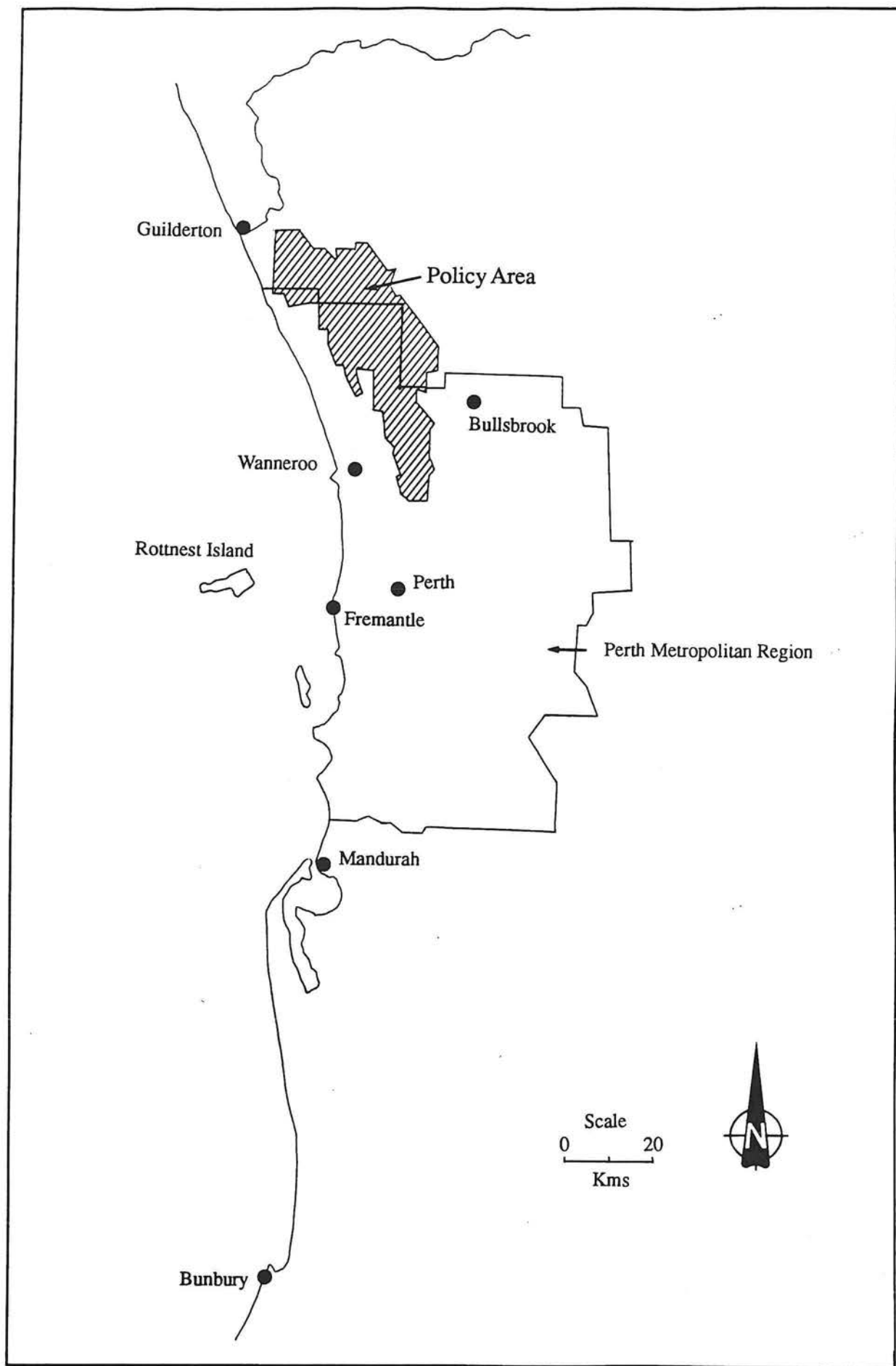


**Draft Environmental Protection
(Gnangara Mound Crown land groundwater)
Policy 1991**

**Environmental Protection Authority
Perth, Western Australia
November, 1991**

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ISBN 0 7309 4681 9



Environmental Protection (Gnangara Mound Crown land groundwater) Policy Area

Explanatory Notes

Gnangara Mound groundwater protection policy for Crown land

Perth depends heavily on groundwater for its water supplies and draws much of its water from two large groundwater mounds — the Gnangara Mound to the north of the city and the Jandakot Mound to the south.

