Environmenttechnology
sustainable wastewater treatment

AES
"Always the first option in wastewater treatment"

News December 2019

Christmas Greetings and Holiday Hours

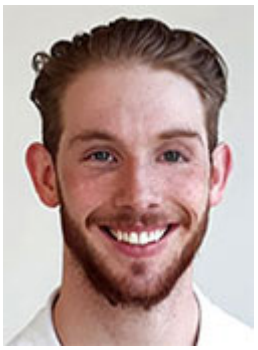
Thank you for all your support of AES Wastewater Treatment Systems in 2019. We wish you a very Happy Christmas with family and friends and all the best for 2020.

Environment Technology offices will be closed from midday Friday 20th December until Monday 13th January. The last date for dispatches of AES components is Thursday 19th Dec. We will be dispatching again from Monday 6th January.

New Business Manager and Design Engineer

Environment Technology are pleased to introduce our new Business Manager, Teresa Eddy and Wastewater Design Engineer, Harry Oram.

Teresa has over 30 years' experience in administration, training and IT, with more than 20 of those years in senior office management roles. She also has project management qualifications and is very process orientated. Teresa also ran her own business. She brings a wealth of management experience to our team as our business expands.
Teresa served in the Territorial Army as a Signaller and later seconded as a civilian IT Instructor working alongside her husband Mike whom she met in the service. They have two grown children and have travelled widely.



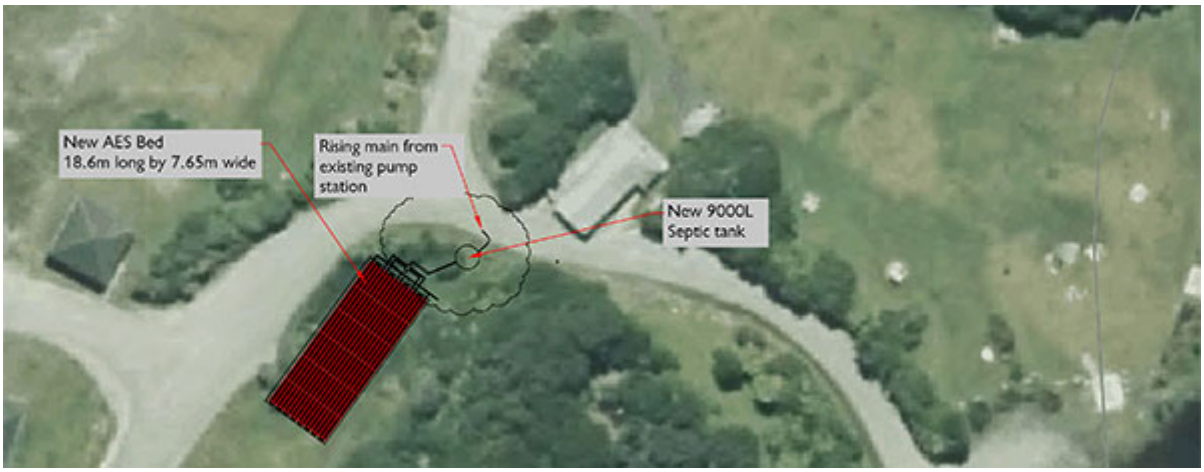
Harry brings experience as a process engineer in a large dairy company and a keen interest in environmentally sustainable wastewater design. He has a Bachelors of Chemical and Process Engineering and a Masters of Engineering in Management from the University of Canterbury. In addition to providing design assistance from the office, Harry will be out in the field liaising on larger AES projects. In his downtime he enjoys drumming, playing squash, and traveling. He moved to Nelson with his partner who has a dream to start up a dance studio in the sunshine capital of NZ.

DOC Installation West Coast

Lake Mahinapua DOC camping ground, south of Hokitika, required an upgrade of its existing wastewater system servicing a toilet block via septic tank primary treatment to low pressure effluent dosing into a gravel filter, to cater for the addition of a new shower block.

The original system was designed 17 years ago in accordance with Auckland Council's 'Technical Publication #58: 1994 On-site Wastewater Systems: Design and Management Manual' with the design based on a high infiltration rate of 130mm/day. The current 2004 version of TP58 does not recommend high DLR's for primary treated effluent. High infiltration rates in TP58 now require effluent to be treated to secondary standard prior to discharge to land.

Stuart Challenger of Eliot Sinclair as wastewater designer, recommended that the land application bed be upgraded to an AES treatment disposal system with effluent from the existing septic tank pumped to 6000L of additional septic tankage to match the expected additional inflow from the shower block and then be gravity fed to the AES treatment bed via a 4 port distribution box (a 7 hole box was actually installed for future-proofing). Provision is included for buffering the pump derived outflow through the septic tank prior to the distribution box, to be less than 76 litres/minute from each box port.

