

DROUGHT – EXPERIENCES IN THE EFFECT AND MANAGEMENT



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*61st Annual Water Industry Engineers and Operators' Conference
Civic Centre - Shepparton
2 and 3 September, 1998*

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ABSTRACT

North East Region Water Authority, was formed in July 1997 by the amalgamation of the former Kiewa Murray and Ovens Region water authorities. In the turmoil of restructure, relocation and integration of systems and policies etc. Mother Nature added to the confusion by providing serious drought conditions throughout North East Victoria.

This paper will example the drought response management experiences and outline the system of restrictions applied to extend dwindling supplies.

KEYWORDS

Drought, management, restrictions

1.0 INTRODUCTION

The newly formed Authority comprises 32 towns supplied from Authority systems throughout North East Victoria, from Corryong to Yarrawonga, and Wodonga south to Benalla. The 32 towns vary from 58 to 11 660 serviced properties. The major centres being Wodonga, Wangaratta, Benalla and Yarrawonga.

Amongst the early priorities of amalgamation was the adoption of By Laws enabling the restriction of water supplied from the Authority's systems. The "Water Restriction By-Law No. 2/97" was adopted on the 3rd of December 1997.

Based on four stages of restriction, the adopted By-Law provided the legal mechanism for regulating, restricting or prohibiting the use of water for other than domestic purposes. Experiences of the 1983 drought and the confusion and frustration experienced trying to administer eight stages of restriction, lead to the adoption of this simpler approach.

A range of individual system drought response plans existed within the two former Authorities. The former Ovens region had engaged Sinclair Knight Merz to assess and develop integrated response plans for the systems within its control, and the former Kiewa Murray Authority had developed an in-house drought response plan. Both Authorities had variations in their approach to drought management, which created difficulties for assessment, and management of the situation across the new Authority.

2.0 DISSCUSION

2.1 By-Laws

By-Law No. 2/97 made under sections 160, 161 and 171(a) of the Water Act (1989) provided the definition and framework for the administration of drought response measures.

The notices for restriction for the various stages, one to four, were compiled from the By-Laws,

putting a positive annotation to the terminology, for example, where the By-Law stipulated that “sprinklers must not be used between the hours of etc.”, the Restriction Notice advised that “sprinklers must only be used between the hours of etc.”

The stages of restriction provided the mechanism for reducing the consumption in degrees according to the situation. Progressing from the imposition of Mild Stage One restrictions, through to stages Two and Three, and eventually to Critical Stage Four if necessary.

- ◆ Comparing for example private and public gardens can indicate the progression:
- ◆ Stage One restriction, limits sprinkler use to between the hours of 6am to 9am and 8pm to 11pm.
- ◆ Stage Two restriction limits sprinkler use to between the hours of 6am to 8am and 8pm to 10pm.
- ◆ Stage Three restriction bans the use of sprinklers and automatic watering systems, lawn areas are not to be watered and severe limits placed over garden watering by hand.
- ◆ Stage Four restriction almost totally bans watering.

Throughout each stage a positive bias is applied to microspray and drip systems to encourage efficient watering.

Some practical agreements were reached in some instances where it could be shown that the inconvenience of hand watering a playing surface could in fact use more water than the fixed sprinkler system, eg. Bowling Green.

2.2 Trigger Levels

The trigger level is that point of time and circumstances that requires the application of restrictions that will extend the dwindling supply by reducing consumption. It is system unique and should vary depending upon the time of the year, previous experiences and applied probabilities. The calculation of trigger levels was the factor, that proved to be the major difference between the two former authorities drought response plans. The majority of towns in the former Kiewa Murray region are supplied from the Murray, Mitta and Kiewa River systems which provide secure water supplies. Exceptions exist such as Dartmouth with it's individual supply reservoir – Lake Tabor, which depend entirely on storage replenishment from an individual catchment to maintain supply.

A uniform approach to Drought Response Planning with particular attention to a common approach towards adoption of trigger levels is being undertaken. Consultants Sinclair Knight Merz have been engaged to provide a common approach to response planning to be incorporated throughout the authority following this experience.

