Taupo District Council - Septage Reception Facility

Taupo District Council (TDC) has recently completed the construction of a new Septage Reception Facility. The facility, located in an industrial area with future access from the new East Taupo Arterial, is one of a number of recent and planned initiatives by Taupo District Council to reduce nutrient inputs into the Upper Waikato River Catchment (and in particular Lake Taupo).

Drivers:

In the past the majority of all septic tank waste in the Taupo District has been taken to the Taupo Landfill and dewatered in un-lined lagoons before being deposited in the landfill.

The disposal of septic tank waste to the landfill and the use of un-lined lagoons for dewatering was not seen by TDC as environmentally sustainable in the longer term and an environmentally sustainable strategy was sought.

Following consultation with Environment Waikato, the decision was made to build a septage reception facility.

Options for Septic Tank Waste:

AWT were tasked by TDC to look at options for the location of a new septage reception facility.

There were two fundamental options:

1) Reception Facility located at the main Taupo Waste Water Treatment Plant;
2) Reception Facility located remote from the Taupo Waste Water Treatment Plant but within the Taupo wastewater catchment.

Option 1, to construct a facility at the main Taupo Waste Water Treatment Plant, was discounted as there was limited available space on the site for the physical plant and access to the treatment plant was confined. Furthermore the plant is isolated from main arterial roads and Septage trucks would be required to travel through residential areas to get to the plant.

In addition, the reception of Septage directly to the plant had been attempted in the past but this had caused shock loading resulting in operational issues with the primary sedimentation, primary sludge thickening and sludge digestion processes.

Further consultation with TDC and evaluation of the sewer model, as well as assessment of the treatment plant capacity, showed that significant benefits could be realised by strategically locating the Septage Reception Facility within the Taupo wastewater catchment. These benefits included:

- Holding tanks at the facility for controlled metering of processed Septage into the wastewater network so that shock loads to the plant do not occur;
- Ability to strategically locate the facility in relation to truck access routes off main arterial roads;
- Avoidance of septic tank trucks travelling through residential areas of Taupo;

- Avoidance of truck movements at the already congested Taupo WWTP site;
- Ability to process sludge at the facility that has been trucked in from other wastewater treatment plants in the district and to eliminate these truck movements through the Taupo residential zones and also at the congested Taupo WWTP site.

Due to the nature of the activity the site was required to be located within an industrial zoned area. There is currently a shortage of industrial zoned land around Taupo. Fortunately the new ETA (East Taupo Arterial) road has opened up land between the ETA and the existing urban area for further urban and industrial development. A site was identified on land owned by Taupo District Council in an industrial area within 50m of the proposed ETA. An advantage of the site selected was the fact that the sewage reticulation from this location gravitated all the way to the Taupo WWTP, hence eliminating the requirement to store and on-pump the material in any pump stations in the sewerage network.

Design of Physical Facility:

A 3D CAD model of the Septage Reception Facility was completed so that TDC project managers could visualise the facility before approval was given for the project to proceed. The 3D model also aided in the communication of design intent internally for review and approval with the end result being an improved quality of design deliverables compared to conventional 2D design drawings. The opportunities for human errors that can occur with traditional 2D design methods are greatly reduced, especially where the design is of a process nature where many separate services share a relatively small space. 3D models minimize the need for re-work because clashes are more easily identified, the design quality is greatly improved and sub-consultants and construction contractors can better visualize the design before starting work.

The physical plant consists of a reception area for tankers consisting of concrete off-loading and washdown zone, camlock fitting direct to a gravel trap before the flow is directed through a flow meter and a pump up to the screen. A state-of-the-art screen and grit removal system was imported from Italy through specialist equipment suppliers, Smith and Loveless.

The screen consists of a coarse perforated plate screen with a screw conveyor and spray washing system to lift the screening out of the Septage flow, wash organics from the screenings and then dewater the screenings in a screw press before the screenings are deposited into an enclosed bag for storage prior to landfilling.

The screened Septage then flows through an aerated tank for grit separation, grit washing, dewatering and deposition into an enclosed bag for storage prior to landfilling. A high sided purpose-built trailer is used for screenings and grit storage and conveyance to landfill. The processed Septage from the discharge of the grit removal system gravitates into a storage tank with a $60m^3$ capacity containing two small flygt submersible sewage pumps that gradually meter the processed Septage into the nearby municipal gravity sewer. The facility has an odour extraction system and a bark biofilter to remove and treat odours from both the storage tank and the screen & grit removal system.

Daily washdown cycles for both the screen and storage tank are automatically initiated by the site control system (typically at night when the facility is not in use) and include provision for hot washes to be programmed to manage fat, oil and grease build-up.

The facility is un-manned and operated by a swipe card 'cardax' system which controls automatic gate access to the site and also initiates operation of the system. Once the operator/driver has scanned his card to initiate operation, an automated billing system logs the volume discharged and this information is used to automatically generate monthly invoices to each septic tank contractor based on number of cubic metres each contractor discharges through the plant.

The site is security fenced and landscape planted. Unpaved areas consist of weed mat topped with graded river stone for low maintenance.

The new facility was officially opened by Taupo District Council Deputy Mayor, Don Ormsby, on 19th February 2010.

The total project budget was $ 1.5 million.

Photos to be included:

1. *Photo of Completed Site*
2. *3D CAD Drawing of Design*