THE REGIONAL COUNCIL

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Report 01.795
13 November 2001
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Report 01.795.doc

Report to Utility Services Committee
from Murray Kennedy, Strategy and Asset Manager

Wholesale Water Supply in an Emergency

1. Purpose

To obtain approval for development of an emergency water supply plan.

2. Introduction

The Water Group has a comprehensive Incident Management system in place for events that may happen from time to time. It includes loss of communication, interruptions to supply, detection of *giardia/cryptosporidium,* contamination, earthquake, tsunami and other incidents.

Over the past few years, the Water Group has spent up to $300,000 a year on seismic protection works and other works to reduce the possible damage from unexpected events. Examples include earthquake couplings on pipelines crossing bridges, tying down pipelines in tunnels, restraining tanks and equipment at water treatment plants and flood protection works at stream and river crossings. Two major projects currently being investigated are the Hutt River crossing at Silverstream and the pipeline from SH2 near Silverstream to SH58.

The Water Group is also active in the activities of the Lifelines Group in the Wellington area.

It is difficult though, to plan for some events. For example, an earthquake associated with the movement of the Wellington fault. This event has a return period of several hundred years. When it does occur, major disruption can be expected to the water supply system. While it is not possible to be precise about the extent of the damage, evidence from earthquakes overseas provide some pointers. It is likely pipelines will fracture in

many places. Production at the water treatment plants will be disrupted and even temporary repairs will take many weeks. Water production and distribution will resume progressively as the system is restored.

3. Contingency Planning

The present incident management system is based on continuing to use the existing infrastructure, or at least having it available within a short period of time after an incident. It had been assumed that collection and delivery of water while the infrastructure was not available, would be undertaken by others. Recent discussions with our customers indicates this is not the case. Planning is therefore required for the situation where water cannot be delivered by pipelines to the four cities for an extended period.

3.1 Supply Quantities

What quantity of water should be made available on an ongoing basis during the emergency? United Nations disaster relief minimum standards are:

- 3 litres per person per day. This requires 1,050 cubic metres a day, or 70 x 15 tonne truckloads to supply a population of 350,000.
- 20 litres per person per day, after the first 3 days. For the same population, 470 x 15 tonne truckloads or 7,050 cubic metres are required each day.

The greater the quantity of water that can be made available, the lower the risk of public health problems.

As the recovery operation progresses, greater quantities of water will be delivered by pipeline to our customers' reservoirs. Hence, more resources are then available to deliver water by road to areas that are not yet reconnected. Public tolerance to not having a connected water supply will lessen as days after the event roll into weeks.

This suggests the emergency quantity of water made available per person per day should be increased, the longer the time a property is without a connected supply.

3.2 Self Reliance

After the third day of the emergency, the quantities of water to be delivered could be substantial. For this reason anything the public can do to help themselves will reduce the pressure on the delivery resources and will be worthwhile. This could require an ongoing education programme. An example is the Accident Compensation Corporation advertisements encouraging people to ensure their hot water cylinders are secure.

Initial self reliance may include:

- usage of water already at a property
- bottled water
- toilet cisterns
- hot water cylinders
- other storage

Ongoing

- collection of rainwater
- tapping into downpipes and adding water treatment tablets to the water collected

4. Responsibilities

Several areas of responsibility have to be decided. For example:

- Development of the emergency plan
- ongoing revision of the plan
- ensuring infrastructure is available when an emergency arises
- training
- putting the plan into action once an emergency arises
- who pays

These issues have been discussed in broad detail with our four city customers. Their responses are included as attachment 1.

The legal position regarding water supply in an emergency is not clear. The Wellington Regional Water Board Act (1972) governs the Water Group's activities. Section 38 of the Act requires the Wellington Regional Council (WRC), as successor to the Water Board, to supply water on such terms and conditions it chooses after consulting with the customers. Supply is required though only when water is available. The Act is silent on emergency situations of the type outlined in this report.

No doubt the public will expect the local authorities to arrange an emergency supply. Rather than taking a legislative view of responsibility, a better approach is to consider who is best placed to arrange supply in an emergency. The answer is probably the Water Group of the WRC, in conjunction with Emergency Management personnel of the WRC and the City Councils. Involvement of the Water Group would end once water has been taken to a point for distribution.

5. Next Steps

The next step is to prepare an emergency supply plan for water delivery when pipelines are not available. This can be carried out by the Water Group staff with a small amount of external assistance. Once a draft plan is prepared, it would be discussed with the four city customers before being brought before the Committee. Implementation costs can be included as part of the reporting back process.

6. Communications

There is no immediate need for a media communication.

