audit and Performance Review**

5-1 The proponent shall prepare an audit program and submit compliance reports to the Environmental Protection Authority which address:

1. the status of implementation of the proposals;
2. evidence of compliance with the conditions and commitments; and
3. the performance of the environmental management plans and programs.

Note: Under delegation No. 54 issued on 18 June 2004 and section 48(1) of the *Environmental Protection Act 1986*, the Environmental Protection Authority is empowered to monitor the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.

5-2 The proponent shall submit a performance review report by 1 December each year and more detailed reports by 1 February every three years, to the requirements of the Environmental Protection Authority, which address:

1. compliance with the conditions;
2. the achievement of environmental objectives set for the proposal;
3. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
4. proposed environmental management over the next three years to comply with conditions and environmental objectives set for the proposal.

5-3 The proponent shall make the reports required by condition 5-2 publicly available, to the requirements of the Environmental Protection Authority.

5-4 The proponent shall report any breach or anticipated breach of the environmental criteria set out in Tables 1 and 2 or environmental objectives to the Environmental Protection Authority immediately it becomes evident to the proponent.

## **6 Management of the Water Resource**

6-1 The proponent shall base decisions affecting the management of groundwater resources of the Gngara Mound on the concept of sustainable yield of resources and maintenance of ecological systems in accordance with the objectives of the State Conservation Strategy (1987).

- 6-2 The proponent shall subject to regular review the basis for groundwater management decisions, including groundwater allocations and licences, and the criteria specified for conservation of the environment and the groundwater resource of the Gngangara Mound, to the requirements of the Environmental Protection Authority on advice of the Department of Conservation and Land Management.

## **7 Groundwater Allocation**

- 7-1 The proponent shall ensure that the allocation of water to public and private users and the operation of the Pinjar Stages 1, 2 and 3, Wanneroo, Mirrabooka and Lexia Groundwater Schemes comply with environmental water provisions.

## **8 Groundwater-dependent Ecosystems**

- 8-1 The proponent shall ensure that the integrity of all groundwater-dependent ecosystems located on the Gngangara Mound that may be impacted as a result of groundwater abstraction are protected, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

## **9 Groundwater Availability**

- 9-1 The proponent shall widely publish by the end of October each year the limits on groundwater availability for the Gngangara Mound.
- 9-2 The proponent shall update annually the figures published according to the requirements of condition 9-1, with emphasis on those areas of high allocation relative to sustainable yield of the groundwater resource so that limits to use and development can be clearly seen by all interested parties. The updated figures shall also be widely published.

## **10 Water Conservation**

- 10-1 The proponent shall actively encourage further reduction in public and private water demand in accordance with the State Water Strategy (2003) and other water conservation initiatives.

## **11 Research and Monitoring**

- 11-1 The proponent shall participate in and undertake research and monitoring on the Gngangara Mound which includes:
1. clarification of the relationship between groundwater level and rainfall under conditions of declining long-term rainfall;
  2. improvement in the understanding of the relationship between groundwater levels and vegetation, including plantations;

3. improvement in the understanding of the relationship between groundwater level and abstraction from unconfined and confined aquifers of the Gnangara Mound;
4. clarification of the relationship between groundwater level and wetland water levels and wetland water quality;
5. improvement in the understanding of the relationship between groundwater level and water levels in the Yanchep caves; and
6. improvement in the understanding of the conservation value of wetlands and other groundwater-dependent ecosystems on the Gnangara Mound,

to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

### **Procedures**

- 1 Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will prepare the written notice to the proponent.
- 2 The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice.
- 3 Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Environmental Protection Authority.

### **Notes**

- 1 The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority over the fulfilment of the requirements of the conditions.
- 2 The conditions and commitments of Statement No. 437 for which the Water Corporation is primarily responsible have not been reviewed during the section 46 consideration which has led to the amended conditions of this statement.

Dr Judy Edwards MLA  
MINISTER FOR THE ENVIRONMENT; SCIENCE

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**Proponent's Environmental Management Commitments**

December 2004

**GNANGARA MOUND GROUNDWATER RESOURCES  
[INCLUDING GROUNDWATER RESOURCE  
ALLOCATION, EAST GNANGARA]**

(Assessment No. 1540-1)

Water and Rivers Commission

**Gnangara Mound Groundwater Resources [Including Groundwater Resource Allocation, East Gnangara] (Assessment No. 1540-1)  
December 2004**

**Note:** The term “commitment” as used in this schedule includes the entire row of the table and its six separate parts as follows:

- a commitment number;
- a commitment topic;
- the objective of the commitment;
- the “action” to be undertaken by the proponent;
- the timing requirements of the commitment; and
- the body / agency to provide technical advice to the Environmental Protection Authority.

