



## A guide to **cooling towers**

The Grangemouth complex has two different types of cooling towers: the natural draught, the impressive hyperbolic-type that gives the site its distinctive skyline, and the mechanical draught cooling tower, a lower level cooling system.

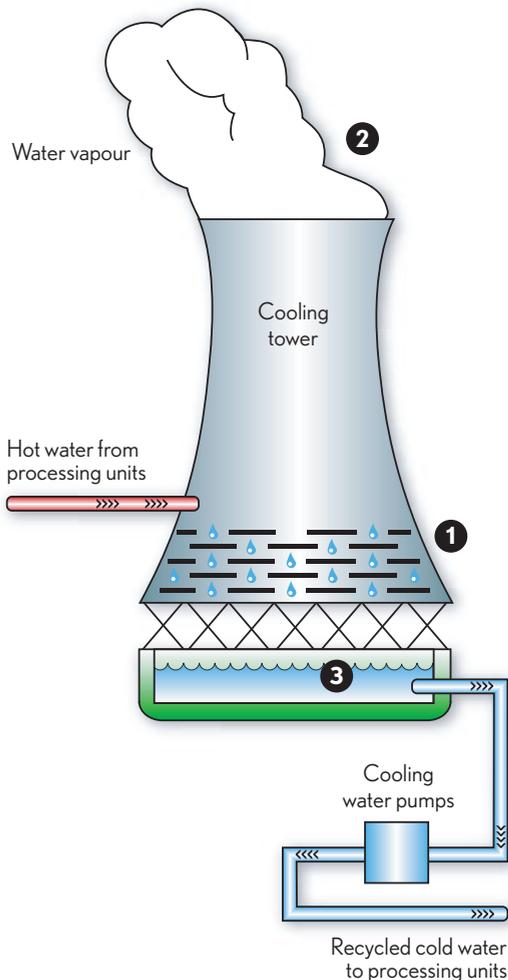


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## What is the purpose of the cooling towers?

Both types of cooling tower serve the same purpose: water is used to help regulate the temperature on some of the processing units around the complex. Cool water is

passed through these units and the heat is transferred from one to the other: cooling the unit and warming the water. The role of the cooling towers is to remove the heat from this water, reducing its temperature from around 40°C to 24°C and allowing it to be re-circulated through the processing units' cooling system.



## What happens inside cooling towers?

In a natural draught cooling tower, the warm water from the processing units is cascaded over the tower's open lattice frameworks<sup>(1)</sup>. Some of the water evaporates and emerges from the top of the cooling tower as a white plume of steam (pure water vapour)<sup>(2)</sup>. As the steam travels up the inside of the large structure a natural draught is generated at the foot of the cooling tower which cools the water. The cooled water is collected in a pool at the bottom<sup>(3)</sup>. From here it is circulated back through the site's cooling system.

The method of cooling water in a mechanical draught system is very similar. However, the warm water is cooled by a draught generated by a large electric fan above the lattice framework.

In both cases, by means of this recycling process, the cooling towers help to minimise the site's usage of water.

## Where does the water come from?

The source of the water we use in our cooling system is the same as that supplied to domestic users.