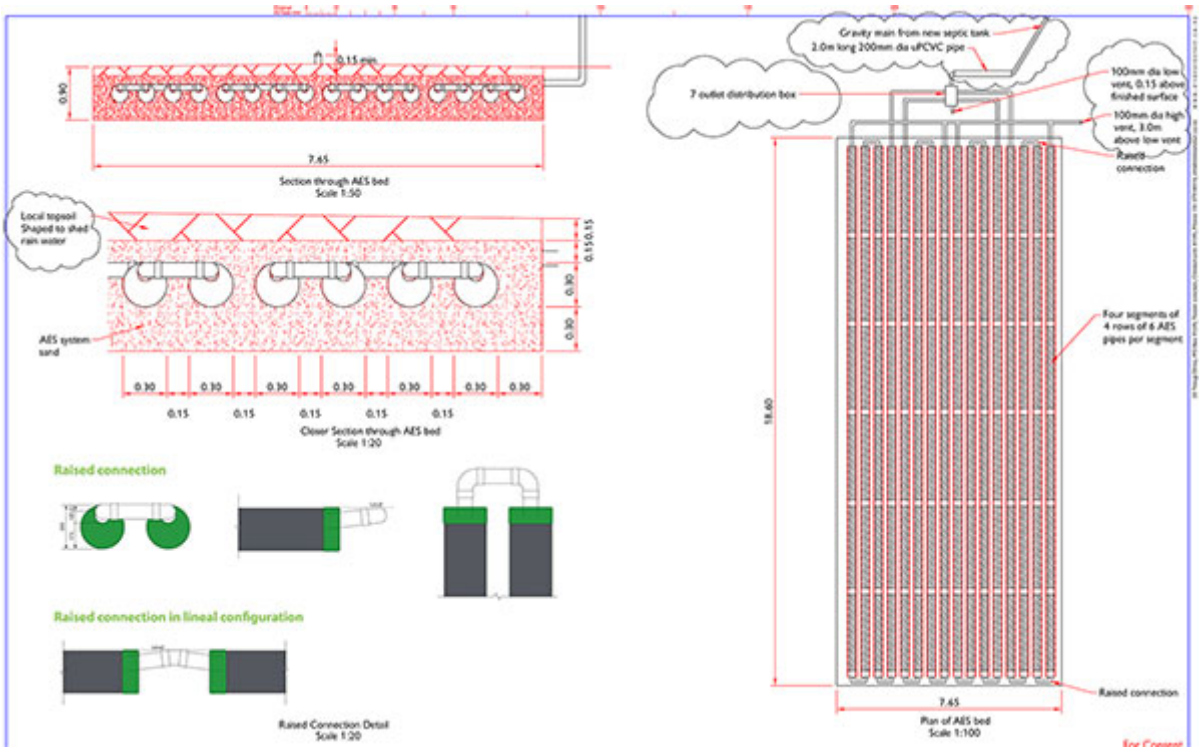


The new shower block will increase the daily flow from 30 to 50L per person. Peak design inflow for 300 people is 15,000L.

Inclusion of the grey water from the showers helps to dilute the effluent similar to domestic strength than the higher strength primary treated black water previously discharged. As the maximum design flow will be maintained for only a short period over Xmas / New Year, using an AES loading rate of 55L/m for the design of the AES bed was deemed appropriate. This was based on the tested performance of the AES system in Trial 12 at Rotorua's OSET-NTP facility. During this trial at 200% loading for 5 days or 76L/m of AES pipe, there was no significant impact upon BOD, with TSS still maintaining A+ grading and minimal impact on nitrogen reduction.

At both the 38 and 76L/m loading AES is recorded at OSET performing better than almost all AWTS package treatment plants. Check the recorded performance here - www.et.nz/resources/oset-testing/

Click here to enlarge the drawing below.



The number of AES pipes required was 15,000L/55L per m = 273m divided by 3m (= length of

AES pipes) = 91. The current location for the land application bed was about 20m long so with 6 pipes in each row the length of the AES bed would be 18.6m and the number of rows would be: 91/6 = 16 rows (actual rows would be15.2 but as it is not recommended to have part rows, this was rounded up to 16). So the width of the bed is 16 rows x 0.45m per row + 0.45 for side clearance = 7.65m. The total area of the bed is therefore 18.6 x 7.65 = 142.3m2. This is a loading rate of 15,000L per day/142.3 m2 = 105mm/day.

This is a lower application rate than the previous 130L/day. The AES bed is located so that it can be extended lengthwise or sideways at a later date if required using the unused ports of the installed 7-port distribution box.

The septic tank capacity needed to be increased by a similar amount to the increase in inflow to have capacity for 24 hours storage plus room for build-up of scum and sludge. i.e. 20L/person/day x 300people = 6000L. A 9000L septic tank was installed adjacent to the existing tank and above the beds to allow for future increased use. As the effluent is pumped to the additional septic tank it was recommended that the filter be removed from the existing tank to allow some of the solid matter through. From the new septic tank, the effluent flows by gravity to the AES bed. However, the outflow from this additional septic tank is at the same rate as the inflow so it was necessary to buffer the flow before it enters the AES bed. A 2m section of 200mm dia pipe was installed prior to a 90 degree bend before the distribution box. Installation was by managed by Duncan Hamilton of Dwan & Andrews from Hokitika.

Wooden staples securely hold the 4 rows of AES pipe split into 4 sections placed on a base of 300mm system sand ready for the surrounding and covering sand to be added. Access to the bed was only available from the far end. The staples were lifted and re-established as the construction of the bed progressed when the covering sand was flush with the top of the 150mm top boards of the staple. Note the use of 2 position staples in this manner in securing the AES pipes in a wide bed.

The completed AES combined treatment and disposal bed showing the raised connector pipework fitted to the offset adaptors on the ends of the sections of each pipe row. All venting was manifolded at the septic tank end. The work was completed with a 20 ton digger and 4 staff in 6.5 hours. The AES system sand was stockpiled about 20 metres distant from the end of the bed.

For more information about AES wastewater treatment systems visit our website or call us on 0800 927 834 (0800 waste H2O).

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