2.3 Mother Nature's Influence

Much has been written and said about drought and El Niño, and through the course of managing system Drought Responses, there were plenty of theories, predictions and advice as to when it would rain and how much we would get.

The purpose of this paper is not to re-write the daily weather conditions experienced during the period commencing December 1997. In fact when we are under the influence of drought conditions, the weather forecasts have little influence on response actions. The trigger levels, once adopted must

be adhered to, even if forecasts predict relief. When advancing to a further stage of restriction, some consideration to forecasts is warranted to endeavour to avoid distribution notices during a break in the weather, thereby maintaining the credibility of the restriction.

At the time of imposing a restriction, constant use was made of the Internet to gain up-to-date forecasts. As the drought lengthened, the forecasts seemed to become less reliable, giving hope of rain rather than fact.

2.4 Communications

Throughout the drought response management process the importance of communications cannot be over emphasised. Consumers are being asked to sacrifice use of a commodity that they purchase. It is of prime importance that their cooperation is gained to share the responsibility of conserving a valuable resource in times of shortage. Commercial or industrial customers who consume large volumes of water need to be recruited to the effort at an early stage, as they can have major influences on small systems.

Media communications must be established and maintained to reinforce the message and to alert visitors to areas with susceptible systems. Staff communications and reporting within the Authority must be maintained to provide accurate information dissemination.

At all times it is important to communicate the facts of the situation confronting consumers; this helps to lessen the degree of outrage amongst the community, being more informed and up-to-date with relevant information. Each stage of development requires presentation of the facts concerning the current status.

2.5 The Messages

Information notices were issued when prompted by a trigger level to inform consumers of a situation developing in respect to their water supply. This notice raised awareness and provided facts on the status of their supply. It encouraged 'Voluntary Restriction' and pre-empted the possibility of imposing formal restrictions.

Stage One Water Restriction, classified as Mild Restriction, was the first formal stage of restriction issued at the prompt of a trigger level. Formal restriction notices have a commencement date for restrictions to be applied in accordance with the Authority's By-Law No. 2/97. Again the facts are given concerning individual supplies, and alert consumers to the possibility of more severe restrictions, should the situation continue.

Consumers are made aware of the consequences of not complying with the restriction:

- *May be fined up to \$1000 and / or have their water supply disconnected.*

The restriction notice also carries a statement to the effect that all employees of the Authority carrying out inspections to monitor restrictions will carry official identification to reduce the possibility of bogus representation.

Stage Two Water Restriction Notices (classified as Medium Restrictions), and Stage Three Notices (High Restrictions), carry similar messages that highlight increasing severity of restriction. At these stages surveillance is increased to ensure compliance with restrictions. The Authority also provides commitment to provide back up and support to the process. Staff have the confidence of knowing the Authority will act and implement legal proceedings for non-compliance.

Stage Four Water Restriction Notices, classified as Critical Restrictions, are the last resort and indicate that Mother Nature has defeated the applied science of response planning up to this stage. Alternative supplies such as road or rail transport, underground bore, etc. need to have been previously planned to meet basic supply needs. Towns reaching this stage need to be reviewed for provision of enlarged storage capacity or alternative supply sources etc? This situation demands urgent planning and capital expenditure to alleviate re-occurrence.

2.6 Distribution of Restriction Notices

Each level of restriction, including the Voluntary Information Notice, and the eventual notification of the lifting of Restrictions, were circulated to all consumers affected in individual towns. This process proved to be a major logistical exercise in each case, and required prompt action once Trigger Levels were reached.

Alternative means of distribution used:

- ◆ Australia Post letter drop. This process sometimes inhibited by prior bookings, generally proved to be efficient but costly.
- ◆ Mail merge on the Authority's computer property system and direct mail to consumers proved to be a disaster and expensive.
- ◆ Pamphlet distributions were the least expensive, a special request was needed to ensure 'No Junk Mail' properties were included.
- ◆ Direct Mail was used to large consumers and councils.

2.7 Other Publicity

All elements of the media, television, radio, newspaper advert and news items were employed to emphasise the seriousness of the situation and saturate the message to consumers.