7. Recommendations

It is recommended that the Committee approves the preparation of a draft plan to supply water during an emergency when delivery by pipeline is not possible.

Report prepared by:

MURRAY KENNEDY
Strategy and Asset Manager

Approved for Submission

DAVID BENHAM
Divisional Manager, Utility Services

Endorsed by:

DAN ROBERTS
Group Manager Operations

Attachments
Attachment 1 : Letters from our four city customers

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07 May 2001

«LastName»
«JobTitle»
« Company))
((Address 1»
«City»

Dear «FirstName»

Water Supply in an Emergency

At the recent customer meeting at the Regional Council Centre there was a discussion about wholesale water supply in an emergency.

When there is a water supply problem the first thing the Regional Council would do is contact those customers who may be effected and also inform our other customers of the situation. The usual type of the emergency does not involve our entire network because of the levels of system redundancy.

The situation could arise in a major earthquake where there is damage to our pipelines, water treatment plants and structures carrying our pipelines across rivers and streams. Under this scenario it is likely to be either days or weeks before the system is restored, even in a relatively limited way. Hopefully the earthquake valves installed in some of the customer reservoirs will respond as predicted, retaining most of the water which was in the reservoir at the time of the earthquake. Even on a rationed basis this water can only last a relatively short period of time.

The key issue then is how is water to be distributed from collection points which could be for example the wellfield in Knights Road, Lower Hutt, or water stored in the Te Marua lakes, to the various households. Even with a minimal distribution of 10 litres per person per day there is still 3500m^3 of water to be delivered on a daily basis. Obviously as treatment plants and pipelines are restored then the points where water is available will be closer to where it is needed.

It seems apparent that the public will expect the local authorities to make arrangements for water supply in some form, if pipelines are not available. What we are seeking in the first instance, is what planning, if any, each of the cities has undertaken to collect water from supply points in the event that the Regional Council cannot make water available to your various reservoirs? We will coordinate the responses and then instigate further discussions with you.

Yours sincerely

M D KENNEDY
Strategy and Asset Manager

WELLINGTON CITY COUNCIL
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WELLINGTON
Tumeke Pōneke
Wellington City Council

20 September 2001

Murray Kennedy
Strategy and Asset Manager
Wellington Regional Council
PO Box 11 646
WELLINGTON

Dear Murray

Water Supply in an Emergency

Reference your letter of 7 May and our various conversations since that date.

Wellington City Council has no contingency in its continuity planning to cover the collection of water from outside the City's main points of supply in an emergency that disrupts Regional Council's water treatment or distribution system.

The City Council's planning is focussed on the supply of water within the city network. It has been assumed that in an emergency, Regional Council remains responsible for providing adequate water quantities to these main points of supply, and your own emergency planning includes whatever actions are necessary.

From our discussions, I understand that the necessary level of emergency planning has not been carried out and the responsibilities of both councils in an emergency are not clear. That is of concern to this council and needs to be addressed. It is also possible that a similar situation applies to the Hutt and Porirua City Councils.

I would like to see the issue resolved and suggest the first step would be for you to sponsor a meeting with the councils concerned to identify responsibilities for water supply in an emergency and planning options and actions needed. There may also be aspects of network emergency planning that would benefit from a more common approach.

I also note that **there is** no document in place that covers the supply of water by the Regional Council. This may be an appropriate time to revisit the Wholesale Water Agreement that was proposed 2 years ago.

Yours sincerely

Tony Shaw
Manager Major Projects

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Our Reference: WS80-12-01

HUTT CITY COUNCIL

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New Zealand
http://www.huttcity.govt.nz

27 August 2001

Murray Kennedy
Strategy and Asset Manager
Wellington Regional Council
PO Box 11-646
WELLINGTON

Dear Murray

WATER SUPPLY IN AN EMERGENCY

Further to your letter dated 7 May 2001 on this subject, I make the following comment. I apologise for the delay in responding but as previously advised I needed to consult with other parties on this matter before responding.

I have consulted with Council's Emergency Management Controller (Brian Toomey) on the structure and responsibilities of the respective authorities for supplying water to the community. Brian has advised that under the current legislation the authorities currently responsible for supplying water to the community would be expected to continue to do so in an emergency situation, ie. the onus is on the Wellington Regional Council (WRC) to supply bulk water to the respective Cities and for the Cities to distribute that water to their communities. Obviously the severity of the emergency would restrict the respective authorities ability to carry out their normal functions, however Brian informs me it is the authorities responsibility to have adequate contingencies in place to provide a minimal service in such an event.

