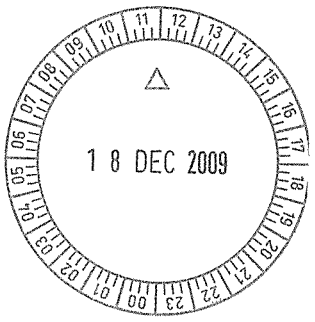
96196

Government of **Western Australia**
Department of **Health**
Office of the Director General



PUBLIC

Your ref: wri
Our ref: EHB09/3575
Enquiries: D Philippe 9388 4899

Standing Committee on Public Administration
Parliament House
PERTH WA 6000

Dear Committee

RECREATION IN DRINKING WATER CATCHMENTS

Please find enclosed the Department of Health's response to the parliamentary enquiry into proposed recreation in drinking water catchments.

Yours sincerely

Dr Peter Flett
DIRECTOR GENERAL

14 December 2009

189 Royal Street East Perth Western Australia 6004
Telephone (08) 9222 4002 Fax (08) 9222 4314 TTY 1800 067 211
Letters PO Box 8172 Perth Business Centre Western Australia 6849
ABN 28 684 750 332
http://www.health.wa.gov.au

Environmental Health Directorate

Position Statement on Recreation in Drinking Water Catchments

Report for Parliamentary Committee reviewing proposed recreation in Western Australia's drinking water catchments.

Background

With an expanding population, there is increasing demand from various Western Australian recreational groups and individuals for greater access to natural environments for recreational purposes. Many natural environments in the South West surround Perth's drinking water catchments, where human access is currently restricted.

The WA Government and Water Corporation are now being asked to consider the option of allowing certain low risk recreational activities in these catchment areas.

The Environmental Health Directorate has produced this paper to discuss from a Public Health perspective, the Directorate's requirements if recreation is allowed in these catchments.

A primary aim of the Environmental Health Directorate is to ensure Western Australians are supplied safe and potable drinking water that conforms with the NHMRC Drinking Water Guidelines [1].

What is health?

The World Health Organisation (WHO) defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

What is environmental health?

The World Health Organisation has defined environmental health as "those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social, and psychological factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially affect adversely the health of present and future generations".

What does recreation encompass?

The Oxford dictionary definition of recreation is "an enjoyable leisure activity".

Recreational activities in and around water catchment areas can include:

- Bush Walking/hiking
- Camping
- Horse Riding
- Mountain Biking
- Motorcycling and four wheel driving
- Shooting
- Fishing
- Canoeing and Kayaking
- Swimming
- Sailing
- Boating/Water Skiing

Different types of recreation potentially generate different levels of risk to the safety of a drinking water supply.

Benefits of allowing recreation in drinking water catchments
There have been numerous publications citing the health benefits of access to nature and interaction with natural environments, including allowing recreational activities in water catchment areas [2]. Demonstrated health benefits include social benefits, improved mental and physical health, greater quality of life and stronger community networks [3].

Additionally economic values such as tourism, and the additional money spent by these visitors to the local businesses can be considered.

Risks created by allowing recreation in drinking water catchments
The greatest risk in allowing recreation in water catchment areas is the potential for the contamination of the drinking water supply with human pathogens [4]. Human pathogens may enter a waterbody from direct human contact with the water, or from effluent sources entering a waterbody from poorly maintained toilet facilities or stormwater systems.

Unless the supply water is appropriately treated, human pathogens may go undetected. This has the potential to cause significant illness and death of consumers.

There have been many documented cases of contaminated water supplies affecting public health. In one of the largest documented cases a cryptosporidium outbreak in Milwaukee (USA) in 1993 affected over 400 000 people and caused 100 deaths. Human faecal contamination from sewage was identified as the most probable cause [5].

The natural ecosystem provides a natural filtration system of microorganisms running into the water, which can minimise contamination and treatment costs. Inappropriate use of catchments could disrupt this delicate ecosystem. For example, increasing human access may increase man made bushfires that can result in erosion and increased runoff.

Economic Considerations
At a macro level, economic growth and population growth lead to an increase in demand for most resources. Environmental goods appear to be mostly those which are in fixed or limited supply. As such, it is likely that the social value of environmental resources will continue to increase rapidly [6].

Current Situation in WA
In the early 1900's, protection of Perth's surface water resources was introduced after outbreaks of water borne disease were attributed to human activity in the catchments [7].

Perth's catchments are today considered direct (pristine) water supplies. Currently, Perth's catchment dams provide less than 40% of the city's drinking water [8]. Due to the current restrictions which aim to prevent human and other contamination of Perth's drinking water catchments, only basic treatment processes of the supply water have been required [9] and there has been a limited need for advanced water treatment infrastructure and filtration techniques.

