

A reasonable and logical RPZ width for bushwalkers

Introduction

This document addresses the bushwalking access issues in relation to the appropriate Reservoir Protection Zone (RPZ) width for Perth's metropolitan above-ground drinking water storages such as are impounded by Mundaring Weir, the Helena Pump Back Dam, Victoria Reservoir, Bickley Dam, Churchman Brook Reservoir, Canning Dam, Wungong Dam, Serpentine Dam, and the Serpentine Pipehead Dam. It also applies to the dams further south along the Darling Scarp such as Waroona, Harris, Wellington and Harvey Dams, where soil, geography and climate are substantially similar.

An RPZ is defined as a 'no-go' (no public access) region surrounding the high water mark upstream of a drinking water supply reservoir. It is intended to reduce contact with (and to avoid introduction of pathogens to) the water by the general public. The width of this zone should vary depending upon the activity being undertaken. However, the easiest management option (and one currently adopted by the Water Corporation) is to impose a blanket ban on all activities to a certain width upstream from the reservoir. This has the unfortunate effect of penalising those recreational activities such as bushwalking that are generally recognised to be benign to water quality within the catchments.

RPZs in Western Australia are currently set at 2 km from the top water level of the reservoir. There appears to be no justification for that 2 km width in relation to bushwalking. It prohibits bushwalker access to an unnecessarily large area of generally the best, most attractive bushwalking environments in the catchments. That prohibited area covers up to 10% of the total area of the catchments. Areas within the RPZs have particular recreational value in view of their special aesthetic qualities i.e. proximity to the reservoirs combined with the often locally more rugged, interesting landscapes that are typical around the reservoirs in contrast to other more gentle and undulating areas that dominate large areas of the eastern Darling 'Plateau'

The 2 km wide exclusion zone around the reservoirs appears to have been based on an initial arbitrary distance introduced to W.A. legislation in the ***Metropolitan Water Supply, Sewerage and Drainage By-laws 1981***. The 2 km width has evidently been subsequently accepted and defended as a Reservoir Protection Zone (RPZ) by regulatory bodies, including Department of Water (DoW) and Department of Health (DoH), despite no evidence of serious scientific review of its validity over a period for more than 25 years.

The DoH has been quoted by DoW as having the view that "*the current system of protected catchments has been successful in protecting public health*" and it "*supports the 2 km RPZ exclusion zone*". In fact that same "*successful*" system had also allowed the Federation's bushwalking members access to the RPZs for a period of 18 years after the introduction of the 1981 by-laws (see below), and for many years before their introduction. Bushwalking activities within the catchments over that very long period did not give rise to any adverse incidents nor to any concerns regarding any perceived risk to water quality and public health.

Policy 13 (2003) appears not to have recognised the historical significance to the community of bushwalking within 2 km of the water storage areas. It is a great loss to the community that many of the traditional bushwalking areas within the catchments are now being 'locked away' in 2 km wide RPZs with seemingly no new science, evidence, or argument to justify that action other than a "lack of full scientific certainty" and a policy of 'risk avoidance'.

Bushwalking in close proximity to reservoirs

A written agreement between the Federation of Western Australian Bushwalkers Inc and the Water Corporation (dated 21 December 1993, and active from 1994 to 2000) allowed the Federation's member clubs to have pedestrian access to the high water mark "***within the existing 2 kilometre prohibited zone***" of the catchment areas. The agreement also provided that "***on all activities toilet waste will be buried 250 mm deep no closer than 200 metres to the high water mark and 100 metres to any feeder streams***". A protection zone of 500 m width from the high water mark was also agreed for overnight stays with the condition that "***the site should not be visible from the dam wall***".

The agreement of 1993 was summarily cancelled by the Water Corporation at the end of 2000 without any consultation, and without any explanation to the Federation. We are certainly not aware of any incidents or difficulty with water quality caused by bushwalkers that could have justified the apparent change in attitude by the Corporation. It was presumably associated with sentiments similar to those expressed in the submission dated 6 November 2009 to this Standing Committee by Barry Sanders, former head of the Water Corporation, which were to the effect that those who wish to recreate in catchments are small in number, "***unthinking and selfish***". Those narrow sentiments are also allied to adoption of the "precautionary approach" in Policy 13 in 2003 as a claimed justification for simplistic, but unnecessarily restrictive control measures.