In the sandy soils of the Swan Coastal Plain there is a strong link between the groundwater and the fragile lakes and surrounding environment they support.

It is vital that these groundwater sources are protected from any activity which may pollute or reduce them.

The Environmental Protection Authority and the WA Water Authority have prepared a draft Environmental Protection Policy (EPP) to protect the groundwater under the area of Crown land on the Gnangara Mound.

The policy also will protect the native vegetation and wetlands which the groundwater supports.

While this draft EPP covers Crown land only, another will be developed to cover other land over the Gnangara Mound, much of which is private.

The EPP for the Gnangara Mound was prepared as a condition of the Water Authority being allowed to extend its use of the mound for public water supply.

The Gnangara Mound

The Gnangara Mound is a large mound of groundwater beneath the deep sandy soil north of Perth, between the coast and the Darling Scarp.

It is an extremely important source of water for public water supply — it is essential for Perth's existence — and supports many valuable wetlands.

The groundwater mound could provide Perth's public water supply system with about 45 percent of present demand with high quality, relatively cheap drinking water.

But the groundwater and the land overlying it must be carefully managed to retain its value for water supply and to protect the natural vegetation and wetlands.

Purpose of the policy

This EPP is to protect groundwater under the Crown and State-owned land on the Gnangara Mound for public water supply and the surrounding environment in accordance with the State Conservation Strategy.

The policy sets out specific levels for the quantity and quality of the groundwater to make sure this happens.

There is a strong link between the shallow groundwater and the environment it supports so by protecting the shallow groundwater, the ecosystems which depend on it are also protected.

By ensuring that native vegetation is not badly disturbed, the underlying groundwater is in turn protected.

The EPP will make it illegal to do anything which threatens the groundwater.

Some activities will be allowed in the policy area if it can be shown that they do not harm the groundwater but such proposals will normally be referred to the EPA and may need environmental assessment.

These activities include industrial or urban developments, sand mining, limestone quarrying, farming or recreational development.

Activities which do not threaten the groundwater will not be assessed, but will still be subject to the control of the authority responsible for the land involved.

In most of the policy area the Water Authority has controls over land use activities that may pollute the groundwater and all proposals in these areas must meet the the Authority's requirements.

Existing activities

The policy allows for some activities already occurring in the policy area to continue even though they may not be entirely compatible with groundwater protection.

This includes activities such as mining, roads and road transport, horse riding in the pine plantation, rifle range and pistol shooting, pine production, power generation and transmission.

However, any existing activity in the policy area may be reviewed if it is polluting the groundwater or likely to do so.

Environmental protection policies

Environmental protection policies are a powerful means of protecting particular parts of our environment.

A draft EPP must be widely advertised and the public asked to comment on it. These comments are taken into account as the policy is finalised.

The EPA submits the policy to the Minister for the Environment who consults all affected people and organisations.

When a final policy is approved by the Minister and has been allowed by Parliament, it has the force of law as though part of the Environmental Protection Act.

Environmental planning

The environmental protection policy for Crown land on the Gnangara Mound will be supported by a Statement of Planning Policy from the State Planning Commission which will guide town planning in the area.

How to make a submission

The EPA invites your comment on the draft Gnangara Mound EPP. If you feel unsure of how to make a written submission you can phone the EPA for help.

In preparing your submissions the following points will be useful:

- be familiar with the policy and the map showing the policy area;
- clearly state your views on the draft policy and give your reasons;
- clearly express your concerns and how your concerns might be addressed;
- provide references to any factual data used to support your point of view; and
- use photographs, maps or sketches if appropriate.

Each submission is important in its own right but those submissions that give reasons for concerns and offer good information and suggestions are of most use.