It is important that all media contact is handled through a nominated Media Liaison Officer. There is a strong influence from the media to sensationalise facts and distort comments to suit the story of the day, however they must be kept on side, as publicity is essential to the process. Our process was simple, supply the current status supported by factual details, and support with interview wherever possible. This proved effective and the support of the Media throughout the drought event was greatly appreciated.

North East Region Water Authority's region adjoins Goulburn Valley Water, and media coverage reception is shared in print, radio and television. The fact that the two Authorities had differing By-Laws and numbers of stages of restrictions created some confusion in the public perception of the seriousness of levels of restriction. For example, Goulburn Valley Water was publicising Violet Town being on Stage 8 Restriction, and at the same time, and in the same media, North East Region Water Authority publicised Glenrowan Stage 3 Restriction. By definition the two stages of restriction are basically the same. This variation in definition needed clarification to Municipal and Regional Emergency Response Planning Committees.

2.8 Calendar of Events

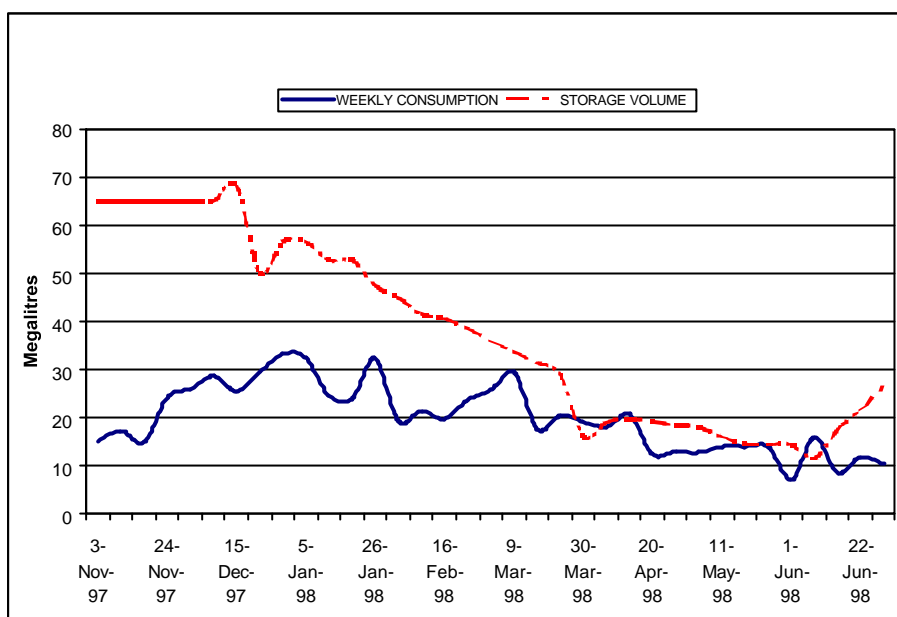
Appendix I, documents the general sequence of events that occurred across the whole of the Authority as drought response planning was invoked. The township of Glenrowan proved to be the most vulnerable, reaching Stage Three restrictions.

2.9 Glenrowan – The spirit lingers on

Figure 1 shows a graph of Glenrowan's drought experience, indicating that Ned is not necessarily

dead and the community spirit does linger on. Cooperation from consumers is evident at each level of restriction.

Figure 1 – Glenrowan Water Consumption



Glenrowan stayed on Level Three restrictions until the 26/6/98; one week after the Fifteen Mile Creek resumed flowing. The town had been on some form of restriction since 31/12/97.

Glenrowan is dependent on volumes contained in its individual storage's; and does not have the security of other systems with constant river flows.

Although most affected by restrictions, the Questionnaire responses from Glenrowan consumers were positive and constructive in comment and generally very appreciative of the Drought Management process. Twenty Seven responses were received from the One Hundred and Sixty Nine notices lifting restrictions to Glenrowan consumers.