No.	Topic	Objective	Action	Timing	Advice
1	Gnangara Mound allocations		Manage public and private groundwater abstraction to meet objectives and Environmental Water Provision (EWP) criteria presented in Tables 1 and 2 (attached).	Ongoing	
2	Management objectives and Criteria		Management objectives and criteria and water allocation limits will be regularly reviewed and amended as information becomes available to provide for ongoing adaptive management.	Ongoing	CALM
3	Yeal Groundwater Scheme	To minimise environmental and/or significant impact	Prepare a Water Resources Allocation and Management Plan for the Yeal area to identify groundwater allocations.	Prior to grant of an allocation to the Yeal scheme	
4	Yanchep caves	To minimise environmental and/or significant impact	Continue to develop catchment strategies to minimise change in hydrological regime within the caves of Yanchep National Park. Monitor water levels and cave fauna.	Ongoing	CALM
5	Strategic drainage plans		Prepare strategic drainage plans for the study area including options for the management of high water levels in Lakes Joondalup, Goollelal, Mariginiup and Jandabup.	Ongoing	

6	Research and investigation program		<ol style="list-style-type: none"> <li>1. Prepare a research and investigation program for submission to the EPA for review and subsequent finalisation of the program to the satisfaction of the EPA. The research and investigation program will be prepared with the objective of improving understanding of: <ul style="list-style-type: none"> <li>• groundwater-environmental relationships on the Swan Coastal Plain;</li> <li>• the associated management requirements; and</li> <li>• potential management techniques;</li> </ul> and will incorporate all relevant aspects of research and investigation work currently committed to under Ministerial Statements 438 and 496. </li> <li>1. Implement the research and investigation program to the satisfaction of the EPA.</li> <li>2. Review and revise the program every six years (coinciding with triennial reports), to the satisfaction of the EPA.</li> </ol>	Within four months of a revised statement being issued following the 2004 Stage 1 section 46 review/ Ongoing	CALM
7	Vegetation protection	To minimise environmental and/or significant impact	Require the Water Corporation, through licence conditions, to phase in production bores closest to phreatophytic vegetation to allow the vegetation to adapt slowly to the drawdown and minimise the overall impacts of drawdown.	Ongoing	
8	Environmental monitoring program		<ol style="list-style-type: none"> <li>1. Prepare an environmental monitoring program for submission to the EPA for review and subsequent finalisation of the program to the satisfaction of the EPA. The monitoring program will include: <ul style="list-style-type: none"> <li>• monitoring of groundwater levels in all relevant aquifer systems;</li> <li>• relevant wetland water levels and water quality;</li> <li>• condition of vegetation and fauna associated with groundwater-dependent ecosystems; and</li> <li>• cave water levels.</li> </ul> </li> <li>2. Implement the approved environmental monitoring plan to the satisfaction of the EPA.</li> <li>3. Review and revise the program every six years (coinciding with triennial reports), to the satisfaction of the EPA.</li> </ol>	Within four months of a revised statement being issued following the 2004 Stage 1 section 46 review/ Ongoing	CALM

9	Development advice		Continue to provide advice to the City of Wanneroo, the Department for Planning and Infrastructure, CALM and other relevant agencies on the impact of land use on groundwater resources.	Ongoing	
10	Gnangara inter-agency technical advisory group		Convene and provide ongoing executive support for an inter-agency technical advisory group for water resources planning and management issues on the Gnangara Mound. The group will consider planning and management issues in the context of recommendations of the Select Committee on Metropolitan Development and Groundwater Supplies.	Ongoing	
11	Community consultation		Continue to chair and provide support for the Gnangara Consultative Committee as an ongoing forum for information exchange and advice.	Ongoing	
12	Aboriginal consultation		Liaise with the Swan Valley Nyungah Community regarding the East Gnangara proposal.	Ongoing	
13	Vegetation protection		Limit potential for tree deaths around production wells to 100 metres radius for normal (average) climate conditions and within 200 metres in extreme conditions.	Ongoing	
14	Lake Nowergup supplementation		1 Upgrade the artificial maintenance facility for Lake Nowergup to provide more rapid recharge when it becomes necessary to meet EWPs; and  2 Should EWPs in Lake Nowergup not be met by November 1, artificial supplementation will be used until the EWP is reached.	Ongoing	
15	Dieback protocols		Conduct operations in accordance with proponent protocol for dieback management.	Ongoing	
16	Reporting		Require the Water Corporation to submit yearly production plans as part of the operating strategy and to report on compliance with environmental commitments made in the operating strategy.	Ongoing	
17	Monitoring wells	To minimise environmental and/or significant impact	Request the Water Corporation to establish further monitoring bores for monthly monitoring and more frequently if required within a 200 metre radius of production bores located in phreatophytic vegetation.	Before 5 May 1997	