Submissions should be sent by January 24, 1992 to:

**The Chairman,
Environmental Protection Authority,
1 Mount Street, PERTH WA 6000
Attention: Jim Singleton**

Environmental Protection Act 1986
Draft Environmental Protection (Gnangara Mound Crown land groundwater)
Policy 1991

Title of the policy

1. This policy shall be referred to as the Environmental Protection (Gnangara Mound Crown land groundwater) Policy 1991.

Purpose of the policy

2. This policy is to maintain the quantity and quality of the groundwater of the Gnangara Mound for public water supply, and to protect wetlands and vegetation which depend on the groundwater.

Definition of terms used

3. In this environmental protection policy:

"Gnangara Mound" means the groundwater system which occurs in the superficial formations in the area bounded by the Indian Ocean, Moore River, Gingin Brook, Chandala Brook, Ellen Brook and the Swan River;

"land use activity" in relation to this policy means a use, operation, development, programme, plan, scheme or proposal;

"policy" means this policy;

"policy area" means the area defined in Schedule 1;

"responsible authority" means any decision-making authority which has statutory responsibility for regulating or controlling land use activity;

"superficial formations" is a term for Pliocene to Holocene sedimentary aged geological formations comprised of deposits which immediately underlie the Swan Coastal Plain in the Perth Basin.

Application

4. This policy applies to that portion of the environment comprising the land and groundwater in the superficial formations, within the area defined in Schedule 1.
5. The boundary of the policy area may be altered providing:
 - (a) the total policy area is not reduced; and
 - (b) the proposed change is referred to the Environmental Protection Authority, and has the support of the Water Authority of WA and State Planning Commission.

Any change to the boundary of the policy area shall be treated as a minor change, and not require formal review of this policy.

6. This policy applies to all land use activities by all persons, corporations, government departments, government agencies and responsible authorities, within the area defined in Schedule 1.

Principles for management of the groundwater resource

7. To provide protection and maintenance of the groundwater resources of the Gnangara Mound this policy requires that:
 - (a) water levels in wetlands are to be maintained in accordance with Schedule 2; and
 - (b) water quality is to be maintained in accordance with Schedule 3.

Groundwater abstraction

8. Pumping of groundwater is to be managed by licensing so that the minimum levels, as specified in Schedule 2, are met.

Groundwater contamination

9. The water quality parameters listed in Schedule 3, are to be considered when proposed land use activities are being assessed.
10. No land use shall be permitted which may reduce the quality of any part of the groundwater outside the permissible limits or range specified in Schedule 3, except:
 - if the level of any water quality parameter in the area where the activity is to be undertaken already exceeds the limits or range specified in Schedule 3, no further reduction in quality will be allowed.The water quality to be considered shall include, but not be limited to, those listed in Schedule 3.
11. Schedule 3 may be amended without formal review of this Policy.

Clearing of native vegetation

12. Removal of native vegetation from areas larger than 1 hectare is prohibited under this Policy. Smaller scale clearing of native vegetation in the Policy Area shall not be undertaken except in accordance with plans or programmes, approved by the Water Authority, for:
 - (a) essential clearing of firebreaks as required under the Bush Fires Act 1954;
 - (b) essential clearing of noxious weeds as required under the Agriculture and Related Resources Protection Act 1976;
 - (c) maintenance of State Energy Commission easements;
 - (d) maintenance of existing access tracks; or
 - (e) any other uses as approved under sections 13 and 14 of this policy.

Existing and proposed land use activities

13. Lawful existing land use activities which conflict with this Policy shall be permitted to continue up to their present level. This will not prevent review by responsible authorities under other statutory powers to reduce the impact of activities, if required.
14. Any proposed land use and any significant change to the scale or nature of existing land uses in the Policy Area, shall be referred to the Environmental Protection Authority for possible assessment before any construction or implementation.