Typical comments; "that the Authority should investigate alternative supply from Wangaratta", "the Authority managed the dry conditions and hence low supply levels well",

2.10 Community reactions

Generally the reactions from consumers to the imposition of restrictions on their supplies were positive in acceptance and understanding of the situation. There was some initial confusion which required clarification of the restriction notices, for example when is 12.00pm?, what is a Microspray system and why do they have more leniency?. Acceptance and understanding of the situation was exemplified by an 83 year old lady ringing to complain about the lateness of the hours allocated for hand watering and her difficulty experienced in the garden in the dark.

Her reaction to my explanation of the seriousness of the town's dwindling supplies was to suggest to me that she would put used milk cartons with small holes in the base beside each of her shrubs to 'drip water' using bath or sink water – and that we should make everyone do this!

Similar to other natural disasters such as flood or fire, these events tend to bring out the best and worst in some people. People reporting on neighbours wasting water were common, (even in areas where restrictions did not apply). Each report was followed through, and in many circumstances met with abuse when the 'suspects' were using their own alternative source of water from a bore.

2.11 De-restriction – Down the ladder and review

Restrictions were lifted by a final notice, thanking consumers for their cooperative efforts, and indicating the Authority's intention to review the Drought Management process. The 'de-restriction notice' was sent along with a questionnaire inviting constructive criticism of the restriction / drought management process.

Some vented their spleens on general matters, but the vast majority was appreciative and complimentary of the drought management procedures, despite having to sacrifice their normal water consumption. One criticism often cited was that the questionnaire was not a stamped addressed, free postage return. This had been adopted to reduce expense and minimise the general abusive reply on unrelated issues.

The review process will address trigger level appropriateness, storage capacities and alternative supplies. The process of documentation highlights the most vulnerable supplies within our region for this drought event. The Authority is investigating and considering options for mitigating or eliminating the effects for future repeats of Mother Nature's fickle temperament.

3.0 CONCLUSION

The experience of this drought event will become part of the evaluation and review of response actions and trigger level appropriateness.

Address will be given to the variation in definition of stages of restriction experienced between adjoining Authorities, and documents have been exchanged to enable comparison and discussion.

Our revised plan will contain amended trigger levels for some of the former Kiewa Murray towns by introducing variable responses depending on the month of the year, rather than a straight 'on - off' trigger.

As indicated, this experience will be used as a basis for determining actions for worst affected areas. These responses will be to provide either increased storage or an alternative supply.

It could be assumed that because we did not reach the critical 'man the bucket' Stage Four restrictions, that the applied science of system evaluation and performance in drought conditions may have proven to be satisfactory. Mother Nature may have an alternative definition for the word 'satisfactory' and she may have produced this summer's drought event as a practice for the next!

Figure 2 - North East Region Water Authority Drought Summary

Month	N	N	N	N	D	D	D	D	J	J	J	J	F	F	F	F	M	M	M	M	A	A	A	A	M	M	M	M	J	J		
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Barnawartha																																
Beechworth													V	V	V	V	V	V	V	1	1	1	1	1								
Bellbridge																																
Benalla														V	V	V	V	V	1	1	1	1	1	1	1	1	1	1	1	1		
Bright/Wandil.													V	V	1	1	2	2	2	2	2	2	2	2								
Bundalong																																
Chiltern												V	V	V	V	V	V	V	V	V	V	V	V									
Corryong																																
Cudgewa																																
Dartmouth	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	1	1	1	2	2	2	2	2	2	2	2	2	2	2	
Devenish													V	V	V	V	V	V	V	V	V	V	V	V	V	V	V					
Ebden																																

Glenrowan	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	1	1	1	1	2	2	3	3	3	3	3	3	3	3	3	3	3	3	
Goorambat																																		
Harrietville																V	V	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Kiewa																																		
Moyhu																																		
Mt.Beauty																																		
Myrtleford																					V	V	V	V	V	V	V	V	V	V	V	V	V	
Oxley																																		
Porepunkah																V	V	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Ruth/Wahg.																																		
Springhurst																V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
St. James																V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
Tallangatta																																		
Tungamah																V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
Walwa																																		
Wangaratta																							V	V	V	V	V	V	V	V	V	V	V	
Whitfield																							V	V	V	V	1	1	1	1	1	1	1	
Wodonga																																		

Yackandandah															v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v					
Yarrawonga																																			