

Waste stabilisation ponds and temperature



The waste stabilisation pond design process factors in temperatures as the key aspect to ensure effective treatment of the organic material present in the sewage.

Temperature is important to ponds in a number of different ways:

- Algae provide the oxygen required for the biological treatment process. At temperatures $> 28^{\circ}\text{C}$ an ideal environment is created for algae to grow.
- During periods of colder temperatures, ponds can turnover, this can cause the elevation of the lower (septic) layers in the ponds to the top, increasing the load on the ponds and emitting more odours.
- Temperature inversions can occur in the atmosphere, this traps and concentrates odour emissions at ground level which can impact customers.

During periods where there are significant variations in daytime to nighttime temperature (greater than 12°C) the ponds systems can become stressed, which can reduce pond performance potentially increasing nuisance odours.

Power and Water is implementing a number of solutions to reduce the impact of temperature on the ponds treatment process:

- **Dosing of Magnesium Hydroxide into our pump stations.**
By simply increasing the pH, the proportion of hydrogen sulfide produced (the dominant contributor to odour) in our sewerage reticulation system can be limited.
- **Increasing oxygen levels in our pond system.**
Through an increase in recirculation flows between our ponds we can increase the oxygen levels. This assists with improving the pond bacteria activity leading to better pond performance.

These occurrences of increased odour are usually relatively short and the ponds' performance will return to normal within a few days.