Implementation of the policy

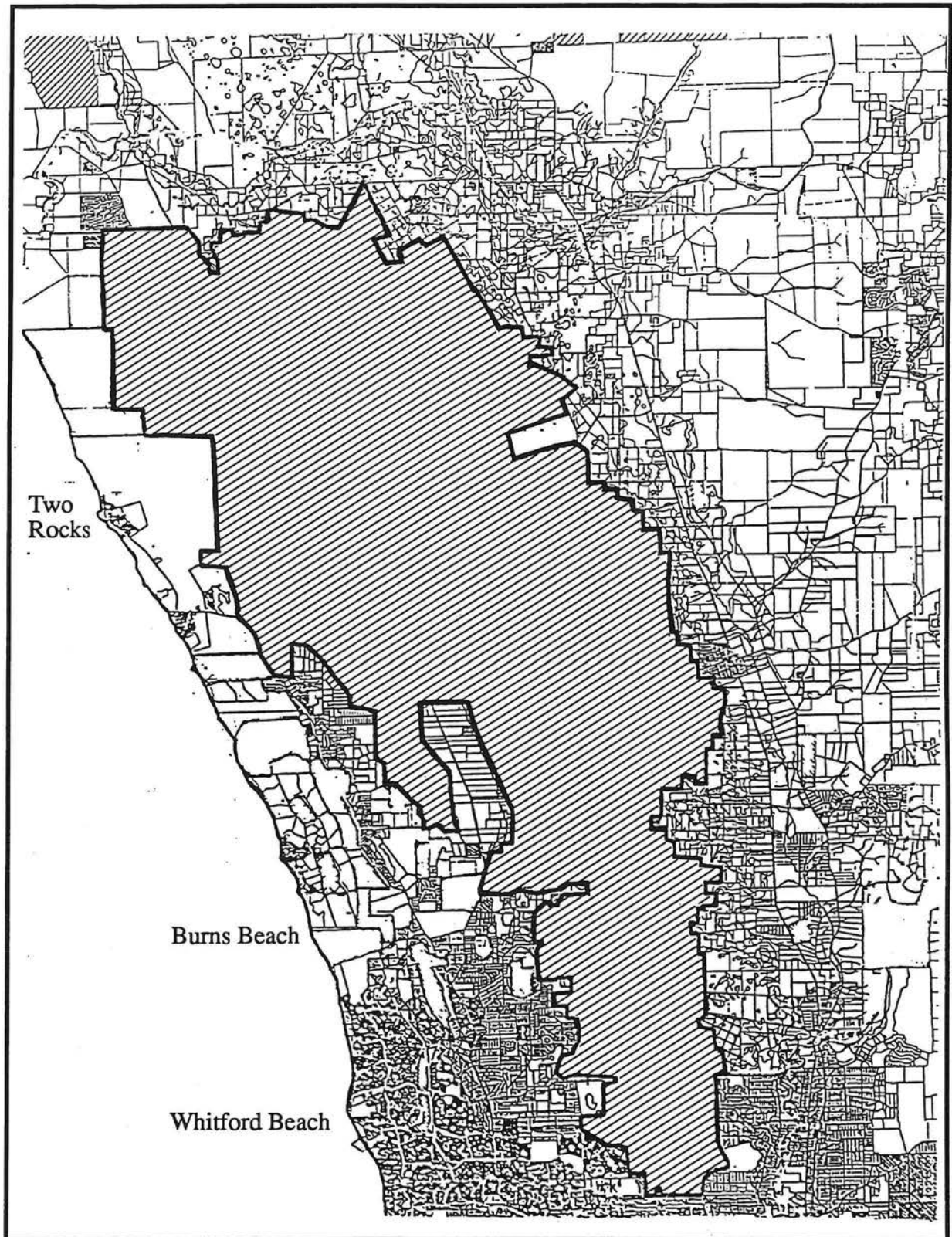
15. This Policy should be read in conjunction with the State Planning Commission's Statement of Planning Policy for the Gngara Groundwater Mound.

Review of the policy

16. The Environmental Protection Authority shall review this policy within seven years of the date of gazettal of the policy.

SCHEDULE 1

Environmental Protection (Gnangara Mound Crown land groundwater) policy. The area designated for protection is the hatched area contained within the thick black line on the map.



SCHEDULE 2

The Protection of Specific Wetlands on the Gngangara Mound

The levels indicated in Table 1 are derived from the Minister for Environment's conditions (March 8, 1988) placed on the Water Authority of Western Australia for its proposal to abstract groundwater on the Gngangara Mound.