Changes to recreational access and thus the level of risk accepted, will affect the scale of systems that may need to be established to ensure safe drinking water can be provided.

Allowing recreation in a drinking water catchment may create a need for additional water treatment, i.e. more effective water filtration, processing and monitoring systems. These systems will have associated economic and environmental costs that need to be evaluated against the potential benefits. Increased costs may include requirements for the purchase of more advanced water treatment infrastructure; often energy demanding and requiring high cost consumables, and associated running costs.

The water provider (Water Corporation) would be required to identify and assess the risks from recreational use. A cost benefit analysis may form part of the overall assessment when managing these risks. Any additional treatment costs would result in increased drinking water costs for the consumer.

Other States
Drinking water catchments in other Australian states have a combination of restricted and permissible recreation.

Primarily areas that allow recreation have a multiple barrier system in place to treat water (for example pre-treatment with oxidants, pH adjustments, filtration and disinfection). Often recreation or agriculture in the area existed before the water source was identified as a catchment source. These catchments are in Qld, ACT and NSW and are all categorised as mixed land use areas [9].

In states where recreation in the reservoir and catchment areas are not permitted the catchment type is classified as native bush land. These exist in ACT, Vic, NSW, NT and encompass all reservoirs in Perth [9].

Health Risk Assessment
The Department of Health's requirements for allowing recreational activities within a drinking water catchment will depend on the level of risk created by different forms of recreation.

The primary requirement is to ensure the Water Corporation continues to provide Perth with a safe and potable drinking water supply in accordance with the NHMRC Guidelines and that public health risks are minimised.

If recreation were to be permitted, it is recommended that legislation is developed to provide the Department of Health with the legislative authority to direct the Water Corporation to manage health risks. This would include routine sampling, and in the event of contamination being detected, the Water Corporation required to implement an emergency management response plan. The proposed Public Health Bill provides a mechanism for new legislation to be created and provide the Department with such authority.

Additionally, a risk management approach would need to be undertaken by the Water Corporation. Each form of recreation would need to be quantified and assessed in accordance with the Department's *Health risk assessment in Western Australia [10]* and associated documentation.

Processes will most likely be based on the Australian Drinking Water Guidelines Risk Assessment and may be specific to the activity types.

Additional Department of Health requirements may include but are not limited to:

- increased surveillance of the catchment and surrounding areas
- increased monitoring of the water in the catchment area
- the provision of additional purification techniques, such as that in a multiple barrier approach
- The provision of appropriate signage and other methods (advertising material, information brochures) to inform the public

At a minimum (ie only activities with the lowest risk) the Department of Health estimates an additional specified calling FTE officer will be required within the Environmental Health Directorate's Water Unit to monitor and manage the effect of recreation in the metropolitan area. Similarly, an additional specified calling FTE officer would be required to monitor regional catchments if recreational activities are permitted in regional areas. The amount of staff required will increase with an increasing risk level in each catchment and the need to audit the Water Corporation's compliance with the NHMRC Guidelines.

Additional requirements are also likely to include

- A vehicle for both the metropolitan and regional officer
- Specialised monitoring equipment
- Laptops (2) and a desktop computer

1. National Health and Medical Research Council/ Natural Resource Management Ministerial Council, *Australian Drinking Water Guidelines National Water Quality Management Strategy*. 2004: Canberra: Australian Government.
2. Curtin Sustainable Tourism Centre, *State of Play: A review of recreation in drinking water catchments in Southwestern Australia*. 2008, Curtin University of Technology: Perth.
3. Western Australian Water Resources Council, *A Review of Water-based recreation in Western Australia: Summary Report*. 1991, Government of Western Australia: Perth, Western Australia.
4. Water Services Association of Australia, *Effects of recreational activities on source water protection areas- Literature Review*, in *Occasional Paper No. 22*. 2009, Water Services Association of Australia,.
5. Peng, M.M., et al., *Genetic polymorphism among Cryptosporidium parvum isolates: evidence of two distinct human transmission cycles.* Emerg Infect Dis, 1997. **3**(4): p. 567-73.
6. Bardsley, P., et al., *New Directions in Environmental Policy.* Agenda, 2002. **9**(3): p. 211-221.
7. Water Corporation, *Myth Busting: Recreation in Drinking Water Catchments.*, W. Corporation, Editor. 2009: Perth.
8. Water Corporation, *Water forever. Towards Climate Resilience*, Water Corporation, Editor. 2009: Perth.
9. Water Corporation, *Drinking Water Catchment Protection*, Water Corporation, Editor. 2009: Perth.
10. Department of Health, *Health Risk Assessment in Western Australia*, E.H. Directorate, Editor. 2006.