18	Vegetation protection	To minimise environmental and/or significant impact	Establish additional monitoring wells in those areas where suitable wells do not exist to monitor groundwater levels under phreatophytic vegetation.	Before 5 May 1997	
19	Vegetation monitoring	To minimise environmental and/or significant impact	Select a range of indicator species at transects to determine an acceptable rate of change in vegetation composition. Also calculate similarity indices when monitoring.	By spring 1997	
20	Environmental management plan		Require the Water Corporation to prepare an environmental operations plan to provide specific detail on environmental management of groundwater schemes in the study area, which includes detailed management prescriptions for wellfield operators and water resource managers.	Before 5 August 1997	
21	Pine plantations		Develop a Memorandum of Understanding on pine management regimes with CALM.	By June 1997	CALM and FPC
22	Lexia Groundwater Scheme		Prepare a Water Resources Allocation and Management Plan for the Lexia area (East Gngangara area) to identify groundwater allocations, which includes detailed groundwater modelling to optimise groundwater availability while minimising environmental impacts.	Prior to construction of the Lexia scheme	
23	East Gngangara wetlands		Require the Water Corporation to implement its 2001 wetland mitigation strategy and subsequent approved revisions and report to the Department of Environment on implementation.	Prior to commissioning of Lexia scheme/ Ongoing	
24	East Gngangara wetlands		Determine EWPs for new appropriately located bores in the East Gngangara vegetation corridor.	By 17 February 2002	

### Abbreviations

CALM = Department of Conservation and Land Management

EPA = Environmental Protection Authority

EWPs = Environmental Water Provisions

FPC = Forest Products Commission

## Gnangara Mound Criteria (2004)

Table 1 – Monitoring Wells

Groundwater Monitoring Well	End of Summer	
	Preferred Minimum (mAHD)	Absolute minimum (mAHD)
MM16	-	38.8
MM18	-	38.6
MM49B	-	24.7
MM53	-	33.3
MM55B	-	29.5
MM59B	-	36.3
MT3	-	43.0
NR6C	-	58.5
PM9	-	56.3
PM24	-	40.5
PM25	-	42.3
WM1	-	55.7
WM2	-	66.5
WM6	-	58.3
WM8	-	64.8
NR11C (G61611042)	-	55
MM12 (G61610989)	-	42
L30C (G61611010)	-	47.2
L110C (G61611011)	-	55.7
L220C (G61611018)	-	52.2

## Gnangara Mound Criteria (2004)

Table 2 – Wetlands

Wetlands		End of Summer (mAHD)		Spring (mAHD)	
		Preferred Minimum	Absolute minimum	Preferred Min. peak	Absolute Min. peak
Lake Goollelal	Q6162517	* 26.2	26		
Lake Gnangara	(Q6162591 staff) (G61618440 bore)	42	41.3		
Loch McNess	(Q6162564)	6.95			
Yonderup	(Q6162565)	5.9			
Lake Joondalup	(Q6162572 staff) (G61610661 bore)	* 16.2	15.8		
Mariginiup Lake	(Q6162577 staff) (peak levels recorded) (G61610685 bore)			* 42.1	41.5
Lake Jandabup Artificially maintained	(Q6162578)		44.3	* 44.7	44.2
Nowergup Lake Artificially maintained	(Q6162567) (peak levels recorded)			* 17	16.8
Wilgarup	(Q6162623 staff) (61618500 bore)		4.8	6.10	5.65
Pipidinny Swamp	(Q6162624)		1.6	2.70	2.40
Lexia 94	(GNM17a) G61613216	* 45.8	45.5		
Lexia 86	(GNM16) G61613215	* 47.3	47		
Lexia 186	(GNM15) G61613214	* 47.5	47.2		
Melaleuca Park (EPP) 173	(GNM14) Q6162628 staff Bore G61613213		50.2		
Melaleuca Park (Dampland) 78	(GNM31) G61613231	* 65.4	65.1		
Edgecombe	(B10) (G61618606)		14.35		
Egerton	(B25) (G61618607)		39.29		

\* water levels allowed between minimum and absolute minimum at a rate of 2 in 6 years to replicate natural drying cycles.