Hutt City has installed auto shut off valves at key reservoirs in the majority of the supply zones to prevent water from running to waste in an extreme earthquake event. Remaining key reservoirs are programmed to have auto shut off valves installed over the next three years. The expectation is that the community will have access to drinking water from these reservoirs for a number of days after an event. Access to drinking water from the artesian aquifer may also be possible from defined bores throughout the City, depending on the extent of damage the aquifer sustains. However, ultimately the community would expect that bulk water would be supplied by the WRC to predetermined points within each City for distribution.

HUTT CITY
WE'VE GOT THE LOT

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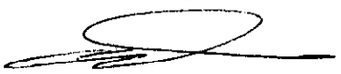
You have raised an important issue on the supply of water to the community beyond the immediate days after a major event. I believe it would be beneficial for the TA's and the WRC to meet in the near future to discuss the issue and seek to define each parties expectations and the associated contingency measures that could be put in place.

Yours sincerely



Gary O'Meara
WATER SUPPLY MANAGER

UTTERLY UNIQUELY
UPPER HUTT CITY
UPPER HUTT CITY COUNCIL

8/9/2001	
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Mr M D Kennedy
Strategy and Asset Manager
Wellington Regional Council
PO Box 11 646
WELLINGTON

File: 329/1/3
LKW:JMS
kennedy

29 May 2001

Dear Murray

WATER SUPPLY IN AN EMERGENCY

I refer to your letter of 7 May 200 1 seeking information on what planning we have carried out for the collection of water from supply points in the event that the Regional Council cannot make water available to our various reservoirs.

We are in the process of reviewing our supply of water in an emergency which includes the options of delivery by tanker truck from our reservoirs, supply direct from our reservoir sites and maybe limited supply from mains where they are still functioning. Our scenarios at this stage did not include having to pick up the water from say the lakes at Te **Marua.** Our planning has been based upon Wellington Regional Council being able to re-supply our reservoirs before our storage was exhausted. I must admit that I am concerned that you consider it could take weeks before your system is restored even in a relatively limited way. Hopefully, with Upper Hutt being closer to the source of supply, the time to supply into our reservoirs may be considerably shorter. I believe that you have to look very closely at your recovery procedures if you are talking weeks, as the feasibility of supplying from tankers must be fairly limited. Within Upper Hutt we have 4 or 5 trucks that service the rural area taking water from selected fire hydrants within the City. But with your figures of 10 litres per person per day, those trucks would be required to make about fourteen deliveries each per day just for Upper Hutt.

The available storage in our reservoirs at 75% full is about 25,000 cubic metres. For 10 litres per head per day this volume is adequate for 67 days. Under the World Health Organisation guidelines of 3 litres per head per day, the storage would be significantly more. Provided the earthquake valves work as planned we are probably in a reasonable state of preparedness but maybe the policy on the minimum volume of water stored needs reviewing to ensure that the best risk assessment is in place.

Yours faithfully

Lachlan Wallach
DIRECTOR, OPERATIONS

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Porirua City Council

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11 May2001

Wellington Regional Council
P 0 Box 11-646
Wellington

Attention: Murray Kennedy, Strategy and Asset Manager

Dear Murray

WATER SUPPLY IN AN EMERGENCY

We write in reply to your letter of 7th May concerning responsibility for supplying water to Porirua City and other councils after a major disruption to the regions water supply.

This Council has developed plans to retain water within some of its service reservoirs to ensure a very limited supply after a disruption assumed to be caused by a significant earthquake. At the time of writing eight reservoirs have had seismic valves installed. Council's planning concentrates on distributing water from these reservoirs and repairing the city reticulation.

You may remember my raising this issue of WRC's response to earthquakes at a previous meeting, more particularly at planning for repairing broken trunk mains. Marshall Hyland of this office has also queried this matter more recently when he attended a meeting on civil defence issues.

It has been our expectation that your organisation would have a plan to reinstate supply to the four retail suppliers as soon as practicable, and that this plan would include measures to supply water to the service reservoirs or first reticulation branch as may be the case. Porirua City has not planned to collect water further back up the supply chain.

We have clearly relied on the provisions of section 38(3) of the Wellington Regional Water Board Act 1972. This section identifies the point of supply to be the inlet of the service reservoir or to the first reticulation branch. As stated above we have assumed in our planning that your organisation would have addressed this most important point in developing your response strategy to an earthquake of sufficient magnitude to disrupt water supplies within the region.

It is obvious that all parties would need to act in concert to recover supply as soon as practicable, however it is our opinion that WRC's planning should deal quite clearly with how it can best meet its obligations under the Water Board Act.

We are willing to work together to discuss this matter further when you have had time to consider this response and those of other councils.

Yours faithfully

J S Oldfield
For T M Davin
GENERAL MANAGER UTILITIES POLICY
FOR CHIEF EXECUTIVE