Ratana Water Supply Upgrade Newsletter – **February 2014 (Issue 1)**

The Rangitikei District Council is planning to complete a major upgrade of the Ratana water supply in 2014/15. While progress with the project will be reported to the Ratana Community Board, it is important that the Ratana community understand the project – what's planned and when - and have regular updates on progress. A regular community newsletter will be produced to report on progress. This is the first of those newsletters.

Description of the Existing Ratana Water Supply System

The Ratana water supply was established in the 1960s, but the quality of the water means it is not used by residents for drinking or laundry. The water has a rotten egg smell (caused by hydrogen sulphide), high hardness and high levels of iron and manganese, which is why it is unsuitable for drinking. The houses are connected to the community supply, but the Council supply is typically used for showering, toilets and garden irrigation.

Water is drawn from two bores located at the treatment plant site on the corner of Tamariki Place and Kiatere Street. The two bores, both about 80 metres deep and located about 10 metres apart, draw from the same aquifer within the Rapanui Formation, which comprises alternating layers of sand, silt and gravels. They are operated in a duty standby arrangement and provide water to the treatment plant.

Water from the bores undergoes minimal treatment. It goes into the top of a passive aeration tower where it enters through a spray aerator. This process is designed to remove some of the iron, manganese and gases from the water. The water is chlorinated (using chlorine gas) then flows to a precipitation tank/clarifier for settling of the iron and manganese precipitate. There is a scour valve at the bottom of the tank which allows the discharge of the precipitate to the sewer every three to six months. A pump provides the water to two pressure filters (operated in parallel) containing anthracite, silica sand and crushed gravel. The filters are backwashed (cleaned) daily. The water is then pumped (via a rising main) to the storage tanks located near to the Ratana cemetery. The plant shuts down when there is a loss of power and there is no backup generator.

The supply includes nine water reservoirs/storage tanks with volumes ranging from $18m^3$ to $25m^3$ and providing a total storage capacity of $180m^3$. The water is divided between two banks of five and four storage tanks which operate in parallel. The storage capacity of the tanks roughly equals the current daily demand. However, during the Ratana Festival demand increases significantly – about three times the storage capacity, so the Council brings in the extra water by tanker – the equivalent of 45 tanker loads.

From the reservoirs, the water is fed into the community reticulation by gravity via a falling main, which runs parallel to the rising main. The reticulation network is comprised of 25mm to 150mm pipes of various types. Iron and manganese in the water has contributed to biofilm growth and deposits within the reticulation system. The mains are periodically flushed, but the high iron and manganese means this is an ongoing problem.

While there have been minor modifications to the water supply system over the years, the major components of the system are original and near the end of their serviceable life.

Progress on a New Water Supply for Ratana

In response to concerns that the water supply was not suitable for consumption the Council applied to the Ministry of Health Capital Assistance Programme in 2008 for funding to identify a new water source for the community. That application was successful, and new bore has been drilled, tested and developed. Water from the new bore is generally of good quality, and is free from microbiological contaminants.

A new reservoir and pump house are required, and a new site has been identified on Ratana Road. An initial meeting was held with community representatives in September 2013 to provide an overview of the project and outline how the site would be developed. A geotechnical assessment of the site has been completed, which confirmed that the site was suitable for the construction of the treatment plant.

A surveyor has been engaged to mark the site boundaries and prepare a site plan. When the survey is completed a final access arrangement will need to be agreed with the land owners. It is hoped that this agreement can be confirmed by the end of May 2014. Once the agreement is in place, works can begin for the construction of the new treatment plant. Preparation of the site for construction, including extensive earthworks, is planned to be completed by the end of June 2014. It is intended to install the pipeline from the treatment plant to the community during the next construction season (September 2014 to May 2015). Construction of the treatment plant and storage reservoir is planned to be completed by mid-2015.

Ratana Water Supply Upgrade – Key Facts

Project cost (total)	$1.672 million
Government contribution	$1.034 million
New treatment plant capacity	350m³/day (350,000 litres per day). Increasing to 500m³/day (500,000 litres per day) during major events, such as the Ratana Festival
New reservoir capacity	700m³ minimum (700,000 litres), but could be increased to 1000m³ (1,000,000 litres) if funding allows
New water main length	1,115 metres – includes the water main from the bore to the treatment plant and the water main from the treatment plant to the township
Completion date	Mid-2015

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