



## Resilience or artefact?

### The Potters Lane water scheme: an example of local water supply

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Local water supply is a common occurrence in areas of rural New Zealand. Usually these are on a property by property basis, or locally built and run mini-schemes. Mini-scheme examples are declining however at least in peri-urban areas, due to expansion of larger territorial authority reticulated water schemes and increased public health standards for human water consumption. This short note describes the background, recent operating experience, and future prospects of the Potters Lane water supply scheme, in eastern Selwyn District. There may be some lessons for local water supply resilience from this example, or it may simply be an artefact of New Zealand's rural infrastructure history.

Local water supply schemes were a common occurrence in many parts of New Zealand, at least from the late 19<sup>th</sup> century. In 1958, householders bordering the mid- Halswell River, at the junction of Old Tai Tapu Road, Early Valley Road, and Potters Lane approached the Paparua County Council to establish a local water scheme. Their purpose was in order to replace water takes from the Halswell River, due to declining water quality and uncertain supply. With council support, a 30 metre bore into a gravel aquifer was drilled on land adjoining the Halswell River – possibly on marginal strip. Easements across subscribers' land were created to transport water to a small electric pump and then up to holding tanks (to provide pressure head) on the lower Port Hills, and then back via lines to all subscriber homes and water troughs. The water was used for domestic supply and some stock water.

The scheme currently has ten subscribers. Of these, four households are entirely reliant on the scheme. Others have alternative sources of supply either through the Christchurch City owned and operated Lansdowne scheme or bores on individual properties. Subscribers pay an annual fee, which predominantly funds electricity

and six monthly checks and maintenance of the pump systems. Any upgrades or repairs are separately funded: either collectively, or by individual subscribers on the in-lines to their houses. The Selwyn District Council provides informal low key support by water quality testing on request (to date tests have shown excellent water quality from the bore).

The scheme received a severe test in the first Canterbury Earthquake (a 7.1 magnitude event) in September 2010. Apart from loss of power to the pump for two days, and damage to one supply line to a water trough, the scheme survived remarkably well, at least in terms of supply from the well and survival of the header tanks. The leak to the water trough, however, took five days to be discovered and closed off. Repairs to the system were made by volunteer labour and the services of Bay Pump Services, who maintain the pump system. Later Christchurch earthquake events, despite their severity elsewhere, appear to have had no effect. The scheme was able to supply friends and relations from Christchurch city with clean drinkable bottled/container water for more than three months after the February events.

The challenges for the scheme for the future are as follows:

- Although water quality from a relatively shallow bore has been excellent to date, there may be some uncertainty in the future as pressure on Canterbury's shallower aquifers intensify. This presumably will be an issue common to many other semi-shallow bores.
- Questions surrounding the maintenance and replacement of an aging scheme when more than half of the current subscribers have direct access to

an alternative high quality water supply.

- The gradual (and possibly increasing) pressure for closer subdivision along the toe slopes of the Port Hills/Banks Peninsula as Christchurch City expands west and southwards.

The scheme straddles the boundary of Selwyn District and Christchurch City. The third challenge listed above - subdivisional pressure - depends on planning rules for land uses on the Banks Peninsula toe slopes, and land adjoining the Halswell River. Land values in the area are high and reputedly sought-after for lifestyle reasons. River-adjointing land suffered extreme liquefaction, and there is also a flooding hazard from the Halswell River. Surrounding flat areas in Lansdowne Valley and north of Holmes Road are flood plains. Sub-division may, however, make the Potters Lane water scheme unworkable without significant upgrade, possibly then giving rise to demands to connect to reticulated schemes such as the Lansdowne water supply, or something more extensive coming from Christchurch City in the future.

What might be learned, if anything, in planning terms from the experience of the Potters Lane water scheme? There is a considerable body of literature supporting, or advocating for, local resilience. The scheme is an example of local resilience and community self-support, alleviating pressure on territorial authorities, and demonstrating an ability to cope with disasters that disrupted some other local infrastructure severely (with any damage that did occur to the scheme being fixed with a minimum of fuss). However, experience in running the scheme suggests it relies on a socially cohesive set of subscribers, that it may rely on the relative higher socio-economic status of subscribers to be able to repair and keep the scheme running, and that it relies heavily on sunk investment of the past. Consequently, caution should be exercised in describing the scheme as an example of "local is good". Rather, it might best be seen as a quaint artefact of historical New Zealand rural and peri-urban infrastructure.