By February 2006 the DoW appeared to acknowledge that there was no justification for the arbitrary 2 km width for RPZs. They advised one of our members in writing that the Department was "***currently considering buffer areas of less than 2 km***", but that "***any future changes would need to pass through legislation***".

Also in February 2006 DoW's Water Quality Protection Note, WQPN6 ("Vegetation buffers to sensitive water resources"), which represented the Department's "***current views***" and "***guidance***", appeared to implicitly acknowledge that a 'Prohibited Zone' across the entire 2 km RPZ width is unnecessary: When defining default buffer dimensions that are "***considered most suited to the south-west of WA***", the DoW indicated in the Note that a minimum appropriate vegetation buffer width within RPZs is "***100-200m.***"

The DoW has also acknowledged that "***The risks associated with bushwalking are comparatively less than some other land uses and activities within PDWSAs***". They have also claimed however that "***if bushwalking were permitted in RPZs it would be difficult to control. For example the utilised area would not be well defined (as is the case with picnic sites), which makes management and patrolling difficult. In***

addition, allowing people into the RPZ for one activity sets a precedent for other activities that would also claim to be 'low risk'."

The DoW's stated concerns ignore the fact that there are public walkways along the top of most of the drinking water storage dam walls in the southwest. These walkways effectively have a zero or sometimes even negative - width RPZ: One can peer over the edge and look directly onto the reservoir. Tourists and walkers are encouraged to use these rights-of-way, including the Bibbulmun Track which follows one such walkway across Mundaring Weir. There has been no objection or problem expressed by the regulators with that arrangement. That is despite the inconsistency of the DoW considering that proximity of bushwalkers to the reservoirs anywhere else around the reservoir is a significant risk to water quality that needs controlling, while large numbers of the public are encouraged to have almost direct access to the water bodies by using the dam-wall walkways.

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The Federation maintains that the key provisions of the 1993 agreement with Water Corporation were appropriate and effective and should be restored: Bushwalkers should be permitted pedestrian access anywhere within the catchments, including up to the high water mark "*within the existing 2 kilometre prohibited zone*". Consistent with the 1993 agreement, the Federation also recognises that such access must be undertaken discretely and should not be within view of popular recreation areas such as the dam walls and nearby picnic areas. That reasonable qualification adequately and responsibly addresses in a common sense manner the DoW concerns that "*allowing people into the RPZ for one activity sets a precedent for other activities.*"

Bushwalking with 'Overnight Stays' in drinking water catchments

As noted above, the 1993 agreement between the Federation of Western Australian Bushwalkers Inc and the Water Corporation also allowed the Federation's member clubs to have overnight stays within the RPZs provided that overnight sites were more than 500 m from the high water mark and were not visible from dam walls.

The main later objection raised by the regulators to bushwalking, and to bushwalkers' overnight stays in the southwest catchments, has been the connection between overnight stays and human waste, and more particularly the assumed improper disposal of human waste and potential for contamination of the drinking water sources by human pathogens.

The actual risks posed by bushwalking activities can be put into their true perspective by considering the actual specific environment of the Darling Plateau and the simple practices and processes followed by bushwalkers for disposal of human waste. The risk of entry of human pathogens (such as the protozoan *Cryptosporidium* and faecal bacteria such as *E. coli* and streptococci) into the water reservoirs from the faeces of bushwalkers is negligible due to the following factors:

The environment - The soils of the Darling Plateau are particularly hostile to the survival of micro-organisms and their movement through the soil profile. The use of 'cat holes' by bushwalkers for hygienically disposing of human waste (see below) is

extremely efficient in confining micro-organisms, including pathogenic protozoan and bacteria.

