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De-silting ensures clear water for Tiromoana Bush

A major de-silting operation is underway in the Water Supply Dam at the Kate Valley Landfill and Energy Park in Waipara, to ensure the supply of water for landfill operations and to support biodiversity in Tiromoana Bush.

The Kate Valley Landfill and Energy Park has two dams, one to capture sediment from the earthwork operations of the landfill, and a second one further downstream for capturing water, known as the Water Supply Dam, used for dust control, plant washdown, firefighting and ensuring a minimum flow of water into the Kate Creek which feeds the 12-hectare Kate Pond wetland. The wetland was constructed as part of the landfill development and is now an occasional home to a variety of rare and endangered species, such as the spotless crane, which rely on the continuous flow of clean water.

Rangi Lord, Regional Manager of Canterbury Waste Services who operate the Kate Valley Landfill and Energy Park for Transwaste Canterbury, says several exceptional weather events through the first 15 years of operations at the landfill have led to significant amounts of sediment building up in the Water Supply Dam.

“Each storm has contributed sediment into the Water Supply Dam, particularly rainfall on 14 April 2014”, says Lord. “A large slip approximately 1 kilometre downstream from the landfill resulted in several hundred cubic metres of material collapsing into the stream channel and then over the next few years the sediment has flowed down into the Water Supply Dam.”

Every storm contributes to the sediment build-up. An investigation in 2019 concluded that at least 66% of the dam’s storage volume has been filled with sediment. That’s an issue because a consistent volume of water is needed both for operational activities within the landfill and to ensure the Kate Pond wetland and the biodiversity supported by it receives a continuous supply of clean water year-round.

Lord says routine desilting of the upstream Sediment Dam is carried out every 12 to 18 months, but the Water Supply Dam hasn’t required de-silting until now.

“The significant reduction in storage capacity in the Water Supply Dam has major implications on our ability to fully extract water during peak construction periods at the landfill”, says Lord. “Before the Water Supply Dam was constructed the Kate Stream (as there was no Kate Pond wetland prior to the landfill) would dry out over summer with the resultant loss of biodiversity. De-silting the dam to restore the full water holding capacity ensures landfill operations can proceed and biodiversity downstream at the wetland and along the stream bed is supported.”

The de-silting project began in April and is expected to run until September. Specialist equipment is being used to suck up sediment and mud and deposit it into truck-mounted dewatering bins with a built-in filtration capability. That means filtered water can drain back into the Dam where it’s needed, while the sediment mud is transported in the bins and placed on top of the landfill. Lord says the approach ensures the project is contained on-site and nothing is wasted, ensuring the best possible outcomes. Regular monitoring of the build-up of silt in the Water Supply Dam will continue in the future particularly given the likelihood of significant rainfall events in North Canterbury due to climate change.