Wetland name	Preferred minimum summer water level to maintain current values (AHD)	Number of consecutive months below preferred minimum summer water level allowed in any 12 month period	Minimum water level (metres AHD)	Bottom of wetland (metres AHD)
Loch McNess	7.0	#	6.9	?
Joondalup	16.7	4	16.45	15.4
Twin Swamps	n/a	n/a	n/a	n/a
Ellen Brook	n/a	n/a	n/a	n/a
Yonderup	5.3	#	5.15	?
Melaleuca Pk wetlands	n/a	n/a	n/a	n/a
Jandabup	44.3	3	44.0	43.8
Yeal Swamp	n/a	n/a	n/a	n/a
Bindiar	n/a	n/a	n/a	n/a
Nowergup	16.5	3	16.3	13.1
Pipidinny	n/a	n/a	n/a	n/a
Goollelal	26.4	2	26.25	25.3
Gngangara	41.4	3	41.3	41.1
Wilgarup	n/a	n/a	n/a	n/a
Beonaddy	n/a	n/a	n/a	n/a
Coogee Springs	n/a	n/a	n/a	n/a
Neerabup	n/a	n/a	n/a	n/a
Lake Adams	n/a	n/a	n/a	n/a
Mariginiup	40.9	1	40.85	41.0
Badgerup	n/a	n/a	n/a	n/a
Little Badgerup	n/a	n/a	n/a	n/a
Pinjar	n/a	n/a	n/a	n/a
Lenzo Road Wetlands	n/a	n/a	n/a	n/a
Dundarbar	n/a	n/a	n/a	n/a
Unnamed S.E. of Adams	n/a	n/a	n/a	n/a
Snake Swamp	n/a	n/a	n/a	n/a
Mindarie	n/a	n/a	n/a	n/a
Carabooda	n/a	n/a	n/a	n/a
Little Mariginiup	n/a	n/a	n/a	n/a

: means to be determined by the Environmental Protection Authority

? : means information not available, but that a bottom of lake figure is needed

SCHEDULE 3

Groundwater quality criteria

Parameters not specified or not listed in this schedule are to be maintained at background levels as established by sampling and analysis carried out to the satisfaction of the Water Authority.

<u>Parameter</u>	<u>Permissible Limits or Range</u>
<i>Physical</i>	
Colour	0
Turbidity	0
pH	6.5 - 8.5
Temperature(situ degrees C)	15 - 25
<i>Chemical - Inorganic(mg/L)</i>	
Aluminium	*
Ammonia	0.01
Arsenic	0.01
Cadmium	*
Chloride	20
Chlorine	*
Chromium	*
Copper	0.02
Cyanide	*
Fluoride	0.1
Hardness (as Calcium Carbonate)	10
Iron	0.03
Lead	0.01
Manganese	0.02
Mercury	0.0001
Nickel	*
Nitrate	0.01
Nitrite	*
Total Nitrogen	*
Phosphate	*
Total Phosphorus	0.02
Selenium	*
Silver	*
Sodium	15
Sulphate	1
Total Dissolved Solids	100
Zinc	0.02

<u>Parameter</u>	<u>Allowable Level</u>
<i>Chemical - Organic (ug/L)</i>	
Aldrin and Dieldrin	0.05
Azinphosmethyl	0.5
Camphechlor	*
Chlordane	0.3
DDT	0.15
Endosulfan	2
Endrin	0.05
Heptachlor & Heptachlor epoxide	0.15
Lindane	5
Maldison	5
Methoxychlor	*
Parathion	1.5
2,4-Dichlorophenoxyacetic acid	5

Carbon tetrachloride	0.15
Tetrachloroethene	0.5
Trichloroethene	1.5
1,1-Dichloroethene	0.015
1,2-Dichloroethene	0.5
Benzo-a-pyrene	0.01
Pentachlorophenol	0.5
2,4,6-Trichlorophenol	0.5
Total Phenols	0.5
Benzene	0.5
Trihalomethanes	10
Total Hydrocarbons	0.5
Aromatic Hydrocarbons	0.5
Polychlorinated Biphenyls	*
Surfactants	10

Microbiological quality(number per 100 mL)

Faecal coliforms	not detectable
Coliforms	not detectable
Faecal Streptococci	not detectable
Salmonella	not detectable

Radiological Characteristics (Becquerel/L)

Gross alpha activity	0.1
Gross alpha activity excluding activity by potassium-40	0.1