Soils derived from weathering of the granite that comprises the main rock type of the Darling Plateau are primarily comprised of gravels, clay and minor sand (derived from quartz). Gravels (underlain by clay) are generally confined to the tops of hills and, therefore the overwhelmingly dominant soil-type in the southwest catchments is clay. Clays consist of very fine particles packed tightly together to leave minute pore spaces many times smaller than bacteria. They are therefore extremely efficient at naturally filtering out bacterial components within our soils and preventing their dispersion. Our ancient soils are also very low in organic material, thus providing little food source for micro-organisms. The hot dry summers are also not conducive to micro-organism growth and dispersion.

The disposal of human waste - All bushwalkers who are members of Bushwalking Clubs in W.A. are trained to dispose of their human faeces waste by burying it in 'cat holes', 100 m or more away from any water storage or water course.

Not surprisingly most people on day bushwalks in fact do not have a 'call of nature' that would require human waste disposal in a cat hole. Similarly, on a single overnight stay many people do not get this urge for a 'toilet visit'. However, clearly bushwalking involving more than a single overnight stay will require disposal of human waste. A notable scientific paper on this subject, and one quite often quoted by the Department of Water, is entitled *Wildland Recreation and Human Waste* (Cilimburg, et al, 2000). The paper presents a number of findings from studies of human waste disposal, in particular:

"Many land management agencies and outdoor education groups commonly recommend depositing wastes in cat holes 30–60 m from lakes and streams. Based on the research reviewed here, there is no compelling evidence to alter such recommendations, except to standardize the distance to 60 m. Given the possibility that distances are underestimated, there would be no adverse effects with the greater distance. In addition, a recommendation to stay 60 m from potential water courses, including dry ravines and water-logged areas, would reduce chances of wastes entering water systems. To avoid concentrating feces, dispersing widely away from the campsites is prudent."

And

"The few studies that have been conducted show no clear evidence to indicate that there is an optimal burial depth for bacterial mortality (Temple and others 1982). However, as long as the feces are sufficiently buried to avoid being uncovered by animals yet not buried so deeply as to affect the water table, the actual depth appears incidental. "

And

"Where soil is available, sequestering feces in cat holes appears to be the best practice (Reeves 1979, Temple and others 1982)."

Interestingly the Cilimburg paper is often quoted by DoW to incorrectly suggest that improper disposal of human waste by bushwalkers, and recreation in general, presents an insurmountable risk to water quality. The paper actually concludes:

“...there is little evidence to suggest that the health hazard to humans is great enough to impose further regulation in areas currently using cat holes”.

Considering the soil-types and climate of the Darling Plateau, the Federation’s requirement of its members that cat holes be located at least 100 m away from any water storage or water course provides an extremely safe and conservative buffer. That buffer contrasts favourably with the 60 m distance suggested in Cilimburg’s paper (applicable to a different climate).

Recommendation of Reasonable Reservoir Protection Zone Width

Taking into account the above discussion, the Federation believes the following would be appropriate for RPZ access and/or width with regard to bushwalking activities:

- i) **Bushwalking access** - Bushwalkers to be permitted pedestrian access anywhere within the catchments, including up to the high water mark “*within the existing/previous 2 kilometre prohibited zone or RPZ*”.
- ii) **Bush hygiene** – The Federation will train its member clubs in good bush hygiene, including human waste disposal using cat holes. Cat holes are to be located at least 200 m from any water storage and 100 m from any feeder stream.
- iii) **Overnight stays** - Sites used by bushwalkers for overnight stays are to be temporary and are to be located at least 500 m from the high water mark. (The recommended minimum distance of 500 m from the high water mark will allow for the possibility that anyone who moves away from a campsite with the intention of creating and using a cat hole in privacy, may inadvertently wander some distance in the direction of water. A 500 m minimum overnight stay distance from the high water mark would therefore ensure cat holes remain well remote from the reservoir (and certainly more than 100 m).
- iv) **Bushwalking visibility** - All bushwalking activities are to be remote from (i.e. well out of sight of) the dam wall. The sites of overnight stays should especially be very discrete and not visible from the dam wall.
- v) **Written agreement** – The Federation would welcome an opportunity to capture the appropriate access arrangements if necessary in an agreement similar to its previous 1993 agreement with the Water Corporation.